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Het leugenloket – speculating on lie-detection in Dutch political communication

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Het Leugen loket

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Speculating on lie-detection in Dutch political communication

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1. Introduction

Democracy depends on trust. Citizens expect political representatives to communicate truthfully and transparently, yet public trust in governments has been relatively low in many democratic countries, including the Netherlands (Sociaal en Cultureel Planbureau [SCP], 2026). Recent political scandals, such as the Toeslagenaffaire, and perceived incidents of dishonesty have contributed to growing concerns about the integrity of representatives (Sociaal en Cultureel Planbureau [SCP], 2022). At the same time, technological developments offer new ways of assessing whether political communication can be trusted. Algorithmic systems are becoming increasingly sophisticated, also within the scientific field of lie-detection. Together, these developments raise an intriguing democratic question: Would it be desirable, from a citizen's perspective, to implement lie-detection technologies during political communication in the Netherlands?

In this paper, I present Het Leugenloket, a speculative research project consisting of an interactive installation in public space, which allows visitors to evaluate a fictional future in which politicians are monitored by personalised lie-detection algorithms. Beyond exploring this speculative scenario, the project investigates whether Research through Design (RtD) and speculative design can function as methods for producing knowledge outside conventional academic environments.

To develop this research project, I first established a conceptual framework around lying and deception, with particular attention to political communication and existing approaches to lie-detection. This framework was subsequently translated into the design of a speculative scenario in which these concepts are brought together through a designed artefact: the IBO (Indicator Bedriegelijk Optreden). The methodology further describes how the scenario and installation were developed, how visitors interacted with it, and how the resulting responses and observations were collected.

The findings provide insight into how participants responded to the speculative scenario and how the installation functioned as a public research environment. These findings are interpreted in relation to both the implications of algorithmic lie-detection in political communication and the potential of speculative Research through Design as a way of conducting research with a public audience.

2. Conceptual foundation

Much has been written about the philosophy of lying. In this chapter, I navigate this literature and distil aspects that are necessary for understanding the remainder of this project. I first establish the working definition of lying adopted throughout this thesis. I then place this definition within a political context, exploring the different and unique dynamics that are at play in this context. Finally, I examine existing research on lie-detection technologies, explaining the assumptions on which they are based and their current state of development. Together, these three parts form the conceptual foundation on which I build the methodology used to answer the research question.

2.1. What is lying?

People lie. Whether it is a white lie to spare someone's feelings or a lie told to achieve something, lying is integrated into everyday life. Although people encounter deception in their everyday interactions, most communication remains honest (George & Robb), but distinguishing the two is not as simple as it seems. To understand what constitutes a lie, I use several theories from scientific and philosophy research.

2.1.1. Contextualising the lie

Lying appears to be understood as knowingly saying something untrue. While useful as a starting point, defining lying in this way overlooks several philosophical distinctions. One of the biggest misconceptions about the idea of lying is its supposed connection to an objective truth. However, lies are not defined by actual facts, but by misrepresentations of one's belief about those facts. Svendsen describes this in his book The Philosophy of Lying. He states that when an individual lies, they aim to mislead the audience in two ways:

1. about the factuality of what they say and
2. about the correspondence with their state of mind (Svendsen, 2022).

This means that lying depends primarily on the relationship between a speaker and their own beliefs, rather than on objective reality. The opposite of a lie is therefore not truth but *truthfulness* (Svendsen, 2022). Philosopher Bernard Williams identifies this intention as the first virtue of truthfulness: *sincerity* (Williams, 1996). He identifies the second virtue to be *accuracy*, or a responsibility to verify what one thinks to be true is actually true. This means that active verification of one's beliefs is fundamental in being truthful (Williams, 2002). To illustrate this, imagine someone explaining a fact that they picked up from a random social media profile, knowing that the source might not be very reliable. In choosing not to verify the information, one fails to uphold the second virtue of truthfulness.

The distinction above establishes lying as a specific form of deceptive communication, but lying is not the only way in which deception can occur. Other tactics include *misleading, vagueness* and *bullshitting*. Although these forms of deception differ from lying, they remain highly relevant in the context of political communication. Therefore, I briefly define them here, before returning to them in the section about political deception.

Firstly, *misleading* refers to leading people away from the truth by saying something that is true or only partially true. In this way, without explicitly lying, the audience is intentionally placed in a position where they are likely to acquire false beliefs (García-Carpintero, 2021).

Vagueness, sometimes described as omission or concealment, involves intentionally framing a conversation so as not to communicate the whole truth, by excluding information, stating half-truths or leaving too much room for interpretation (Fallis, 2018). It differs from misleading in that it does not misdirect, but instead leaves the audience without sufficient information to form an accurate belief. It is usually regarded as a safer form of deception because deceivers can easily hide behind excuses like forgetfulness, ignorance, or the intent to reveal more information later (Ekman, 1992).

Lastly, *bullshitting* appears to be the closest to lying, but there is one important distinction (Petrocelli, 2018). When bullshitting, there is no regard for the truth whatsoever. Both a liar and an honest individual intend to present themselves as truthful, whereas a bullshitter does not care what is true, but is only concerned with the effects of what is being said (Svendsen, 2022).

Even though lying resembles misleading, vagueness

or bullshitting, in this thesis I argue that lying is binary: there is knowledge of what one believes to be true and the speaker intentionally states otherwise (Bok, 1999). A final condition for lying concerns the audience. Lying only functions when someone is expected to believe the speaker (Svendsen, 2022). There are apparent lies everywhere, appearing in the form of fiction, films, satire or irony. Although these formats intentionally communicate false information, both speaker and audience understand that the statements are not intended to deceive. When that shared understanding exists, false statements cannot meaningfully be regarded as lies.

2.1.2. Interactions with the lie

Humans naturally rely on communication to make sense of the world around them. Expecting others to tell the truth allows people to interact with the world efficiently (Marar, 2008). People are therefore predisposed to trust others, a tendency referred to as *truth bias*. This is a useful mechanism, as the majority of human communication is in fact truthful. Effective communication would suffer if people's default were to distrust others, particularly in situations requiring immediate trust. At the same time, this bias makes people less likely to suspect deception. There are ways to shift away from truth bias, for example by adopting a projected motive for deceptive behaviour, detecting behavioural cues associated with deception, noticing inconsistency across messages, comparing messages with outside knowledge or hearing external warnings for potential deception (Levine, 2018). Truth bias may be replaced by a distrust bias towards a particular individual who no longer deserves to be trusted.

While lying has severe consequences for trust between speaker and audience, cognitive side effects happen to the lying individual as well. Telling a lie is not only related to forgetfulness and the distortion of memories (Colwell et al., 2011), but also to confusion about the actual truth (Polage, 2012). The more successful a person lies, the more likely they are to believe their own lies (Polage, 2019), ultimately leading to self-deception. Interestingly, Von Hippel and Trivers argue that self-deception could actually serve an adaptive function (Von Hippel & Trivers, 2011). By convincing oneself of a falsehood, individuals reduce the cognitive effort normally associated with deception and therefore appear more confident in the eyes of others. As a result, self-deception could make deception both psychologically easier and socially more convincing. Although this remains a theoretical explanation, self-deception might function as a coping mechanism reducing the cognitive burden associated with deception.

This theory is particularly interesting if we take broader social dynamics into consideration. Research shows that honesty and dishonesty can be contagious, as people tend to be honest (or dishonest) if other people appear to be honest (or dishonest) (Robert & Arnab, 2013). Lying may therefore influence people's behaviour even when they are not part of the lie's direct audience. A related finding comes from research on ethical behaviour, which showed that acceptance of unethical behaviour (such as lying) is more likely when it develops gradually over time (Gino & Bazerman, 2009). Thus, repeated exposure to deception may slowly normalise lying and influence how society evaluates its ethical acceptability.

Taken together, these concepts provide the conceptual framework that I adopted throughout this paper, in which I understand lying as intentionally stating something untrue directed towards an audience expecting honesty. Furthermore, the responsibility of the audience and truth bias remain important concepts that strongly influenced the design of my research project. In the next section, I will approach these different conceptions from a political context, explaining why deception by political representatives can have profound consequences for democratic society.

2.2. Political deception

Whether lying can ever be morally justified has been debated for centuries. Broadly speaking, two ethical traditions can be distinguished. One tradition treats lying as inherently immoral regardless of its outcome, whereas the other evaluates deception according to intentions or consequences (Saul, 2012). Kant is perhaps the best-known representative of the first tradition, arguing that individuals are morally responsible for their own actions, but never for the unintended consequences of telling the truth (Kant, 1797/1996). While this position offers a clear moral principle, political communication rarely presents such straightforward situations. Communication in politics involves competing interests, uncertainty, and appeals to the common good. In other words, one does not need a reason to tell the truth, but one does need a reason to justify lying. (Bok, 1999). The remaining question for this thesis, however, is what constitutes sufficient justification. I examine this question from three perspectives: political responsibility, democratic values, and different forms of deception.

2.2.1. Political responsibility

In his book, Svendsen states that the requirement of accuracy increases when a statement becomes more significant or carries consequences for others (Svendsen, 2022). Especially in politics, where words have broad societal influence, the responsibility to be accurate carries greater weight. As Hobbes argues, politicians communicate not only as individuals, but on behalf of the institutions they represent. Their statements therefore carry authority beyond the individual speaker (Hobbes, 2009) (Runciman, 2018).

Beyond the obvious responsibility of representing citizens, holding a position of power comes with other consequences. Receiving information from a politician differs substantially from receiving it from another citizen. Politicians are often among the first to receive facts that are of (inter)national importance. Interpretation and translation happen top-down through institutional communication, with information generally reaching citizens last. Consequently, political institutions occupy an authoritative position

in shaping public understandings of truth. Given people's truth bias, this concentration of authority can become problematic. Furthermore, interpersonal conversations are generally more reciprocal. Political speech is often a monologue. And even though journalists or fellow politicians sometimes have the ability to ask questions, the audience has no way to interact and verify information on the spot. Finally, political communication is rarely entirely spontaneous. Politicians generally speak on behalf of their party and therefore carefully construct and prepare their public statements through rhetorical principles (Brants & Voltmer, 2011). This careful construction may make naturally occurring cues to deception more difficult to detect and these characteristics make political communication fundamentally different from interpersonal communication.

In general, deception is only used if telling the truth, which is easier and less socially risky, appears insufficient in achieving a goal (Levine, 2018). As a result, deception becomes easier to justify when those goals are presented as benefiting society. This position also creates opportunities to hide personal gains behind seemingly necessary lies for the greater good. Yet even under the assumption that political leaders genuinely pursue the common good, the act of deception itself risks undermining the shared commitment to truth upon which democratic societies depend.

2.2.2. Truth and democracy[1]

Although factual truth is not fundamental to lying, lying is only possible if there is a shared understanding of what is true. Over the past few decades, however, the way people interact with truth has changed considerably.

The rise of mass media, the internet and digital communication has changed the way people interact with information. Information is no longer scarce (Gleick, 2011). Instead, people are confronted with an abundance of information that is increasingly mediated and personalised to their preferences (Dahlgren, 2021). Truth has shifted from something that is received to something that must continuously be sought and verified. As discussed previously within Williams' notion of accuracy, individuals keep a responsibility to actively verify their beliefs instead of blindly accepting information, but changes in information distribution make it difficult to actually do so.

Truth has always extended beyond obtainable evidence (Svendsen, 2022). For much of what we consider to be true, we rely on external sources, and choosing which one to trust has become increasingly difficult. To avoid this complexity, people might choose to rely on intuition and beliefs, creating room for phenomena such as *truthiness*, or the feeling that something is true just because it feels convincing (Svendsen, 2022).
This becomes especially problematic within a democracy when politicians engage in deception.

[1] This discussion concerns democratic political systems, where informed consent and accountability are fundamental principles.

As argued earlier, a gradual increase in perceived deception can lead to societal acceptance of this behaviour and might stimulate self-deception within the politician. Over time, this contributes to what is often described as *post-truth* politics, in which politicians communicate facts shaped by emotions, instead of accuracy (McIntyre, 2018). Therefore, maintaining honesty benefits society as a whole because it preserves the shared foundation upon which democracy depends (Svendsen, 2022).

