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RESEARCH NOTE



# Artificial Intelligence (AI) in parliaments – preliminary analysis of the Eduskunta experiment

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**ABSTRACT**

In April 2021, the Committee for the Future of the Parliament of Finland (Eduskunta) organised an extraordinary hearing, that is, of an artificial intelligence (AI). While some legislatures and research groups had already begun to study the implication of AI in the parliamentary domain, this took the parliamentary world by surprise. It was the first time a parliament has directly interacted with an AI system in an actual parliamentary process. This research note attempts to conduct a preliminary analysis on the experiment and discusses its implications for future actions in the development of parliamentary tools and services using AI-based technologies. Analysis is dedicated to intra-parliamentary workspace, while considering possible effects on the main functions of parliament such as law-making and oversight. The note aims to spark the discussion around the implementation strategy, but also for the regulation of such systems in the parliamentary environment.

**KEYWORDS** GPT-3; artificial intelligence; Project December; Eduskunta; techno-ethical committee; simulated personality

> 'AI is not about reproducing human intelligence, it is about doing without it'
>
> (Floridi, 2017, p. 126).

## Introduction, motivation and method

Technologies from the AI domain did not simply appear out of nowhere. They were constantly evolving for decades within the academic and military environments before managing the step into the outer, ordinary world (Feigenbaum, 1963; Solomonoff, 1968). Suddenly, AI is omnipresent in society (Makridakis, 2017), while celebrating significant successes with applications in the public sector (de Sousa et al., 2019). In April 2021, the Committee for the Future of the Parliament of Finland, the so-called *Eduskunta*, while preparing a statement on the EU's strategic foresight, interviewed two separate AI instances (Committee for the Future, 2021a; 2021b). This appears to be a

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first of its kind hearing involving a non-human within a regular parliamentary procedure. While the parliamentary world is rather bemused by this development, parliamentary researchers anticipate the relevant committee report with great interest to find out more about motivation, the design of experiment and its actual outcome.[1] At the same time, this experiment[2] opens up a range of questions for potential applications of similar technologies within the greater parliamentary workspace. As parliaments are public institutions, any discussion regarding the introduction of AI-based applications within their realm, inevitably needs to be had within the wider theoretical framework of the digital transformation of the public sector (Jonathan, 2019; Mergel et al., 2018).

Even before starting to debate AI technology and its potential use and consequences for parliament, one needs to confront questions regarding its nature and problem-solving abilities. So, what exactly is meant when referring to AI? Though many people perceive it as human-like intelligence or Artificial General Intelligence (AGI), it is, in reality, a mix of several technologies (Goertzel & Pennachin, 2007). According to McCarthy (2004, p. 2), AI is 'the science and engineering of making intelligent machines, especially intelligent computer programs'. However, as it turns out, intelligence is not a necessary feature for effectively solving a range of problems and researchers are increasingly adept at decoupling problem-solving from the need to be intelligent. As a consequence, there are several critical, time-consuming tasks within a (parliamentary) administration that can be solved using this decoupling process, and the extension of the GPT-3 language model used by Eduskunta as an AI example is an illustration of the possibilities and a major step in this direction. These may include, for instance, summarisation, question answering (including a chatbot function) and composing E-mails (Floridi & Chiriatti, 2020, p. 684).[3]

New technology does not come without a cost. Decisional bias and cases of discrimination and lack of rationality frequently make headlines and point at the necessity to increase regulatory efforts in the advanced algorithms domain, a subject of which are AI algorithms (Fitsilis, 2019). While regulation can mean actions stemming from the Executive or the Judiciary (Crawford & Schultz, 2019), the legislative branch's role needs to be examined as well.

This contribution attempts a first screening of collective thoughts that sprung out of the imagination of parliamentary professionals and officials in the aftermath of the Eduskunta experiment. As such, it offers an instant and independent analysis of the event and discusses possible implications for parliaments. Besides the state of play in the field of parliamentary AI, this research note also highlights strategic options for the incorporation of AI-based technology and the necessity for their regulation within the parliamentary environment. Finally, it suggests a systematisation of the related

research efforts. In doing so, the note attempts to take an early yet structured approach to the underlying, broad research question that can be formulated as follows: to what extent can AI-based tools be utilised for contemporary parliamentary applications? To facilitate a cross-cutting discussion of this interdisciplinary topic, experts from different scientific and professional backgrounds such as AI research and computational linguistics, have been interviewed on the matter (elite interview method), in order to assess the situation and provide guidance for future handling of advanced algorithms.