Democracy also depends on citizens being able to make informed political choices. Political deception undermines this process because citizens cannot meaningfully consent to political decisions when the information on which those decisions are based is intentionally distorted (Svendsen, 2022). Furthermore, citizens have never granted political leaders permission to deceive them and democratic legitimacy presupposes that political communication is fundamentally truthful (Svendsen, 2022).

As Hannah Arendt concludes, truth is not merely an individual virtue but a democratic necessity (Arendt, 2022). Even when political deception may appear justified in a particular situation, its cumulative effect threatens the shared reality upon which democratic societies rely.

2.2.3. Political deception beyond lying

Lying occupies a central place in ethical discussions about political communication, but politicians have access to a broader repertoire of deceptive strategies that allow them to influence public understanding. As discussed in the previous section, misleading, vagueness and bullshitting are additional strategies used to pursue personal or political goals.

First, vagueness can be used to provide space for error or to communicate incomplete knowledge and can therefore function as a buffer for accountability. Accusations become easier to deflect when a statement was not factually incorrect, but merely incomplete. The ethical legitimacy of vagueness therefore depends largely on intent, similarly to lying. Additionally, secrecy can be understood as an intentional form of vagueness. Williams claimed that there is a significant relationship between trust, lying and secrecy (Williams, 1996). Let's for example assume that trust in the government is high. Most government communication can rely on being truthful as well as maintaining secrecy: citizens are not expected to know everything and they are often aware that governmental secrets are needed for state security. But if trust declines, citizens become critical and more demanding of explanations and secrecy can lose its legitimacy.

According to Alan Strudler, misleading is in most cases less morally problematic than lying. He explains this through assertion and indication (Strudler, 2010). Assertions require the audience to directly accept what is being said as true, forcing them to trust you and risk breaking their trust. Indication provides room for people to frame their conviction. Misleading therefore leaves more room for citizens to draw their own conclusions. Strudler compares this to the principle of proportionality in self-defence, in which one must

always use the least harmful means available. Lying is therefore regarded as the more extreme form of deception. When misleading is sufficient to achieve the same objective, it should be preferred over lying.

Lastly, empirical evidence suggests that the use of bullshitting can have important social consequences and utility as well. Specifically, bullshitting is found to be evaluated less negatively than lying and can be perceived as a successful persuasion tactic (Petrocelli, 2018). Bullshit may therefore function as an effective political strategy because it rewards confidence and conviction, which can be beneficial in maintaining the image of strong leadership. However, because bullshitting disregards the importance of truth, it ultimately undermines the conditions required for a functioning democracy.

Although lying remains the clearest form of intentional deception, misleading, vagueness and bullshitting similarly require speakers to actively distance themselves from what they believe to be true. This raises a practical question: if intentional deception can manifest itself in different ways, to what extent can it actually be recognised? The following section therefore explores how contemporary research attempts to identify deceptive behaviour through technological means.

2.3. Lie-detection

Research consistently shows that the average person performs no better than chance when attempting to detect lies (Serota et al., 2024). Since lying is assumed to influence cognitive, emotional and physiological processes, researchers have developed a wide range of lie-detection technologies that attempt to identify these cues. In this section, I examine the main approaches to lie-detection and discuss the assumptions on which they are based.

2.3.1. Physiological approaches

Physiological lie-detection is based on the hypothesis that deception produces measurable changes in the body. Perhaps the best-known example is the polygraph, which measures physiological indicators such as heart rate, respiration, perspiration and skin conductivity (Brennen & Magnussen, 2023). In forensic settings, these measurements are compared with a baseline established through neutral questions before crime-related questions are introduced, for example through the Control Question Technique or the Guilty Knowledge Test (Iacono, 2012). Although the polygraph has existed for decades, its underlying principles continue to be applied in newer technologies, including wearable sensors that attempt to detect deception outside laboratory settings (Alper & Guri, 2024).

Additionally, research focuses on specific physiological indicators, such as facial behaviour. For decades, researchers have suggested that certain facial movements associated with strong emotions are difficult to consciously suppress, an idea formalised by Ekman as the *inhibition hypothesis* (Ekman, 2003). Building on this assumption, Porter and Ten Brinke hypothesise that liars may be unable to completely suppress subtle changes in facial expression while deceiving (Porter & Ten Brinke, 2010). One study tested this hypothesis by measuring infrared temperature points on the face and comparing them to an individual's baseline profile. The study reported that algorithms were able to predict deceptive behaviour with an accuracy of 87% using a within-person methodology and fivefold cross-validation (Rajoub & Zwiggelaar, 2014).

Researchers have also examined movement as a potential indicator of deception by using body capture suits that record three-dimensional data on the position, speed, and orientation of body joints. In a study involving low-stakes lies, participants who lied tended to move more than participants telling the truth, suggesting that body movement may also reflect deceptive behaviour (Van Der Zee et al., 2019). Analysing the body as a whole resulted in an accuracy of 74%, while focusing on specific limbs increased this to 82%, outperforming the average human ability to detect lies. Although the physiological cues differ, these approaches indicate that deception leaves measurable traces in the body that can be quantified and analysed.

2.3.2. Linguistic approach

Besides physiological cues, researchers have also investigated whether deception can be identified through language. Already in the early 2000s, researchers were able to identify linguistic cues of deceptive communication (Newman et al., 2003). The analysis showed that liars tend to express more negative emotions, use fewer references to themselves and others, and overall demonstrate lower cognitive complexity in their language. Recent developments in LLMs and machine learning have made it possible to identify more personalised linguistic cues of deception. One study, for example, analysed more than 450 tweets written by the 45th U.S. president, Donald Trump (Van Der Zee, 2021). With an accuracy of about 75%, the model was able to distinguish deceptive tweets from truthful ones, suggesting that linguistic features may provide another valuable source of lie-detection cues.

2.3.3. Challenges

Previous research suggests that several lie-detection methods can distinguish deceptive from truthful behaviour with reasonable accuracy. However, the practical reality of these technologies is more complex. Within deception science, researchers have raised substantial criticisms regarding the use and interpretation of lie-detection technologies.

One of the main criticisms of these technologies is that, although different physiological and behavioural states can be measured, it is difficult to determine whether these are caused by deception or by other cognitive processes. Arousal in itself can have many causes, such as anxiety, nervousness, stress or emotional overload. For example, Porter and Ten Brinke acknowledge that a facial cue may reflect fear of being caught, but equally fear of being falsely accused of lying (Porter & Ten Brinke, 2010). Several

other studies, including an influential meta-analysis from the early 2000s (DePaulo et al., 2003), also conclude that there are no reliable non-verbal cues that consistently indicate deception (Luke, 2019). At the same time, Brennen and Magnussen admit that with growing sophistication of machine learning, cues that are impossible to detect with the human eye might be detectable by algorithms (Brennen & Magnussen, 2023).

Another important challenge concerns ecological validity. Most lie-detection research is conducted under controlled laboratory conditions. Consequently, much of what we know about deception is derived from experimentally constructed situations rather than from deception as it naturally occurs in everyday life (Levine, 2018). The experimental design itself can influence the results. For example, the body capture suit study reported stronger findings than previous research, which the authors attributed to asking participants to prepare their lies instead of putting them on the spot, possibly reducing cognitive stress (Van Der Zee, 2019). Instructions, participant characteristics and research design all influence the conditions under which deception is measured, making it difficult to isolate deception itself.

Despite these limitations, lie-detection research remains valuable. Ben-Shakhar and Verschuere argue:

"[Researchers] adopt the principle of 'beyond reasonable doubt' as the sole criterion for the utility of lie-detection methods. While this criterion is essential for reaching a conviction decision in criminal trials, it is hardly appropriate as a criterion for the utility of detection methods" (Ben-Shakhar & Verschuere, 2024).

In other words, when deception must be established with absolute precision, current lie-detection technologies are insufficient. However, this does not mean they lack practical value. Rather than functioning as definitive proof of deception, they can serve as indicators that invite further investigation. This distinction is essential, as it influenced how I conceptualised the role of lie-detection within my research project.

2.3.4. Social effects of lie-detection

Finally, beyond detecting deception, lie-detection technologies may themselves influence social behaviour. In general, people are reluctant to accuse others of lying (Von Schenk et al., 2024), because accusation carries the risk of being wrong, potentially resulting in social consequences. Introducing lie-detection technologies might affect this natural reluctance.

A specific study on the use of algorithmic lie-detection in accusation behaviour shows several consistent patterns. In the absence of a lie-detection algorithm, people are generally reluctant to accuse others of lying. When an algorithm is available, only a minority of participants actively choose to consult its prediction. However, those who do almost always follow the algorithmic recommendation, regardless of whether it classifies a statement as truthful or deceptive (Von Schenk et al., 2024). Interestingly, individuals who actively request the algorithm are not inherently more likely to make accusations than others, but they appear more willing to follow the algorithm's judgement than participants who receive the same prediction without requesting it themselves.

Together, these social effects demonstrate that lie-detection technologies do more than estimate deception: they also shape how people interpret and respond to one another, potentially interfering with the natural operation of truth bias. This observation informed several methodological decisions that I made in designing the experimental set-up.

3. Methodological foundation

The previous chapter showed that lying is a complex phenomenon, especially in a political context. Lie-detection technologies show promise, but they remain imperfect indicators of deception. Studying these topics through conventional empirical methods alone would have revealed how people currently think about political deception or lie-detection, but not how they might respond to a scenario in which both are combined and that does not yet exist. To explore that possibility, I adopted a Research through Design (RtD) approach.

3.1. Research through Design

Rather than treating design as a way of communicating research outcomes, Research through Design (RtD) considers the act of designing itself as a way of generating knowledge (Durrant et al., 2017). As Frayling argues, the activity of researching has become strongly associated with traditional scientific methods, while designers often generate knowledge through making and reflecting on artefacts (Frayling, 1994). Within RtD, the artefact is therefore not merely the outcome of research, but also an instrument through which research is conducted.

This way of producing knowledge differs from conventional empirical research. Gaver argues that knowledge generated through RtD is often "*provisional, contingent and aspirational*" rather than universally verifiable (Gaver, 2012). Instead of producing generalisable truths, RtD opens up possible futures and invites reflection on their implications.

Furthermore, RtD has the potential to create a different kind of knowledge, one that cannot be easily produced through conventional empirical research. This can often be traced back to the initial research question, which is usually different in nature than traditional, scientific questions. Höök and Löwgren describe this as intermediate-level knowledge, which can be used to catalyse pragmatic practices or opening up domains for extended scientific research (Höök & Löwgren, 2012). This is confirmed in a case study that examined three studies using RtD. They added that RtD might literally bridge research and design within specific domains by translating research findings into a format from which practical designers can start producing (Zimmerman et al., 2007). Finally, Höök and Löwgren argue that designers contribute to research what they are specifically trained to do: making to measure. Constructed artefacts that are tailored to the particular question being investigated is integrated in the design process. Especially when dealing with complex, abstract or future-oriented problems, this ability to materialise ideas into tangible experiences becomes a valuable research instrument.

3.2. Speculative Design

Because my research investigates a possible future rather than an existing situation, I needed a way to make that future tangible for participants. Speculative design provides such an approach. The term was introduced by Dunne and Raby, who describe it as an activity in which conjecture is as valuable as knowledge. They use futuristic and alternative scenarios to convey ideas and emphasise the implications of present-day decisions for humanity (Dunne & Raby, 2013).

As a result, speculative design is primarily concerned with creating awareness and stimulating discussion through suggestive future scenarios. These scenarios should remain within the spectrum of possible, plausible, probable, or preferable futures. Scenarios that move too far beyond current developments can become unrealistic, undermining meaningful reflection and debate and making them less useful as research tools (Auger, 2013). Importantly, speculative design does not attempt to predict the future. Instead, it makes people aware of future possibilities and uses these possibilities to reflect on the present, current technological developments, and the role society may want such developments to play in the future (Dunne & Raby, 2013).

Speculative design as a RtD methodology is occasionally used across a variety of disciplines, exploring different kinds of futures about present-day attitudes, values and behaviours (Hoang et al., 2018) (Alfrink teal., 2023). One project that strongly influenced my approach is Poppi's XTC-shop. This project consisted of a physical installation developed to explore the speculative legalisation of XTC in the Netherlands (Poppi, n.d.). It travelled to different cities over time, where passers-by could freely enter the

installation. The shop presented three scenarios, each representing a different venue for purchasing XTC pills: a smartshop, a pharmacy and a club. Each venue was designed to resemble its real-world counterpart and included an iPad containing a questionnaire. Participants were asked to answer questions about their opinion regarding the specific scenarios. Finally, answers were included in a report (Di Quadros Rigoni, 2023).

Beyond engaging a broad public audience, the project demonstrates how a speculative installation can function as a research instrument. This made it possible to investigate opinions and values that would have been difficult to capture through conventional interviews or questionnaires alone. I adopt the same methodological principles to contextualise my research question. The following chapter explains how I designed a speculative scenario that connects political deception with lie-detection and how this scenario functions as the central research instrument of my study.

4. Research approach: *Het Leugenloket*

This chapter describes how I developed *Het Leugenloket* as the central research instrument of this project. I ex-plain why I made certain design decisions, how I took inspiration from the theoretical framework and how I managed practical constraints encountered during production.

Het Leugenloket is a reformulated name for the whole research project. In Dutch, a loket refers to a desk where people can obtain information or assistance. It is commonly associated with government institutions and public services. The idea of *Het Leugenloket* is to create a physical and online space where visitors can reflect, in an interactive and accessible way, on the intersection of technology, politics and trust. It functions as a site for scientific research and information, with a strong focus on connecting with people passing by.

Het Leugenloket brings together everything that has been discussed in this paper, from the conceptual foundation to external communication outlets and is centred around a carefully constructed speculative scenario in which Dutch politicians are monitored by lie-detection technologies. Rather than treating Dutch citizens merely as participants from whom I collected data, I wanted them to become part of the research itself. Therefore, developing *Het Leugenloket* as a broader public project opened up the research beyond academia and invited people to actively engage with the questions explored in this thesis.

4.1 Development of the speculative scenario

An interesting conclusion appeared from the research into lie-detection. Almost every research aims to create a binary system of lie-detection: someone either lies or doesn't, and is aimed to catch liars during criminal examinations. In this context, a consistent, bulletproof verdict of false accounts is of utmost importance. But the majority of research shows that binary judgement of deceptive behaviour is incredibly difficult to achieve (Brennen & Magnussen, 2023) Yet many of these same studies demonstrate that algorithmic systems can successfully *indicate* deceptive behaviour.

4.1.1. The IBO

This observation inspired a different approach. Rather than determining whether someone is lying, what if a system estimated the probability that deceptive behaviour is taking place? Algorithm driven technology based on and individual's personal baseline. I introduce the IBO: Indicator Bedriegelijk Optreden (or IDD, Indicator of Deceptive Demeanour, in English), a speculative system designed for this project.

The fictional IBO plays with the idea that Dutch politicians, while in function, are continuously monitored by algorithms. Individual data is gathered, interpreted and presented as a single data output: a deceptive indicator (IBO). The percentage reflects the *chance* that the politicians demeanour indicates deceptive behaviour. During debates, press conferences and speeches, this indicator is continuously communicated to the audience. How this information is interpreted ultimately remains the responsibility of the individual.

The design of the IBO is based on three principles derived from the conceptual framework.

First, the system preserves accusation as a *private act*. Existing research shows that people are generally reluctant to accuse others of lying, partly because accusations carry social consequences. Within *Het Leugenloket*, participants never publicly accuse the politician. Instead, they privately evaluate the interview while interacting only with the system. The IBO therefore supports individual judgement without introducing direct interpersonal consequences.

Second, the system deliberately intervenes in *truth bias*. People generally assume that others are telling the truth unless there is reason to believe otherwise. By continuously presenting a deceptive indicator alongside political communication, the system acts as a persistent reminder that political statements need to be critically evaluated at all times.

Third, the IBO encourages *individual truth judge-ment*. As discussed in the conceptual framework, access to factual truth has become complicated and citizens increasingly rely on interpretations when evaluating political information. Consequently, the IBO never presents itself as the authority on truth. Instead, it encourages individuals to actively evaluate political communication by weighing the IBO alongside their own observations, prior knowledge and, where appropriate, additional sources of information.

Taken together, the IBO should not be understood as a lie detector, but as a decision-support system. It

does not replace citizens' judgement, but it introduces an additional indication that participants may incorporate into their own interpretation of political communication. In doing so, the speculative technology explores whether algorithmic support can encourage more critical assessment of political statements while preserving individual responsibility for determining truth and therefore evaluates the societal implications of algorithmic lie-detection in political communication.

Figure 1.1: First sketch of the IBO-overlay.

Figure 1.2: Final IBO overlay.

4.1.2. Technology

As discussed in the conceptual foundation, several lie-detection approaches have demonstrated some ability to indicate deceptive behaviour. I combined multiple approaches into one speculative system (IBO). This decision was motivated less by technological accuracy than by the need to create a believable future scenario. Before selecting the technologies, I established three design criteria.

1. Technology has to be practical in day to day wear, i.o.w. realistic to implement in Dutch politics,
2. no over-saturation of technologies, and
3. each lie-detection has an individual contribution to the speculative scenario.

Consequently, the technologies were selected not only for what they could theoretically detect, but also for what they communicated to participants about the plausibility of the speculative world.

When speculating scenarios, visualisation and the use of props helps translating concepts to an audience (Zhang, 2022). People find it easier to imagine future technologies when they are represented through tangible artefacts. For this reason, I selected the *body capture suit* as the central physical element of the IBO. Moreover, fictional props tied to the body (suits, masks, cyborg mods) are widely represented in science fiction films, which possibly enhances the imaginability of the technology.

While body capture technology remains unfamiliar to most people, large language models (LLMs) have become part of everyday life. I therefore incorporated *LLM-based language analysis* into the IBO. Besides their demonstrated potential for detecting linguistic markers of deception, their familiarity helps ground the speculative scenario in technologies that participants already recognise. Combining familiar and unfamiliar technologies makes the overall concept easier to imagine.

Finally, I incorporated *infrared facial analysis*. Although its practical accuracy remains limited, many people intuitively associate facial expressions with lying. Infrared therefore reinforces participants' expectations of what a futuristic lie-detection system might look like.

None of these technologies were selected because they individually provide definitive evidence of deception. Instead, each contributes differently to the credibility of the speculative scenario. Together they create a believable technological ecosystem that encourages participants to engage seriously with the speculative scenario, instead of functioning as a realistic proposal for an actual lie-detection system.

4.1.3. Narrative

To make the speculative scenario more experienceable, I embedded the IBO within a familiar real-world setting: a fictional interview with a local politician. During the production phase of this interview, I consulted with filmmaker and friend Thijmen, who provided practical advice regarding cinematography and directing. His role was mostly advisory, with decisions regarding design and content remaining my responsibility.

The content of the script was paralleled with real news to stimulate believability of the scenario. Because *Het Leugenloket* was intended to be exhibited in Eindhoven, local news would function as the source. When selecting a news item, I considered two criteria:

1. Participants should have roughly equal familiarity with the topic.
2. The topic should be recognisable even to people who do not actively follow local news.

To satisfy both criteria, I chose a recently started construction project at Eindhoven Centraal. A month before constructing the script, bicycles had been removed around the main building of Eindhoven Centraal and construction fencing with informational panels was added (Amvest, n.d.). The centrality and the physicality

of the project enhanced possible familiarity with the news, even for people that are not local but sometimes visit Eindhoven by public transport. Moreover, I hoped that because of its recent initialisation and the general longitude of construction projects, most people would recognise the topic.

Most information presented in the interview is factually accurate. To demonstrate how the IBO functions, I deliberately incorporated several deceptive statements into the script. I avoided obvious lies, but based them on deceptive strategies identified in the conceptual framework. In this way, I ensured that the interview resembled everyday political communication rather than obvious deception. Wording was chosen based on responses in similar interviews with local politicians (Studio Alphen, 2023). Framing of the interview also took inspiration from traditional political interviews in Dutch politics.

Furthermore, I chose the politician to be local, because participants generally hold fewer pre-existing opinions about local politicians than about national figures, allowing the speculative technology to become the primary focus instead of political affiliation. For portraying the role, I recruited actors through *Filmpeople.nl*. Two candidates participated in the recording session, after which one actor was selected for inclusion in the final installation based on the suitability of the recorded material. The interview was filmed in front of the Town Hall of Eindhoven to indicate that the politician had just left a meeting. I selected a business-casual suit as dressing to resemble the appearance of a local politician.

4.1.3. Interaction

For visualising the interface of the IBO, I used two guidelines: clarity and cognitive manageability. First, participants needed to understand what information was presented and how it related to the politician's behaviour. Second, the interaction needed to remain cognitively manageable, allowing participants to focus on the speculative technology without being overwhelmed by the interface. Initially, I explored whether displaying underlying measurements could increase the perceived credibility of the IBO. Based on principles from data visualisation, I considered whether showing continuous physiological data could make the system appear more transparent and trustworthy. Familiar measurements such as heart rate seemed particularly promising, as recognisable physiological data could make the speculative technology appear more plausible. However, prototype testing revealed that displaying multiple graphs would likely exceed participants' cognitive capacity. Including several moving components would distract participants from the element that deserved the most attention: the IBO itself. Therefore I decided to remove specific data measurements from the overlay altogether (see figure 1).

In the end, the visualisation of the IBO was divided into two components: a continuous percentage bar and a verbal judgement label. The bar functions as a representation of continuity. Its responsiveness to the audio and video of the interview was intended to create the impression that measurements were being taken in real time, thereby increasing the plausibility of the scenario (Slater, 2009). The addition of an animated live dot also reinforces this. The judgement label translated the continuous percentage into a qualitative judgement ranging from 1 (small chance) to 5 (high chance), helping participants interpret the numerical output.

Furthermore, the actor was given a political ID with their name, function and department, giving more context to the interview. Finally, the logo of the Dutch government as well as a direction to more information was added to frame the IBO as a democratic instrument. Together, these visualisations manifested as a mainly transparent overlay that was continuously projected over the video, displaying dynamic data. To prevent participants from being cognitively overloaded when confronted with these elements at the same time, they were provided with a preview of the isolated overlay to get familiar with its components.

To generate responsive feedback throughout the interview, I wrote two scripts for creating a deception heat map: a control heat map and a fake heat map. The control map followed a predefined timeline in which every 0.5 seconds was assigned a deception value. This timeline incorporated periods of baseline activity while the politician was listening, moderate cognitive activation during truthful speech and temporary peaks during scripted deceptive statements. Smooth transitions between these states were implemented to create continuous rather than abrupt changes in the visualisation, reinforcing the impression of an actively measuring system.

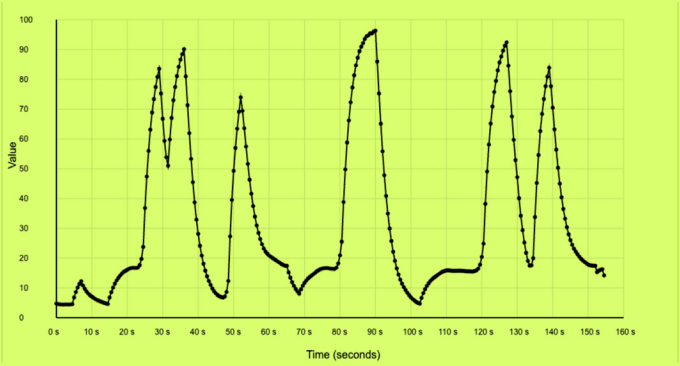

Figure 2.1: Control heat map, used to compare user imput.