## State of play in (parliamentary) AI research

AI constitutes a super-set of technologies and/or models aimed at tackling different types of problems such as to reveal patterns or extract characteristic information out of large amounts of data. In doing so, they rely on ever-evolving computer algorithms. It is not the scope of this article to present a complete ontology of existing AI approaches and models. Nonetheless, in the parliamentary context, one of the most interesting AI branches is machine learning,[4] for which Hao (2018) gives an excellent overview. With recent advances in Natural Language Processing (NLP), a sub-field of machine learning, a couple of significant deep learning models have emerged: Generative Pre-trained Transformer (GPT) (Brown et al., 2020) and Bidirectional Encoder Representations from Transformers (BERT) (Ohsugi et al., 2019). These models can be generally used for document classification, information extraction and natural language understanding and inference.

These research efforts in the AI domain are complemented by ongoing developments in parliamentary research. Recently, an expert survey of 32 MPs and parliamentary professionals from 25 countries on the use of emerging technologies in parliaments, *ParlTech*, localised technologies that in terms of usefulness, maturity and applicability are worth considering for application in the parliamentary workspace: legal informatics, integrated tools and services, virtual parliament, social media analytics, and rapid digital and operational transformation. Furthermore, the researchers defined a generic framework for the digital transformation of legislatures, which essentially requires an integrated parliamentary digital strategy (Koryzis et al., 2021, pp. 10–11).

This research is closely related to a parallel study conducted with focus groups in national parliaments. The collaboration between researchers of The Open Government Institute (TOGI), Zeppelin University, Germany, and the Hellenic Parliament started in 2020 with the mapping of more than 200 distinct parliamentary tasks. In March 2021, a virtual workshop in the Hellenic Parliament on possible AI use cases in parliament took place with the participation of more than 15 parliamentary professionals from different parliamentary departments (TOGI, 2021). Through an

embedded survey, the urgency and relevance measured for applying AI to each of these tasks were measured. While raw data continue to be analysed, further workshops are planned in other parliaments worldwide to possibly capture regional/international trends.

These two projects are supported by the Hellenic Optical Character Recognition (OCR) Team, an international, interdisciplinary scientific crowdsourcing platform for the processing and analysis of parliamentary data (Hellenic OCR Team, 2021). Other parliamentary researchers worldwide are also screening the possible interaction scenarios with AI e.g. through Gedanken experiments, as in the case of Argentina (de Dios Cincunejui, 2021). Within a rapidly developing field, the outcome of such activities can be used to prioritise research and development in order to avoid duplication, shorten time to production and maximise return on investment of AI-based tools and services.

In recent years, the European Parliament has been particularly active in the politics around the definition of the position of AI in society and the economy.[5] In this regard, significant research in the field has been conducted and/or commissioned through special parliamentary units; the European Parliament Research Service (EPRS) and the Panel for the Future in Science and Technology (STOA).[6] By late April 2021, 531 knowledge products, such as studies, analyses and briefings, related to different facets of AI appear in the knowledge repository Think Tank of the European Parliament (2021). These literally cover the entire research field of AI, from niche areas in AI and its ethical aspects to digital skills and macroeconomic growth forecasts. In December 2019, STOA established the Centre for Artificial Intelligence (C4AI) to strengthen internal and inter-institutional dialogue and information exchange.[7] The above constitutes structured efforts: (a) to study the effects of AI in parliaments and (b) to maximise parliamentary involvement in the decision-making process. This all suggests that considerable national and international research activity is currently conducted, yet a broader regional, or even global, coordination in the field could not be determined. The Inter-Parliamentary Union's (IPU) Centre for Innovation in Parliament could potentially take on this role in the future.

## Discussion and implications of the Eduskunta experiment

This section discusses the boundary conditions of this hearing and their implications for the design of ParlTech. Reflections are based on recently released information and input provided by elite interviews with *Jason Rohrer*, computer programmer and AI researcher who invented the GPT-3-based simulated personality technique used in Project December, which is the system that the Committee for the Future interacted with during their interview, *George Mikros*, computational linguist, co-founder and

head of science of the Hellenic OCR Team, and *Olli Hietanen*, counsellor to the Committee for the Future, who provided insights to the Committee's operation and conduct during the AI hearing at stake.

The Finnish parliament has long been pioneering ICT technologies in the parliamentary workspace (Salminen et al., 2005). On the other hand, the Committee for the Future was established in 1993 as a parliamentary body for societal and scientific foresight. It is an element of the country's greater foresight system (Nováky & Monda, 2015) and takes the form of a standing committee consisting of 17 MPs, whose counterpart in the Finish government is the Prime Minister. Among others, the Committee is entrusted with technology assessment tasks to spark and facilitate a wider inter-institutional dialogue about the future of Finland (Groombridge, 2006; Tiihonen, 2008). Early identification of potentially critical phenomena, to which belongs the evaluation of disruptive technologies,[8] is paramount for influencing various stages of the policy-making cycle. Olli Hietanen mentions that the relevant work on technology spans over distinct dimensions such as:

- Consideration of ethical questions;
- Identification of regulatory and knowledge requirements;
- Assessment of technology anticipation.

The latter is equivalent to the hype cycle of emerging technologies (on the hype cycle and its relation to ParlTech, see Koryzis et al., 2021). In this regard, the Committee has devised since 2013 a four-step foresight tool to systematically identify and assess potentially world-changing technologies (an equivalent tool for the UK government can be found in GO-Science, 2017, p. 5). At the same time, Hietanen points at the widespread misconception that the Committee's aim is to narrow down its Top-100 list to a bunch of spearheading technologies. 'The truth is quite the opposite', he says. The question rather is: '[w]hat are the weak signals of our time, the radical technologies that prove to shape our future?'. To answer it, a series of indicators have been developed to identify potentially future-shaping technologies via crowdsourcing.[9]

In April 2021, possibly for the first time in parliamentary history, the Committee organised a hearing with an AI based on a GPT-3 model – a bold move that no one saw coming, unless familiar with the body's history and subversive working practices (Koskimaa & Raunio, 2020). This was not Committee's first concrete pilot. Members had made already acquaintance with augmented/virtual reality, 3D-printers, digital platforms for participatory law-making and more, and the importance of technologies around AI was recognised in previous statements (see, e.g. Committee for the Future, 2018).

To discuss the Eduskunta experiment, the third generation of the GPT model, i.e. GPT-3, will be presented in more detail. GPT-3 is an autoregressive language model developed by OpenAI that produces human-like text by optimising billions of parameters.[10] This is a black-box system, so one cannot simply change it at will, but it is customisable at the front end to a certain extent. It has been trained using a large and diversified data corpus (Brown et al., 2020, pp. 8–9). Access can be provided for academic purposes, by joining a waitlist or through OpenAI's commercial Application Programming Interface (API). The Committee could have directly contacted OpenAI to directly use their language model, but a reasonable conversation with GPT-3 would not be possible as this is basically a text completion service. It was Project December's simulated personalities are that made it possible. This AI project uses newly invented and patent-pending techniques (called Personality Matrix Technology), built on top of GPT-3, to emulate alternative personalities (Rohrer, 2021a, 2021b). According to Jason Rohrer, the technology allows for controlling of personality, attitude and capabilities of the conversational partner.

As indicated earlier, this hearing was not an isolated event, but part of the Committee's wider foresight activity. There was a thorough preparation process before the actual hearing could take place. The Committee heard several AI scholars and private sector experts beforehand. A couple of experts from academia and the private sector were called in to assist in the preparation, facilitation and reporting for the hearing. In the following, they are called 'the facilitators'. The specificities of GPT-3 were analysed and the decision was made to set up two different personality profiles focusing on technological innovation and business possibilities, and environmental policy, respectively. Once these were created, tests questions were used to see how the profiles react. To bridge any difficulties in the interaction with the GPT-3, questions were first directed to the facilitators, who then fed into the AI system them via an internet prompt.

From this point on, the hearing was conducted like almost any regular one. The parliamentarians asked questions to the two different simulated personalities, Muskie and Saara,[11] and these provided written answers. After each question and answer session, Committee members had a side discussion with the facilitators to reflect on the responses provided and the reason why. This reflection discussion constituted the only difference compared to a regular committee hearing. Olli Hietanen describes the atmosphere around it as 'happy' and 'exiting', within which Committee members were motivated to taste and experiment with new things.