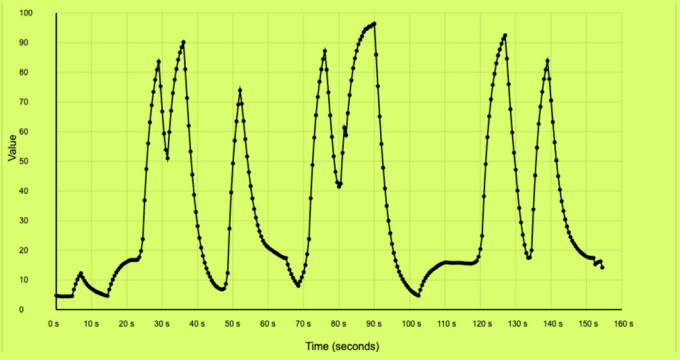

Figure 2.2: Fake heat map, used as input for the IBO visualisation. Differs at 70–80 s with the control.

Technically, the heat maps were implemented as extended JSON files containing deception values for every 0.5-second interval of the interview, allowing the

overlay and scoring system to respond continuously throughout playback. The fake heat map used the same script, but included a false positive (see figure 2).

Additionally, I aimed to gamify the experience. Speculative design often incorporates humour, absurdism or playfulness to make complex societal issues more approachable (Dunne & Raby, 2013) Without an interactive element, the experience would largely consist of watching a political interview, potentially reducing participant engagement. To stimulate active engagement, a game was introduced during the playback: catching lies. Participants were given the opportunity to continuously provide feedback via the slider (horizontal potentiometer), regarding the extent to which they believed the politician displayed deceptive behaviour. They were free to follow their own intuition, the IBO or a combination in their verdict. Importantly, participants were never instructed that the IBO was fully correct. The installation deliberately left room for participants to decide how much trust they wished to place in the technology. After the interview, participants received a score indicating how closely their responses compared with the control heat map. Providing participants with a score reinforced the framing of the interaction as an active evaluation task rather than passive observation.

Participant scores were calculated by comparing their continuous slider input with the control heat map. The scoring algorithm rewarded participants whose responses aligned within a small margin (±10%) of the intended pattern of deceptive behaviour. Importantly, the maximum achievable score by simply following the IBO was intentionally limited to approximately 75–80%, reflecting the imperfect accuracy reported in contemporary lie-detection research. This design choice reinforced the speculative premise that the IBO should be interpreted as an indicator and not as an absolute detector.

Finally, interaction possibilities within the program were limited to confirm (button), select (slider during questionnaire) and live input (slider during interview). The slider was labelled with a *W (waarheid)* on one side and an *L (leugen)* on the other. (see figure 3). Limiting interaction to these three input methods was intended to keep the interface simple and minimise unnecessary cognitive load, consistent with established principles of human–computer interaction (Norman, 2013). The interaction was realised through an Arduino Uno and a simple circuit connecting the button and horizontal potentiometer.

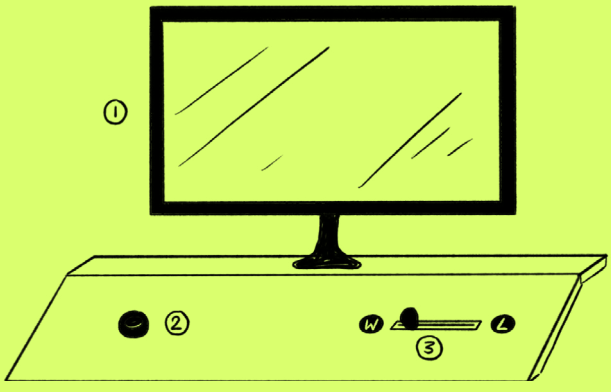

Figure 3: Sketch of interaction set-up. 1) monitor with experiment, 2) confirm button, 3) horizontal potentiometer (slider)

4.2. Exhibition

At first, *Het Leugenloket* was intended to be put in public space for maximum visitor encounter and diversity. This aligns with the exploratory nature of RtD and speculative design, which often seek engagement with diverse publics rather than controlled laboratory populations.

However, because establishing an installation in public space proved impractical within the scope of this project, I selected an exhibition setting instead. This still allowed participation by a broad audience while remaining feasible within the available time and resources. *Het Leugenloket* was ultimately exhibited during DEMO DAYS: Frictional Futures, an exhibition at Nul Zes in Eindhoven (29–31 May 2026).

The final installation consisted of three main components: *a voting booth* containing the interactive experiment, an *information desk* introducing the project and its research context and a *body capture suit* displaying one of the speculative lie-detection technologies. Together, these thee components formed a sequential experience. Ideally, visitors were first introduced to the project, then exposed to the underlying technology and finally invited to participate in the experiment (see figure 4).

Prior to the exhibition the installation was tested a few times to identify technical problems, improve timing, verify the functionality of the interaction and evaluate whether participants understood the scenario.

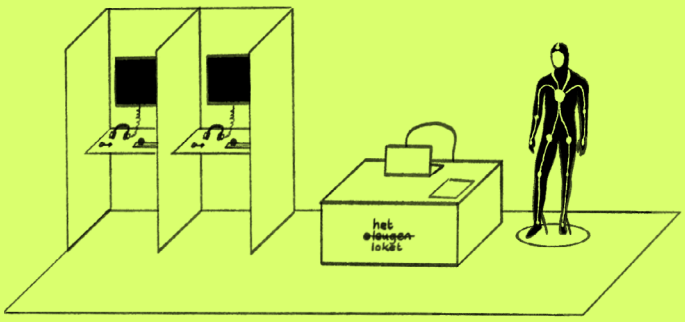

Figure 4: Initial sketch for exhibition set-up. Due to the space and resources, I decided to only have one booth at the exhibition.

Figure 5: Photo from the exhibition. Final experiment set-up.

4.2.1. Voting booth

To reinforce the democratic context of the speculative scenario, I housed the experiment inside a physical voting booth. Besides strengthening the political associations of the installation, the booth contributed to the overall aesthetic and recognisability of the experience. Furthermore, I added a closable curtain to create some privacy and minimise external stimulants. The enclosed setting encouraged participants to form their own judgements without direct influence from other visitors, reflecting the individual nature of democratic voting.

Within the booth a small shelf attached to it supported a monitor on which the experiment was displayed. A diagonal shelve attached to it mounted the two sensor inputs. Headphones were provided to limit audio to the participant and to amplify immersion. The voting booth was deliberately positioned in a corner of the exhibition space, stimulating visitors to first encounter the desk or the suit before entering the experiment. This gradual introduction familiarised participants with the speculative technology before they were asked to evaluate the politician, reducing the feeling of immediately entering an unfamiliar experiment.

Lastly, the entrance of the booth was marked with red-and-white striped tape on the floor, labelled with notices indicating that the experiment was only available in Dutch and intended for participants aged 18 and older.

4.2.2. Information desk

The information desk provided visitors with an opportunity to engage with the project beyond the experiment itself. It reinforced the project's notion to bridge academic spaces and include civilians in scientific debates. Hosted by me, the desk displayed informational flyers and offered candy, creating the informal hospitality often associated with public information counters. Besides providing practical information, the desk functioned as the public face of *Het Leugenloket*. Its resemblance to a governmental service counter reinforced the fictional institutional setting of the speculative scenario, while simultaneously providing a place where visitors could ask questions before or after participating.

Figure 6: Photo from the exhibition: desk.

4.2.3. Technology display

I positioned a mannequin wearing a replica body capture suit near the entrance of the voting booth to illustrate the technological foundations of the speculative scenario. An interactive iPad mounted beside the mannequin allowed participants and passers-by to read about the role of body capture, infrared scanning and LLMs in lie-detection. Information was provided in both Dutch and English, allowing English-speaking visitors to engage with the project as well. Presenting the technologies separately from the experiment familiarised visitors with the speculative premise before participation, increasing the plausibility of the scenario while reducing the need to explain these technologies during the interaction itself.

Figure 7: Photo from the exhibition: technology set-up.

4.3. Communication beyond academia

RtD aims to engage publics outside academic environments by creating knowledge through situated encounters. Inspired by this ambition, I deliberately developed the project as a public installation instead of a laboratory experiment. The intention was not only to investigate participants' responses to speculative lie-detection, but also to explore how academic research itself can become accessible to broader audiences. Consequently, *Het Leugenloket* functioned also as a public communication project. To support this, I developed a website and Instagram page (see Appendix), allowing people to engage with the project beyond the exhibition itself. Although these platforms did not contribute empirical data, they extended the project's reach and supported its broader aim of stimulating public discussion about political deception.

4.4. Data collection

Data were collected through quantitative questionnaire responses and qualitative observations recorded in a research logbook. Both sources of data were collected during the exhibition.

4.4.1. Questionnaire

During the experiment, after finishing the interview, participants were confronted with a reflective questionnaire about their experience. I constructed

this questionnaire around four categories:

1. political attitudes,
2. perceptions of the speculative scenario,
3. the exhibition experience, and
4. demographic information.

Together these categories allowed the study to examine both participants' evaluations of the speculative technology and their broader attitudes towards political deception. The complete questionnaire can be found in the appendix.

4.4.2. Logbook

Alongside the questionnaire, I maintained a research logbook throughout the exhibition. I recorded observations of participant behaviour, informal conversations, practical issues encountered during the exhibition, and reflections that emerged during the deployment of the installation. Within RtD, such reflections constitute an important source of knowledge because they capture insights generated through the design process that cannot easily be obtained through questionnaires alone.

4.4.3. Considerations

To maintain anonymity while enabling withdrawal of data, each participant received a unique user ID. Demographic questions were deliberately limited to age and whether participants were from Eindhoven. Age was included to assess whether the installation attracted a diverse audience, while familiarity with Eindhoven was relevant because the interview referred to a local construction project. No questions regarding political preference, education level or gender were included, minimising unnecessary personal data collection.

Because I was physically present throughout the exhibition, participants could reasonably assume that their responses might be linked to them personally. Although questionnaire responses were collected anonymously, limiting demographic information strengthened the feeling of anonymity. Therefore, only information necessary to answer the research question was collected.

Because revealing the fictional nature of the IBO beforehand might have compromised the experiment, participants were asked for consent to use their anonymised data only after completing the experiment. Participants who withheld consent had their data deleted immediately. During the debriefing (see appendix), I explained that no lie-detection technologies had actually been used and that the IBO itself does not exist. Participants were then given the opportunity to ask questions and reminded that they could withdraw their data for up to one month after participation.

4.5. Overall procedure

To combine everything mentioned above, below a walkthrough that explains the participants journey from entering *Het Leugenloket* to leaving it.

1. **Participants are first welcomed at the information desk, where the project is briefly introduced.**
2. **They are asked to participate in the experiment and invited to enter the booth individually.**
3. **Inside the booth, participants are presented with a screen and input sensors to navigate through the program.**
4. **Participants are given a user ID and are introduced again to Het Leugenloket and to the fictional IBO technology and its underlying principles.**
5. **Participants complete a short practice exercise in which they learn how to use the slider by evaluating a simple example statement.**
6. **Participants are prepared for the experiment. They are instructed that they are free to base deceptive judgement on their own intuition, the IBO, or a combination of both.**
7. **Afterwards, participants have the opportunity to analyse the IBO overlay for ten seconds, before the video starts.**
8. **Participants watch the video, while continuously indicating, using the slider, how deceptive they believe the politician to be.**
9. **Participants receive a percentage in how accurately they judged the actor's demeanour.**
10. **Participants answer questions in a questionnaire.**
11. **After finishing the questionnaire, participants are asked to confirm consent for the use of their data.**
12. **The experiment rounds off and participants are instructed to leave the booth and go to the desk for debriefing.**
13. **Participants receive a written debrief explaining the speculative nature of the IBO. The researcher discussed the debrief with each participant and obtained final consent for the use of the collected data.**

The experiment inside the booth takes approximately 10 minutes, depending on how fast participants read instructions and answer the questionnaire. The video itself takes up exactly 2.5 minutes. Overall, including reading the information on the iPad and/or talking with me, it was estimated that participation takes up 15 minutes.

5. Findings

This section first provides the quantitative results that were derived from the questionnaire within the experiment booth and continues with qualitative logbook findings that were written down during the three day exhibition period.

5.1. Results from the questionnaire

In total, 57 visitors participated in the experiment. Of these, 31 completed the full programme. Four participants did not provide consent for the use of their data for research, and one participant withdrew their data after the debriefing. This resulted in 26[2] usable datasets for analysis. All attitudinal items were measured on a five-point Likert scale.

Of the participants (n=26), a slight majority indicated that politicians should never be allowed to lie under any circumstances. A small third further believed lying is only acceptable in situations of serious threat, while three participants felt that politicians should be allowed to decide for themselves when lying is justified. These findings suggest that most participants hold relatively strict views on political deception. Participants were somewhat less convinced that technology could effectively be used to detect deception in politics (M = 3.35). Just over half of the participants agreed or strongly agreed with this statement, while the remaining participants were either neutral or disagreed. Opinions regarding the ethical use of politicians' personal data were similarly mixed (M = 3.54). Fifteen responses agreed or strongly agreed that such use could be ethical, whereas the remaining answers were either neutral or disagreed.

Overall, participants appeared somewhat open to the use of technology for political lie-detection, although opinions became more divided when considering the specific implementation represented by the IBO.

Besides evaluating the speculative scenario, the questionnaire also explored participants' experience of the installation itself. One aim of *Het Leugenloket* was to make academic research more accessible by presenting it as a public installation rather than a conventional study. Questionnaire responses suggest that this objective was largely achieved. Most participants agreed that the installation was an effective way to engage people with scientific research. In addition, 92.3% reported enjoying the experience, and six participants indicated that they had never previously participated in academic research before visiting *Het Leugenloket*.

The questionnaire also explored two design principles underlying the IBO. Participants were asked whether the IBO encouraged them to verify the politician's statements themselves and whether its presence made them more suspicious of the politician's communication. These items were included to evaluate whether the speculative installation functioned as intended by stimulating active truth judgement and challenging truth bias. Overall, participants reported becoming somewhat more suspicious of the politician because of the IBO (M = 3.00). Responses were somewhat stronger for verification intent (M = 3.35), with almost two-thirds of participants agreeing or strongly agreeing that the IBO encouraged them to verify the politician's statements themselves.

The largest age groups were 26–35 years (n = 10) and 51–65 years (n = 7). Whether participants lived in Eindhoven was almost evenly distributed.

5.2. Logbook observations

Informal conversations took place with both participants and visitors who chose not to participate. These discussions primarily concerned the speculative scenario, the use of lie-detection technologies and broader questions surrounding politics and trust. Many visitors reflected on possible applications, ethical concerns, or their own opinions regarding the concept. When asked whether they understood the scenario, most indicated that the speculative scenario was clear and easy to follow.

Several technical issues emerged during the opening evening. Some participants interpreted the confirmation button as a joy-stick, causing damage to the component and temporarily interrupting the experiment. For the remaining exhibition days,

[2] ID 29 and 44 were manually removed, because of testing inbetween exhibition days. Others did not finish.

the button was fixed in place. Participants also reported that they were unable to return to previous questionnaire items. Although this behaviour resulted from deliberately limiting interaction options, several participants indicated that they would have preferred the opportunity to revise earlier responses. A third issue occurred because the automatic restart function interpreted periods without interaction during the interview as inactivity. Since some participants chose not to continuously operate the slider during the interview, the installation occasionally restarted during the experiment. This behaviour was corrected from the second exhibition day onwards by disabling the restart function during video playback.

During the third exhibition day, a visitor using a wheelchair attempted to participate but was unable to comfortably reach the shelf supporting the interface. Although no further accessibility-related incidents were observed, this highlighted an accessibility issue that had not been identified during development.

Although the experimental installation itself was only available in Dutch, the accompanying information on the iPad was presented in both Dutch and English. English-speaking visitors therefore frequently engaged with the project through conversations initiated by questions about the suit or the technologies presented.

Throughout the exhibition, visitors regularly laughed or smiled when first encountering the speculative idea of politicians being monitored by lie-detection technologies. These initial reactions often developed into longer conversations.

6. Intermezzo

Before the discussion and conclusion are presented, I want to uncover a specific logbook notation that deserves some individual attention.

It is understood that in empirical research, and in research overall, strict ethic considerations are important for guaranteeing anonymity and the careful handling of possible sensitive data. However, these considerations have the potential to turn into constrictions while putting a study outside of its academic context. Usually, research participants enter a space in which certain rules regarding consent and debriefing forms are expected from an institute that is perceived as professional and integer. Furthermore, people actively choose to participate in a study, most of the times based on (limited) pre-existing knowledge concerning its content. RtD spaces operate substantially different. Because they are located in public space, encounters happens spontaneously without pre-existing knowledge about the nature of a project. This can be a huge advantage over traditional methods in reaching a diverse and more random group of participants. But during the design of the project I foresaw that this threshold may be risen when signed consent and debriefing forms would be handed out before even entering *Het Leugenloket*. This is why I chose to integrate consent into the experiment program after finishing the questionnaire. Additionally, I aimed to debrief participants within the program as well, explaining that the IBO and the interview were fictional, although the construction project was indeed real.

However, academic requirements from my university explicitly stated that they wanted a formal debriefing to ensure that people were not believing that the IBO exists. In the end, to prevent educational repercussions, the debriefing form was eventually integrated in the procedure.

After carefully explaining the debriefing, one participant decided to withdraw their consent due to not understanding why they had to sign a form. Before, the participant communicated considerable interest in the project and fun while participating in the experiment, but due to formal consent requirements, they got confused and did not trust the project anymore. It appears that even by using RtD, ethical procedures are not methodologically neutral. They actively shape the design of a study, influencing researcher-participants relationship, design choices and, consequently, the knowledge that can be produced through it.

One last thing that I needs to emphasise is an overall *privacy paradox* that I encountered. My aim was to conduct this research with as much anonymity for participants as possible. That meant no names and no traceable demographics, no personal quotes or video material. As the project depicts possible sensitive information, like people's opinions about certain ethics in politics, privacy was of utmost importance. Especially because I interacted personally with the participants in an informal way. Tracing those conversations back to data from the experiment and linking it to a name felt really unprofessional. But, unfortunately university guidelines forced the use of signatures, often depicting parts of the individuals name, onto the debriefing, again conflicting with the design of the project. Ironically, the procedures intended to safeguard participant privacy required the collection of personally identifying signatures that I had otherwise deliberately avoided throughout the project.

Writing this intermezzo is perhaps the least conventional part of this thesis. I deliberately chose to include it because the institutional conditions under which research is conducted are themselves part of the research process. My frustration is therefore not presented as evidence against ethical frameworks, but as an evaluation of the friction between institutionalised ethics procedures and RtD practices. Ethical considerations should be applied not merely because they are prescribed by protocol, but because they meaningfully contribute to protecting participants within a specific research context.

7. Discussion

In this discussion I will interpret the findings in relation to my research question and reflect on the strengths and limitations of this project. Because this study combined quantitative questionnaire data with qualitative logbook observations within an RtD methodology, I consider not only what participants reported, but also what emerged from the exhibition setting itself.

7.1. Method evaluation

Combining questionnaire data with qualitative logbook observations proved valuable because both methods captured different aspects of participant engagement. Whereas the questionnaire documented individual attitudes towards the speculative scenario, the logbook recorded conversations, spontaneous reactions and practical observations that would otherwise have remained invisible. Neither method alone would have provided a complete understanding of how visitors interacted with the installation and the scenario. This illustrates the value of combining quantitative and qualitative methods within RtD, where both participant responses and the deployment of the design contribute to knowledge production.

7.1.1. Engagement

Participants reported enjoying the installation and generally evaluated it positively as a way of engaging with scientific research. While enjoyment does not necessarily imply successful knowledge production, these responses suggest that speculative design may provide an accessible entry point into discussions that are often confined to academic contexts.

Overall, conversations with participants, exhibition visitors and fellow artists reflected genuine curiosity in the theme and most people really seemed to embrace the idea of the speculation. Acceptance of the concept appeared to be predominantly positive. A participant later reported continuing the discussion after leaving the exhibition, suggesting that the speculative scenario even extended beyond the exhibition itself.

My logbook notes indicate that sometimes people were really enthusiastic to interact, but in reality they sometimes only accepted a flyer and went on with their exhibition visit. Therefore, the logbook likely overrepresents positive engagement. Visitors who disliked the installation may simply have continued their exhibition visit without engaging further. Additionally, talking to me, being the designer, on the spot may have deterred participants from being too critical, meaning that people might have reflected differently afterwards.

Although only a limited number of participants reported never having previously participated in academic research, the findings nevertheless illustrate that the exhibition succeeded in reaching individuals beyond the traditional university participant pool. While my study cannot determine whether this audience differed systematically from laboratory participants, it demonstrates the practical feasibility of conducting research in a public cultural setting.

7.1.2. Accessibility

Although I aimed to make this project as accessible as possible, I primarily focused on making the project accessible to people outside academic contexts. Yet, on the third day, a visitor using a wheelchair entered the exhibition, not able to reach the shelve in the voting booth. This incident revealed an *accessibility paradox*. While I primarily understood accessibility as making the research approachable for non-academic audiences, the exhibition opened up other accessibility related issues that could have been avoided whilst in academic context. Therefore, designing research for exhibition spaces comes with its own obstacles and limitations.

Another example is language. As the project was constructed for Dutch politics, instructions and the interview were translated only in Dutch, making the experience inaccessible for non-Dutch speaking visitors. While it would have been optional to translate the explanation, the interview would have drastically changed if it was conducted in English and perhaps decrease believability. Excluding non-Dutch-speaking participants may therefore have benefited the reliability of the data, but in doing so it conflicted with the project's ambition to broaden accessibility. Although the experiment was only available in Dutch,

information on the iPad was provided in English and resulted in quite some interesting debates as well. Especially discussing the concept for foreign political dynamics resulted in interesting conversations, meaning that some of the qualitative contributions of foreign participants ended up being documented in the logbook. This illustrates that moving research beyond academic environments does not simply broaden participation, it also introduces new practical and ethical responsibilities for the researcher.

7.1.3. Shortcomings

During the opening evening, several technical issues emerged. Two of these problems were fixed during the exhibition, demonstrating the importance of technical robustness when conducting research in exhibition settings. The third issue resulted in significant consequences. To minimise unnecessary interaction, I deliberately limited navigation within the questionnaire. As a result, participants were unable to return to previous questions. Several participants communicated that they would have appreciated this option after misunderstanding a question or responding too quickly. These issues demonstrate that seemingly minor interaction decisions can influence both participant experience and data quality, emphasising the importance of iterative testing when integrating research into exhibition environments.

7.1.4. Political neutrality

While constructing the project, I aimed to avoid any subjective connotations with real Dutch politics and frame the IBO as politically neutral as possible. Interestingly, no participant explicitly referred to a political party during conversations. It was expected that some visitors might want to enter political debates or approach the subject from their personal political convictions, but that did not happen. Although participants occasionally hinted at their political preferences, these observations remained anecdotal and never dominated the discussions.

Additionally, exhibition audiences are often characterised as relatively highly educated and politically progressive. Although political orientation was deliberately not collected, this may have influenced both willingness to participate and the character of the discussions. Consequently, the findings should not be interpreted as representative of the broader Dutch population.

7.2. Interpretation of the results

The questionnaire results should be interpreted descriptively instead of statistically. Given the relatively small sample size and the exploratory nature of this study, percentages primarily serve to describe this participant group rather than to make claims about broader public opinion.

The results suggests that participants generally held relatively strict views regarding political deception. Nearly three-fifths believed politicians should never lie, while almost one-third only accepted deception under exceptional circumstances. This indicates that, at least within this sample, truthfulness remains an important expectation of political representatives.