It is, nevertheless, not clear what kind of behaviour these instances displayed. The attribution of personal traits to deep learning agents is not new (Chia, 2019). Agents can be, for instance, configured to be greedy, aggressive or prudent. It is necessary, however, to realise that such

'personality' is thought to be more of an objective-oriented attribute; for instance how a system 'behaves' in the long run. In the case of a standalone GPT-3, its regulatory parameters (global probability settings) are not enough to 'to sculpt a personality'. It is the Project December technology that provides it with consciousness – 'The first machine with a soul', Rohrer says. Undoubtedly, more studies are necessary to determine the characteristics and full range of capabilities of those simulated personalities.

George Mikros indicates that in the examined interaction with the AI system, the machine lacks the pragmatic reference frame. In effect, the linguistic analysis will not reveal data about the model's 'personality', because 'it lacks the ability to connect language […] with personal experience'. As an example, within a parliamentary setup, GPT-3 will not be able to truly understand terms like 'legislation', 'constitution' or 'democracy'. 'They are [just] words with probabilities in a language model', he concludes. This is because neural language models, such as BERT or GPT, lack, among other things, 'communicative intent' that is intrinsically necessary for a genuine understanding of language (Bender & Koller, 2020).

According to the press release, the aim of the hearing was to exemplify 'how [AI] handles problematic issues and how it responds to them' (Committee for the Future, 2021a). When it comes to the actual discussion, the questions mainly referred to the United Nations Agenda 2030 and the very existence of AI as an opportunity or a threat. The model's ability to answer questions about broad factual knowledge has been displayed in the original GPT-3 article and–assuming full model capacity–GPT-3 should have performed well (Brown et al., 2020, pp. 13–14). The expected reasonable nature of the answers is also confirmed by Committee's counsellor Olli Hietanen.

This broader objective reminds us that GPT-3 merely handles tasks as it is supposed to do. It is not designed to answer semantic or ethical questions such as those mentioned previously; To expect so is nothing short of science fiction (see e.g. Floridi & Chiriatti, 2020, p. 681). Jason Rohrer sees GPT-3 most useful as a 'tool for exploring non-human consciousness', similar to a 'chance to interview an alien or a dolphin'. To confront it with governance or humanity's problems is not going to work. Hence, caution should be exercised over raised expectations. What the Committee got to hear is the dolphin's perspective. It remains to be seen if this perspective constitutes an out-of-the-box approach to contemporary issues as the Committee might have hoped to capture.

In addition, the Committee wanted to know if AI can emulate human behaviour in the provision of 'views and information or in the creation of arguments and counter-arguments'. Despite this having a relatively broad meaning (as it cannot be pinned down to a single task), it nonetheless should be possible for GPT-3 to produce different versions of arguments

and counterarguments, provided the model gets sufficient information as source input (prompt) for it to start with. At the same time, Jason Rohrer suggests that it is wrong to assume that this form of AI is smarter than people, and continues: 'In terms of actual "intelligence", like for problem-solving, it might be like a creatively gifted 13 year old human'.

The press release marked this hearing also as an 'experiment', which is an unusual term for parliamentary conduct as parliaments are not generally thought to act like research organisations or academic institutions. Nevertheless, given the niche use cases of ParlTech and the overall huge number of available technologies, it is possible that representative institutions are left with little alternative than to proceed with the in-house development of AI tools and services and the related expertise.

On the occasion of the Eduskunta experiment, there are two important lessons learned. Firstly, that AI systems are at the gates and parliaments should better prepare for it. Early adopters will have a tough time, but eventually their investments will pay off as they will experience rapidly improving productivity and lower operational costs in the parliamentary workspace. Secondly, when it comes to AI models, there can be no one-size-fits-all. Specifically for the GPT-3 case discussed herein, its increased potential for elaborate applications that can include text generation, for instance for reporting purposes, and chatbots, has been studied by Elkins and Chun (2020).

Having the above in mind, is it safe to assume that such applications will flood the intra-parliamentary workspace any time soon? This broad research question can still not be answered with absolute certainty, as one should also await for the results of ongoing research presented earlier, as well as for the evaluation of a series of AI-enhanced proofs-of-concept for different parliamentary functions, such as in law-making (Sovrano et al., 2020) and oversight (Etzioni & Etzioni, 2016). Moreover, peripheral functions and advisory services, as offered by parliamentary research services for example, are impacted too (Fitsilis, 2019, pp. 55–64). These are just a few indicative tasks and it has been shown that on-going research and limited resources will inevitably lead to prioritisation for a more targeted development of AI applications for parliaments.