Furthermore, participants appeared neither fully accepting nor fully rejecting the speculative technology. A small majority considered the use of lie-detection technologies ethically acceptable, while a substantial proportion remained neutral or disagreed. Rather than indicating consensus, these findings suggest that the speculative scenario succeeded in provoking nuanced consideration instead of immediate dismissal or unconditional acceptance.

Participants also reported that the IBO encouraged them to verify the politician's statements themselves and, to a lesser extent, increased their suspicion towards the interview. Although these measures cannot demonstrate actual behavioural change, they suggest that the speculative visualisation functioned largely as intended. Instead of encouraging participants to simply trust or distrust the politician, the installation appeared to stimulate a more active evaluation of political communication. This corresponds with the design principles underlying the IBO, namely to challenge truth bias and encourage critical reflection. Although the questionnaire cannot determine whether participants' truth bias actually changed, the findings suggest that continuously presenting an indicator alongside political communication may encourage a more reflective attitude towards political statements.

Lastly, results appear to align with my intention of using speculative design. Without convincing participants that such a technology should exist, *Het Leugenloket* succeeded in the creation of a space in which participants could reflect upon the implications of its possible implementation.

7.3. Unrealised design opportunities

During the design process, one of my ambitions remained unrealised. Initially, I intended to extend the project beyond a pre-recorded interview by involving an actual politician. I envisioned a set-up consisting of a public Q&A session in which a politician would wear a replica of the body capture suit while an audience observed a live IBO visualisation. Such a set-up would have enabled direct interaction between citizens and politicians and would have provided an opportunity to investigate how political actors themselves respond to speculative lie-detection technologies.

This ambition was not realised for several practical reasons. Organising such an event required collaboration with a willing politician, an appropriate public venue, technical support and considerably more organisational capacity than I had available within the scope of my graduation project. Consequently, I only relied on a scripted interview performed by an actor, which provided greater control over the speculative scenario while remaining feasible within the scope of this project.

A second design ambition involved comparing participant behaviour under two experimental conditions. During production, I recorded two versions of the interview: one in which the actor wore the body capture suit and one without the suit. I originally

wanted to compare participants' responses to a control condition without the IBO against responses to a condition including both the body capture suit and the IBO visualisation. During development, however, this approach proved methodologically problematic. Creating two videos that were sufficiently identical for meaningful comparison was practically impossible, because differences in acting, timing and camera work would likely have introduced additional sources of variation. Moreover, this comparative experiment ultimately did not contribute directly to answering my research question, which concerns reflection on the speculative implementation of lie-detection in politics and not the isolation of persuasive effects of the IBO.

7.4. Limitations & further research

Several limitations should be considered when interpreting the findings. First, the study involved a relatively small sample (n = 26) collected during a three-day exhibition in Eindhoven, limiting the generalisability of the results. Participants voluntarily chose to engage with the installation, introducing self-selection bias. Furthermore, visitors to cultural exhibitions may differ from the broader Dutch population in ways that were not measured. Finally, because I was present throughout the exhibition and regularly engaged in conversation with visitors, both participant behaviour and my qualitative observations may have been influenced by my presence.

Het Leugenloket provides an initial exploration of speculative lie-detection within Dutch politics rather than seeking definitive conclusions. The project therefore opens several directions for future research.

First, an iterative version of *Het Leugenloket* could be exhibited for a longer period of time, at multiple locations, with a larger and more diverse participant group. This approach would allow future studies to investigate whether the attitudes observed in my smaller study are reflected in a broader public sample.

Second, future research could further develop the speculative technology itself. Rather than relying on a fictional implementation, researchers could explore how multiple existing deception-detection methods might be combined into a personalised indicator.

Third, involving actual politicians, for example through interviews or live speculative scenarios, could provide valuable insights into how political actors themselves perceive and respond to such technologies.

Lastly, future work could investigate how RtD can be further integrated into public-facing academic research, exploring how speculative installations may complement more traditional empirical methods.

8. Conclusion

Het Leugenloket is a research project in which I aimed to combine existing knowledge on lie-detection with the context of political communication. Through speculative design and a Research through Design (RtD) methodology, this idea was translated into a tangible and experienceable scenario in which I designed the IBO (Indicator Bedriegelijk Optreden, or Indicator of Deceptive Demeanour), a personalised algorithm that indicates live deceptive demeanor. By watching a curated interview of a politician (actor), being monitored by the IBO, participants were able to reflect on the possible implications of using lie-detection technology in politics.

The responses did not show an absolute consensus on the desirability of lie-detection. Instead, participants expressed more nuanced attitudes towards its implementation and ethical implications in a political context. While opinions about the implementation of the IBO were divided, the responses suggest that the speculative concept was taken seriously enough to be discussed rather than simply dismissed as science fiction. *Het Leugenloket* therefore cannot provide a conclusive answer to whether lie-detection should be implemented in Dutch politics. Instead, it demonstrates the potential of combining lie-detection research with political communication as a way to explore how such technologies might be perceived and discussed.

The project also demonstrated how speculative design can function as a research approach. By presenting the project in a public exhibition, I was able to involve people outside the usual academic research environment, including visitors who had never previously participated in academic research. At the same time, working in a public setting introduced practical challenges around accessibility, technical robustness and interaction that would have been less visible in a controlled research environment. These experiences showed that designing research for a public space requires attention not only to the research question, but also to the conditions under which people encounter and participate in the research.

While the questionnaire documented participants' reported attitudes, the logbook documentation captured aspects of the exhibition that could not easily be quantified. These observations do not provide objective measurements of public opinion regarding the theme, but they do reveal qualities of engagement that are central to RtD methodologies. In this respect, the logbook complements the questionnaire by documenting the exhibition as a socially dynamic space rather than solely as a data collection tool. The set-up created a space allowing discussion, nuance and connection, which are often not accommodated for in standardised research.

Ultimately, the contribution of *Het Leugenloket* does not lie in determining whether lie-detection technologies should become part of Dutch politics. Instead, the project demonstrates how speculative design and RtD can create a situation in which a possible future can be experienced and questioned before it exists. The IBO allowed participants to engage with the idea of algorithmic lie-detection as something tangible, while still leaving the question of whether such a technology should be trusted or implemented open. In doing so, *Het Leugenloket* illustrates how design can function not only as a way of communicating research, but also as a way of producing knowledge through experience, interaction and public discussion.

9. Acknowledgements

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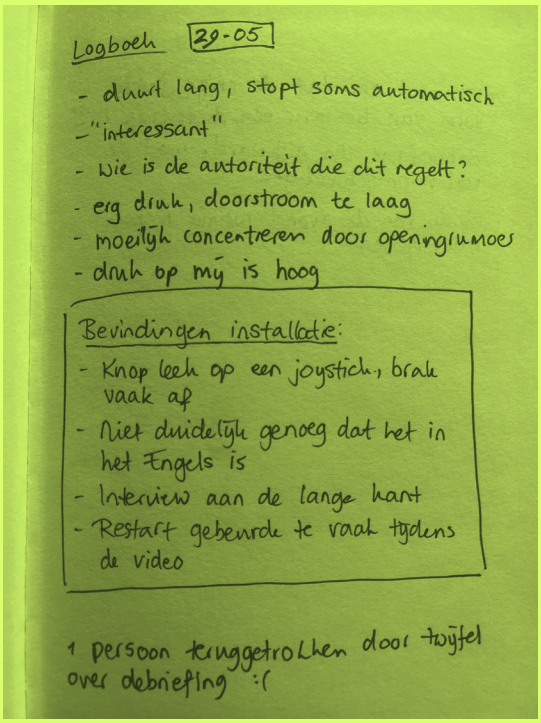
11. Appendix

A. Logbook notes
B. Questionnaire
C. Questionnaire results
D. Experiment materials
- D.1. Interview script
- D.2. Instructions
- D.3. Debriefing

E. Technical documents
- E.1. Experiment software
- E.2. Physical interaction

F. Exhibition documentation
- F.1. Poster
- F.2. External communication
- F.3. Selected photograph
- F.4. iPad information

A. Logbook notes



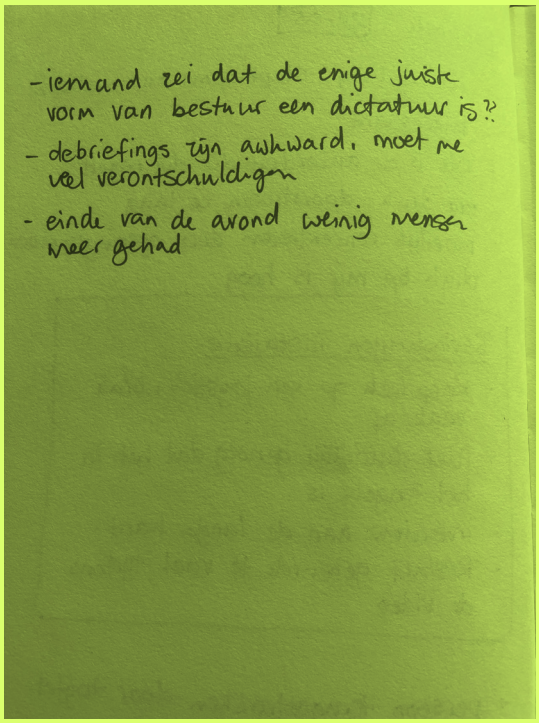
Logboek 29-05

- duurt lang, stopt soms automatisch
- "interessant"
- wie is de autoriteit die dit regelt?
- erg druk, doorstroom te laag
- moeilijk concentreren door openingsmuziek
- druk op mij is hoog

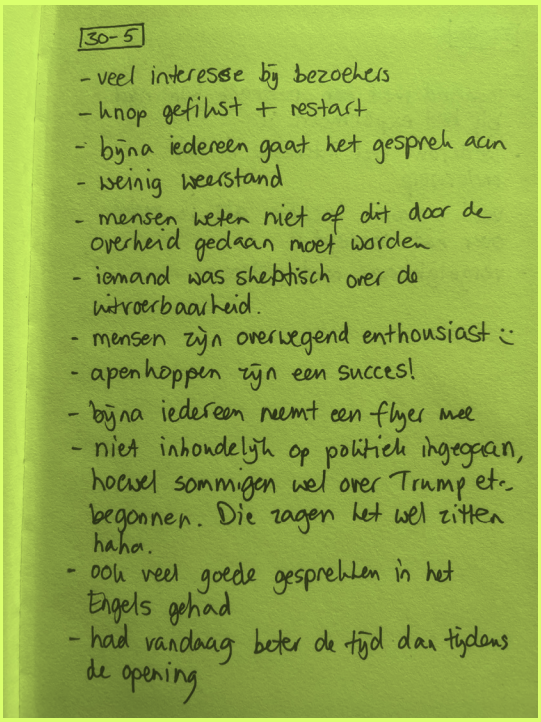
Bevindingen installatie:

- Knop leek op een joystick, brak vaak af
- Niet duidelijk genoeg dat het in het Engels is
- Interview aan de lange kant
- Restart gebeurde te vaak tijdens de video

1 persoon teruggetrokken door twijfel over debriefing :(

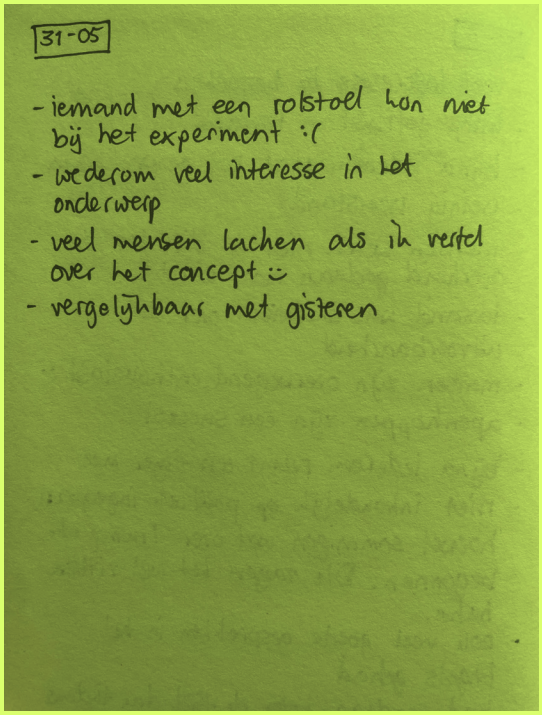


- iemand zei dat de enige juiste vorm van bestuur een dictatuur is?!
- debriefings zijn awkward, moet me veel verontschuldigen
- einde van de avond weinig mensen meer gehad



30-5

- veel interesse bij bezoekers
- knop gefixt + restart
- bijna iedereen gaat het gesprek aan
- weinig weerstand
- mensen weten niet of dit door de overheid gedaan moet worden
- iemand was skeptisch over de uitvoerbaarheid.
- mensen zijn overwegend enthousiast :)
- apenhoppen zijn een succes!
- bijna iedereen neemt een flyer mee
- niet inhoudelijk op politiek ingegaan, hoewel sommigen wel over Trump etc. begonnen. Die zagen het wel zitten haha.
- ook veel goede gesprekken in het Engels gehad
- had vandaag beter de tijd dan tijdens de opening



31-05

- iemand met een rolstoel kon niet bij het experiment :(
- wederom veel interesse in het onderwerp
- veel mensen lachen als ik vertel over het concept :)
- vergelijkbaar met gisteren

B. Questionnaire

1. ″ik vertrouw Nederlandse politici″ (1–5)
2. ″ik vind dat politici nooit mogen liegen tijdens publieke communicatie.″ (″ja″, ″alleen bij dreiging″, ″naar de politicus′ eigen inschatting″)
3. ″ik geloof dat technologie kan helpen om eerlijkheid van politici te beoordelen.″ (1–5)
4. ″ik heb tijdens de video vooral gelet op de IBO–meter.″ (1–5)
5. ″ik vond de IBO–meter geloofwaardig.″ (1–5)
6. ″ik ben door de IBO–meter meer wantrouwig geworden naar de politicus.″ (1–5)
7. ″de IBO–meter moedigt mij aan om toch te controleren of wat de politicus zegt wel klopt.″ (1–5)
8. ″het gebruik van live data om leugens van een politicus te detecteren is ethisch verantwoord.″ (1–5)
9. ″deze installatie is een goede manier om mensen te betrekken bij wetenschappelijk onderzoek.″ (1–5)
10. ″ik vond meedoen aan deze installatie een leuke ervaring.″ (1–5)
11. ″heb je al eens eerder meegedaan aan een wetenschappelijk onderzoek?″ (Y/N)
12. ″ik was al bekend met het leugenloket vóór deze expo?″ (Y/N)
13. ″wat is je leeftijd?″ (18–25, 26–35, 36–50, 51–65, 65+)
14. ″woon je in Eindhoven?″ (Y/N)

C. Questionnaire results

Participants: 57
Completed: 31
Did not finish: 26

Consent
missing: 26
ja: 26
teruggetrokken: 1
nee: 4

ik vertrouw Nederlandse politici.

zeer mee eens	1 (3.8%)
mee eens	8 (30.8%)
neutraal	6 (23.1%)
oneens	5 (19.2%)
zeer oneens	6 (23.1%)
Mean (1–5):	2.73

ik vind dat politici nooit mogen liegen tijdens publieke communicatie.

ja	15 (57.7%)
alleen bij dreiging	8 (30.8%)
naar de politicus' eigen inschatting	3 (11.5%)

ik geloof dat technologie kan helpen om eerlijkheid van politici te beoordelen.

zeer mee eens	2 (7.7%)
mee eens	12 (46.2%)
neutraal	6 (23.1%)
oneens	5 (19.2%)
zeer oneens	1 (3.8%)
Mean (1–5):	3.35

ik heb tijdens de video vooral gelet op de IBO–meter.

zeer mee eens	4 (15.4%)
mee eens	6 (23.1%)
neutraal	6 (23.1%)
oneens	8 (30.8%)
zeer oneens	2 (7.7%)
Mean (1–5):	3.08

ik vond de IBO–meter geloofwaardig.

zeer mee eens	3 (11.5%)
mee eens	8 (30.8%)
neutraal	5 (19.2%)
oneens	8 (30.8%)
zeer oneens	2 (7.7%)
Mean (1–5):	3.08

ik ben door de IBO–meter meer wantrouwig geworden naar de politicus.

zeer mee eens	3 (11.5%)
mee eens	8 (30.8%)
neutraal	5 (19.2%)
oneens	6 (23.1%)
zeer oneens	4 (15.4%)
Mean (1–5):	3.00

de IBO–meter moedigt mij aan om zelf te checken of wat een politicus zegt wel klopt.

zeer mee eens	4 (15.4%)
mee eens	12 (46.2%)
neutraal	4 (15.4%)
oneens	1 (3.8%)
zeer oneens	5 (19.2%)
Mean (1–5):	3.35

het gebruik van live data om leugens van een politicus te detecteren is ethisch verantwoord.

zeer mee eens	7 (26.9%)
mee eens	8 (30.8%)
neutraal	5 (19.2%)
oneens	4 (15.4%)
zeer oneens	2 (7.7%)
Mean (1–5):	3.54

deze installatie is een goede manier om mensen te betrekken bij wetenschappelijk onderzoek.

zeer mee eens	5 (19.2%)
mee eens	14 (53.8%)
neutraal	4 (15.4%)
oneens	2 (7.7%)
zeer oneens	1 (3.8%)
Mean (1–5):	3.77

ik vond meedoen aan deze installatie een leuke ervaring.

zeer mee eens	15 (57.7%)
mee eens	9 (34.6%)
neutraal	1 (3.8%)
oneens	1 (3.8%)
zeer oneens	0 (0%)
Mean (1–5):	4.46

ik heb al eens eerder meegedaan aan een wetenschappelijk onderzoek.

ja	20 (76.9%)
nee	6 (23.1%)

ik was al bekend met het leugenloket vóór deze expo?

ja	8 (30.8%)
nee	18 (69.2%)

wat is je leeftijd?

65+	1 (3.8%)
51–65	7 (26.9%)
36–50	3 (11.5%)
26–35	10 (38.5%)
18–25	5 (19.2%)

woon je in Eindhoven?

ja	14 (53.8%)
nee	12 (46.2%)

D. Experiment materials: interview script

Interviewer:
Goedemorgen meneer Menders. Ik zou u graag wat vragen willen stellen omtrent de bouwprojecten op de Stationsweg.

Menders:
Dat mag. Ga je gang.

Interviewer:
De fietsen zijn weggehaald, de hekken zijn geplaatst. Eindelijk, zou je kunnen zeggen, want het project heeft tot nu toe al veel vertraging opgeleverd. Niet waar?

Menders:
Nou, het duurt inderdaad wel iets langer dan misschien gehoopt was, maar we hebben hier rekening mee gehouden. Kijk, het is een complex project en dat betekent dat er altijd sommige dingen zijn die wat sneller gaan dan andere. We hebben er rekening mee gehouden en we zitten nog in onze verwachte uitloop marge.

Interviewer:
Ja, ik wilde zeggen dat u nog een planning loopt.

Menders:
Ja, misschien niet de optimale planning, maar wel nog voor een realistische planning.

Interviewer:
Ja, over de plannen gesproken. Vanuit inwoners is er veel kritiek op de hoeveelheid kantoor en bedrijfsruimte die er in het gebouw komt. Zou ik nu niet zeggen dat we met een landelijke wooncrisis veel meer moeten focussen op woonruimte Hier in Eindhoven.

Menders:
Nou, het grootste deel van het project is dus ook woonruimte. Maar wat belangrijk is om rekening mee te houden is ook het economisch belang van Eindhoven. We zijn een stad met veel start, met veel start ups, met veel bedrijven veel in ontwikkeling en ook die moeten we stimuleren om hier juist hier te vestigen en hier te ontwikkelen.

Interviewer:
Maar moet het dan in het centrum op zulke prominente plekken?

Menders:
Nou ja, het is wel planologisch verantwoord, want anders is er een risico dat bedrijven zich ophopen in clusters aan de rand van de stad. En je wil eigenlijk dat verspreid zich over de hele stad en dus inclusief de binnenstad. Dat zorgt er ook voor dat mensen makkelijker te voet of met de fiets of met het openbaar vervoer naar hun werk kunnen gaan. En op die manier verminderen we ook de verkeersdrukte. In het al dichtbevolkte gedeelte van Eindhoven.

Interviewer:
Ja, goed dat u begint over duurzaamheid. Met de goedkeuring van de plannen zijn er bezwaren ingediend over wat dat welke impact dit heeft het milieu en de opwarming van de binnenstad. Hoe groen is het plan nu eigenlijk echt?

Menders:
Nou, we hebben hier dus ook onderzoek naar gedaan. Naar de bezwaren zijn. Uiteindelijk zijn ze allemaal van de hand gewezen en we werken ook echt. Met het project werken we samen met een groen bedrijf om ook echt meer fysiek groen in het centrum en in het project te plaatsen. Dat zal je zien aan de verbetering aan en door middel van plaatsing van het groen is een verbetering zien van de lucht kunnen verbetering kunnen zien van de luchtkwaliteit van de van de aanzien baarheid van het hele project, maar ook dat het verkoeling biedt waar dat, ja waar dat juist nodig is.

Interviewer:
Helder. En tot slot wat kunnen we verwachten de komende maanden?

Menders:
Vooral meer duidelijkheid. En dat zit er bijvoorbeeld in dat we. We hebben dus nu onze planning vaststaan en dat betekent dat we ook updates kunnen geven wanneer die, wanneer die beschikbaar zijn en zeker wanneer het groen ook echt geplaatst gaat worden, zal je een groot verschil zien in aanzien baarheid van het hele project. Het zal er dan een stuk leuker uitzien, Daar geloof ik echt in.

Interviewer:
Dank u wel.

Menders:
Graag gedaan!

D. Experiment materials: instructions

When participants enter the voting booth, they are greeted with a screen. The following states the instructions on the screen. Participants could continue by pressing the button.

"*klik op de knop om het experiment te starten*"

"welkom bij het leugenloket.",

"wij onderzoeken hoe we met technologie leugens kunnen herkennen bij Nederlandse politici.",

"jij kan ons daarbij helpen door mee te doen aan dit experiment.",

"het experiment duurt ongeveer 8 minuten en bestaat uit twee delen: een video en een vragenlijst",

"je kan altijd stoppen,",

"dit doe je door lang op de groene knop te drukken.",

"we beginnen met de video.",

"daarin zie je een kort interview van 2,5 minuten met een lokale politicus.",

"tijdens het interview zie je rechts-boven een balk op het scherm:",

"dit is de IBO-meter, de Indicator Bedriegelijk Optreden.",

"de IBO is een algoritme dat live data van de politicus meet",

"deze informatie wordt gebruikt om een inschatting te maken of de politicus liegt.",

"hoe groter de balk en het percentage, hoe hoger de kans dat de politicus liegt.",

"aan jou is nu de taak om de politicus op leugens te betrappen",

"op het bureau voor je zie je een schuifknop met waarheid (W) en leugen (L).",

"die kan je gebruiken om te beoordelen of je vertrouwt wat de politicus in het interview zegt.",

"schuif hem naar links als je denkt dat hij de waarheid zegt",

"en naar rechts als je denkt dat hij liegt.",

"we zullen eerst even oefenen.",

"zometeen verschijnt er een statement.",

"bedenk of het statement een leugen is of niet en schuif de knop naar de goede kant",

>> user practises use of slider

"heel goed! het ziet er naar uit dat je het door hebt.",

"zometeen begint de video, zet daarvoor je koptelefoon op",

"je ziet als eerste de IBO, neem alles goed in je op.",

"10 seconden later begint het interview.",

"je mag de schuifknop continu bewegen ook naar het midden, afhankelijk van jouw vertrouwen.",

"gebruik de IBO en je eigen inschatting om alle leugens van de politicus te vinden",

"heel veel succes!",

"*druk op de knop om de video te starten*"

>> participant sees overlay for 10 seconds, then interacts with the interview

"het interview dat je net gezien hebt is nep en de politicus is een acteur.",

"de IBO-meter is speculatief en bestaat ook niet.",

"toch zou dit scenario in de toekomst mogelijk kunnen zijn.",

"daarom willen wij graag onderzoeken hoe jij daarover denkt door middel van een vragenlijst.",

"deze bestaat uit 14 meerkeuze-vragen",

"gebruik de schuifnop om een antwoord te selecteren en de knop om te bevestigen",

"*druk op de knop om de vragenlijst te starten*"

>> participant starts questionnaire and answers questions

"bedankt voor het invullen!",

"we willen graag je input tijdens het interview en je antwoorden gebruiken voor verder onderzoek, ga je daarmee akkoord?",

"zometeen kan je een debriefings-formulier bij de balie halen.",

"onthoud daarvoor je deelnemers ID:",

"nogmaals bedankt voor je hulp, je kunt nu het stemhokje verlaten",

D. Experiment materials: debriefing

debriefing

het ~~leugen~~ loket

Dankjewel dat je onderdeel wilde zijn van het leugenloket! Samen onderzoeken we de transparantie van de Nederlandse politiek en hoe deze door leugendetectietechnologie bevorderd kan worden.