## The path forward

Whatever the outcome of this interaction, independent research should be able to reproduce the results. For this, the exact discussion framework and any customisation parameters need to be made publicly available. Other parliaments might also want to try to validate the results or diversify their action by developing their own use scenarios. For most parliaments, this seems difficult without external support by the IPU, academia or the private

sector. Examining the broad picture, sooner or later, AI-based tools will enter the parliamentary workspace on a larger scale. The goal should not be to test a particular model or technology such as the one GPT represents, but also to explore the possibilities of other models, such as BERT and the IBM debater (Slonim et al., 2021) and identifying systemic vulnerabilities and technological limitations.

When it comes to the regulation of AI, parliaments are often left out of the equation as this is often regarded as a governmental and/or judicial regime (Fitsilis, 2019). Can decisions about democratic implications of AI be solely entrusted to (inter-)governmental authorities with little to no democratic and/or ethical sensitivities? Now is the time to ask these questions nobody else dares to openly express and start thinking about establishing dedicated parliamentary bodies such as in the case of AIDA in the European Parliament. Under the umbrella of the IPU, a network of such techno-ethical committees could be in the position to substantially contribute to regulatory efforts within parliament and beyond.

For most scholars and practitioners involved in parliamentary development, the discussion around AI in parliaments could seem unnatural, or premature. Yet, evaluating the momentum and the volume of investments in AI technologies, it seems safe to assume that such ParlTech is literally *ante portas*. Consequently, strategic decisions on introducing AI-based applications in parliament and their limitations need to be made in the short-term. The scholarship around parliaments may better be prepared to adjust itself to related issues, such as the study of AI ethics and the extension of traditional areas of parliamentary research, such as law-making and oversight, towards AI-enhanced services.

## Notes

1. The relevant committee report, which will also include comments and opinions by external AI experts, is not to be expected before autumn 2021.
2. This is one of the original terms that the Committee for the Future has used to describe its interaction with AI.
3. Other tasks mentioned therein are already managed by existing online (see e.g. the European Commission's eTranslation or Google Translate) or desktop (see e.g. Microsoft's Word automatic spelling and grammar check) tools.
4. Parliaments produce significant amounts of textual data, such as laws, questions, reports and minutes, that constitute excellent raw material to be processed by machine learning applications.
5. Between 2019 and 2021 (March), the European Parliament adopted five AI related resolutions and decided to set up a Special Committee on Artificial Intelligence in a Digital Age (AIDA). This frantic activity makes apparent the dynamics around AI at the European level. Though not in the context of this analysis, it could be interesting for scholars to investigate the national dimension of parliamentary involvement with AI.

6. The role of the Directorate-General for Innovation and Technological Support (ITEC) in the screening of AI-based technologies for parliamentary application deserves a special mention.
7. In this regard, C4AI appears to be similar in mandate with the founding objectives of the Finnish Committee for the Future (see next section).
8. The Committee seems to prefer the term 'radical technologies'.
9. The Radical Technologies Facebook group, with currently over 3300 members, assists in the identification and assessment of such technologies. Evidently, as in the case of the Hellenic OCR Team, crowdsourcing seems to play a significant role when dealing with complex, non-linear tasks and processes.
10. GPT-3 optimises 175 billion parameters during training. Just for the sake of comparison, its predecessor, the GPT-2, had 1.5 billion parameters.
11. This constitutes anthropomorhism in analogy to early phases of robot development, where they have been portrayed as having human-like form and structure.

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## Disclosure statement

No potential conflict of interest was reported by the author.

## Notes on contributor

*Dr. Fotios Fitsilis* has an academic background in engineering, economics and law, as well as over 20 years of professional experience in science positions within both the private and the public sectors. Since 2009, he is Head of the Department for Scientific Documentation and Supervision and Lead Researcher at the Scientific Service of the Hellenic Parliament. He teaches legal informatics at the National School of Public Administration and Local Government, Athens, and, in 2017, he founded the Hellenic OCR Team, a crowdsourcing initiative for the study of parliamentary data.

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