In deze debriefing wordt benadrukt dat de volledige installatie fictief is. Veel van de gebruikte leugentechnologieën bestaan tot op zekere hoogte en effectiviteit, maar worden niet in de politiek toegepast en er bestaat zeker niet zoiets als de IBO. Het interview is in scène gezet en de politicus is een acteur. Het genoemde bouwproject is wel een echt project. *Het leugenloket* is enkel een titel voor het onderzoeksproject en omvat geen echte instelling.

Recht op terugtrekking
Wil je toch niet dat we jouw gegevens gebruiken? Neem tot een maand na vandaag contact met ons op om de door jou gegenereerde data te laten excluderen uit het onderzoek, deze worden dan vernietigd.

Als je vragen hebt
De hoofdonderzoeker van het leugenloket is Esmeralda van Werkhoven. Het onderzoek wordt begeleid door Bas Haring en Leiden Institute of Advanced Computer Science (LIACS) aan Universiteit Leiden. Als je vragen hebt, kun je die nu stellen. Mocht je later nog vragen hebben, neem dan contact op met Esmeralda via esmeraldavanwerkhoven@gmail.com.

Wanneer je vragen hebt over je rechten als deelnemer aan dit onderzoek, neem dan contact op met Bas Haring (mail@basharing.com) of met het secretariaat van het Ethics Committee for Mathematics and Natural Sciences van de Universiteit Leiden (ethicscommittee@science.leidenuniv.nl).

Wil je graag het eindrapport ontvangen? Neem dan contact op met Esmeralda of houd de website (hetleugenloket.nl) in de gaten.

Door dit formulier te ondertekenen geef je akkoord dat je juist bent gedebriefd en dat al je vragen beantwoord zijn.

Naam onderzoeker _____ Handtekening _____ Datum _____

User ID _____ Handtekening _____ Datum _____

Teken alsjeblieft beide versies,
geef er een terug aan de onderzoeker en houd er eentje zelf

E. Technical documents: experiment software

The interactive installation was developed as a web-based application using HTML, CSS, and JavaScript, supported by a Node.js server using Express. HTML was used to structure the interface, while CSS controlled the visual appearance and layout. JavaScript handled the interaction logic, including the different stages of the experiment, the video presentation, slider input, questionnaire, timers, and participant progression.

A Node.js/Express server was used as an intermediary between the physical input devices and the web application. It received the slider and button data through a serial connection and provided the latest values to the browser through HTTP endpoints. The browser periodically requested these values using JavaScript fetch() calls, allowing the slider position and button state to be incorporated into the experiment in real time.

The application also loaded predefined data files containing the experimental heatmap data. During the video, participant slider positions were recorded together with timestamps. After the video, these measurements were compared with the control heatmap to calculate a correspondence score. Questionnaire responses and experiment metadata were subsequently collected and sent to the server using HTTP POST requests. The server stored each participant's data as a separate JSON file, identified by a unique participant ID:

```
const experiment_data = {
  participantID: null,
  slider_data: [],
  questionnaire: [],
  metadata: {
    started: null,
    ended: null
  }
```

E. Technical documents: physical interaction

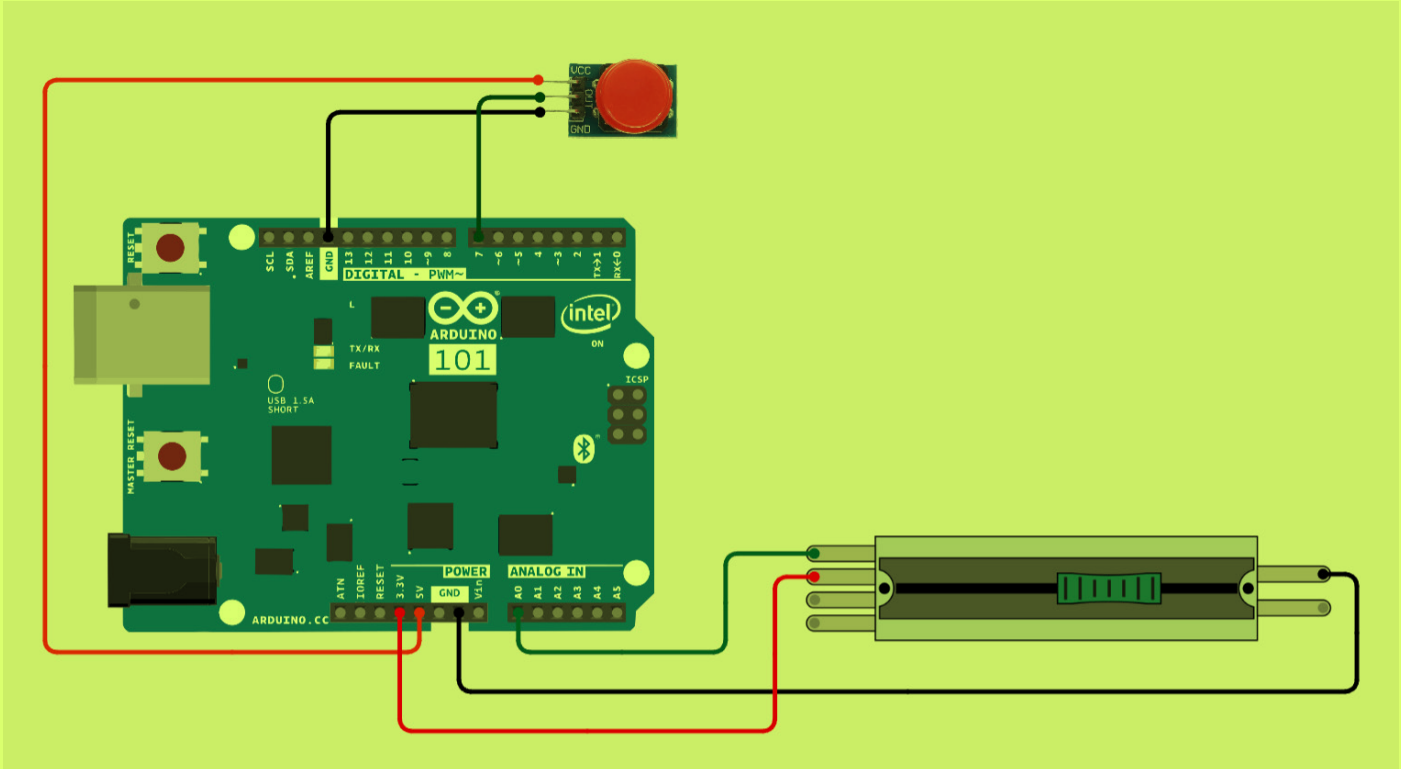
For the installation, an Arduino Uno was used as the physical interface between the slider/button controls and the computer running the experiment. The Arduino continuously reads the position of the slider and the state of the button and sends these values to the computer over USB serial communication at 115200 baud.

See below for the circuit sketch and look right for the code.

Arduino UNO

leugenloket_sensorinput.ino

```
1   void setup() {
2     Serial.begin(115200);
3   }
4
5   void loop() {
6     int slider = analogRead(A0);
7     int button = digitalRead(7);
8
9     Serial.print("S:");
10    Serial.print(slider);
11
12    Serial.print(",B:");
13    Serial.println(button);
14
15    delay(10);
16  }
```



F. Exhibition documentation: poster

F. Exhibition documentation: external communication

Instagram posts (@het_leugenloket):

website screenshots (hetleugenloket.nl):

F. Exhibition documentation: selected photographs

F. Exhibition documentation: iPad information

During the exhibition an iPad was mounted to the wall. People could use it to navigate through the different technologies that were used behind the IBO. The information was designed in Adobe XD and presented on the iPad through the XD app. Participans were able to switch between Dutch and English.

The individual screens are presented on the next page. (only in English)

1/7 nl

will politicians soon be wearing this suit?

explore more about the lie-detection technology behind het leugenloket

2/7 nl

At this moment, several innovations are taking place in the field of lie detection, and experts point to promising developments. What would happen if we applied several of these technologies to Dutch politicians? A combination of different data sources resulting together in a single lie factor. Meet the IBO: the Indicator of Deceptive Behaviour.

Curious about how this would actually work? Read on.

3/7 nl

movement

The suit on the right is a visual replica of a body capture suit capable of measuring the position, speed, and orientation of joints. Research has shown that people generally make more small movements when they lie, and that these movements can be measured by the suit. Around 75% of lies can be detected in an individual this way.

Politicians could, of course, wear such a suit during public appearances and statements. The suit would then feed movement data into the IBO.

Van Der Zee, S., Poppe, R., Taylor, P. J., & Anderson, R. (2019). To freeze or not to freeze: A culture-sensitive motion capture approach to detecting deceit. PLOS ONE, 14(4), e0215000. https://doi.org/10.1371/journal.pone.0215000

4/7 nl

speech

Large Language Models (LLMs) are used to analyse written texts and distinguish between ‘truthful’ language and ‘deceptive’ language. Results show that their accuracy in identifying liars is higher than that of humans. When people choose to use these algorithms, they generally become better at recognising lies, although the number of accusations also increases, including false ones.

If we were to annotate political speeches, an LLM could analyse politicians’ words for deceptive language. This information could then be fed into the IBO.

Von Schenk, A., Klockmann, V., Bonnefon, J.-F., Rahwan, I., & Köbis, N. (2024). Lie detection algorithms disrupt the social dynamics of accusation behavior. iScience, 27(7), 110201. https://doi.org/10.1016/j.isci.2024.110201 Mattes, K., Popova, V., & Evans, J. R. (2023). Deception Detection in Politics: Can Voters Tell When Politicians are Lying? Political Behavior, 45(1), 395–418. https://doi.org/10.1007/s11109-021-09747-1

5/7 nl

facial expression

Thermal facial analysis (infrared) also offers interesting applications in the field of lie detection. By measuring infrared points in the face and comparing them to an individual baseline profile, algorithms can detect deceptive behaviour.

During political communication, infrared cameras could be used to continuously analyse politicians’ faces. The IBO compares this data to their individual profile, combines it with the rest of the collected data, and produces a percentage estimating whether the politician is lying.

Rajoub, B. A., & Zwiggelaar, R. (2014). Thermal Facial Analysis for Deception Detection. IEEE Transactions on Information Forensics and Security, 9(6), 1015–1023. https://doi.org/10.1109/TIFS.2014.2317309

6/7 nl

an individual lie model

Everyone lies differently. That is why it is difficult to create a standardised lie model. In modern lie detection, algorithms are not only indispensable, they also make it possible to learn how a specific individual lies. A model is therefore created for every Dutch politician, consisting of the three technologies that provide the IBO with information.

Has the politician learned to change their deceptive behaviour? Then we simply update the model every quarter.

7/7 nl

curious what this would look like?

experience it in the voting booth.