

Approaching the Integration of Large Language Models in the Parliamentary Workspace

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Abstract: In July 2023, during a research workshop at Zeppelin University about using AI in parliaments, experts from both academia and parliamentary work gathered to talk about how Large Language Models (LLMs) can be used in parliamentary settings. Some valuable insights and ideas were gained during the workshop, but several concerns were raised as well. Moreover, there was a debate about whether or not these systems should be used, in what situations and how they should be used, and who should be responsible for using them. Additionally, there was a conversation about whether and how to detect the use of these systems in practice. Another concern was about the emergence of new dependencies and lock-in effects. Based on the discussions in the workshop, visualized by a graphical recorder, ongoing literature research, and practical exercises, a SWOT analysis on the use of LLMs in the parliamentary working environment has been conducted. The analysis from the perspective of public sector informatics, still work in progress, identified and evaluated the main strengths, weaknesses, opportunities, and threats associated with integrating LLMs into the parliamentary workspace.

1 Introduction

Zeppelin University hosted a research workshop on using AI in parliaments in July 2023. Experts from academia and parliaments gathered to discuss the potential applications of Large Language Models (LLMs) in parliamentary settings. The workshop generated valuable insights and ideas, but also raised several concerns. Participants debated whether LLMs should be used in parliaments, in which situations, how they should be implemented, and who should be responsible for their use. Additionally, they discussed methods for detecting the use of these systems in practice and expressed concerns about new dependencies and lock-in effects that might arise. The lack of transparency of LLMs, the lack of knowledge about how to feed and improve LLMs and the overwhelming challenge for users to correctly assess the answers and their quality were criticized. The discussion was marked by strong interest regarding how skill sets are evolving and what training measures are necessary to teach the required new skills and competences. The consequences for the understanding of the state and democracy were also debated. In the context of parliaments and legislation, the integration of LLMs seems to be a real high-risk area for the use of AI.

Based on the discussions in the mentioned workshop, the graphical recording (Figure 1), ongoing literature research, and ChatGPT exercises, a SWOT analysis on using LLMs in parliamentary work has been prepared. This analysis aims to identify the main strengths, weaknesses, opportunities, and threats associated with integrating LLMs into the parliamentary environment, viewed from the scientific perspective of public sector informatics. The outcomes will be further analysed to provide deeper insights

into the potential benefits and challenges of adopting LLMs in parliamentary processes.

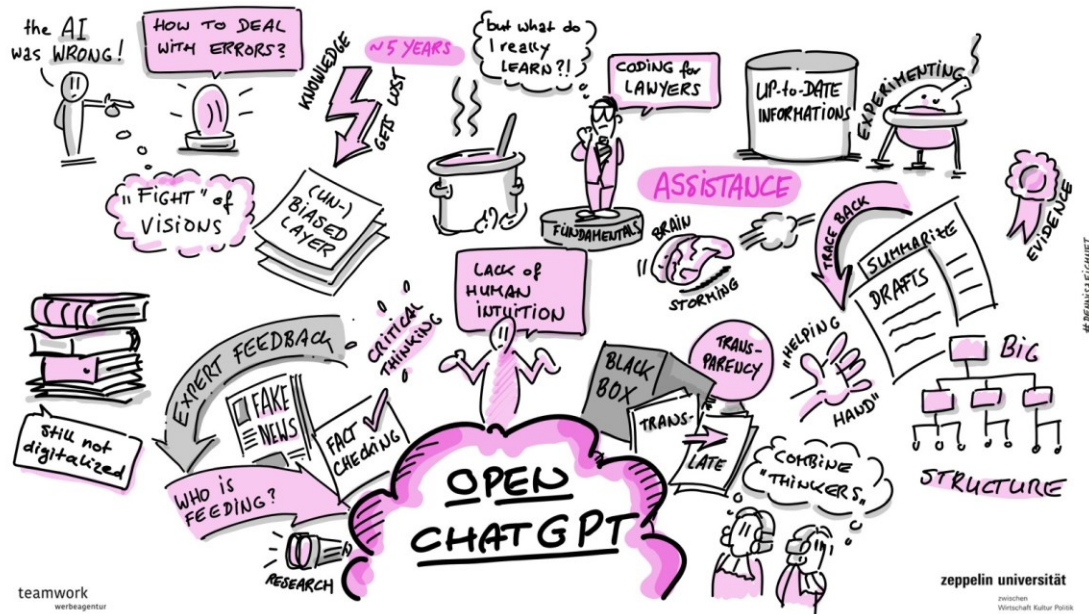


Figure 1: Graphical Recording of the Open ChatGPT Workshop at Zeppelin University on 3rd July 2023

Graphical Recorder: Dennis de Jonge (teamwork werbeagentur, Dornbirn)

The three research questions of this research paper are:

- RQ1: What are the main characteristics and capabilities of large language models (LLM) for a parliament?
- RQ2: Which strengths, weaknesses, opportunities, and threats are expected with the introduction of LLMs in the parliamentary workspace?
- RQ3: What does the integration of LLMs mean for the parliamentary workspace?

Building upon the insights garnered from the workshop discussions, which were further illuminated through a graphical recorder's visualization by Dennis de Jonge, as well as an extensive literature review (section 2), this study systematically explores the integration of LLMs in parliamentary settings. The exploration begins with a detailed analysis of the current options for LLMs to integrate within parliaments (section 3). This is followed by a SWOT analysis that assesses the strengths, weaknesses, opportunities, and threats associated with the use of LLMs in the parliamentary working environment (section 4). In section 5, the general reflections are complemented by reflections on the European AI Act regarding parliaments and an impact assessment. The final section synthesizes the key findings in the conclusions. It also critically addresses the study's limitations and proposes open questions for future research (section 6).

2 Theoretical Fundament for Large Language Models

2.1 AI in Parliament

Parliaments in democracies are characterised by representation, debates in the parliamentary chamber and votes by members of parliament on proposed legislation as well as oversight. Paper and file-based processes ensure that words, drafts, resolutions

and laws are permanently preserved. Modern information and communication technologies support record management, legislative procedures and other parliamentary processes.

Current advances in artificial intelligence (AI) and generative artificial intelligence (genAI) are challenging the tried-and-tested interaction and opening impressive new opportunities for parliaments. Already in 1956, the term “artificial intelligence” was introduced by mathematicians and computer scientists to assume that it would be possible to develop a machine that could simulate “every aspect of learning or any other feature of intelligence” [36]. Nowadays, there is neither a single technology nor a collection of niche applications [49][57]. The term AI stands for a bundle of different technologies, learning methods, system architectures, algorithms and approaches that use computer capacities to replicate the capabilities of human intelligence to perform certain tasks independently or on command. Autonomous systems, machine learning, deep learning, neural networks, pattern recognition, natural language processing, real-time translations, chatbots and robots should be mentioned in this context [2]. The capabilities provided by AI are intended to support or automate human activities and processes. Pattern and text recognition, speech and speaker recognition, image and spatial recognition, face and gesture recognition open up a wide range of possible applications. AI-based systems for text, sound, speech, image, spatial and video generation as well as programming expand the range of applications. All of this leads to new types of systems, applications, and processes for AI-based perception, notification, recommendation, prediction, prevention, decision-making and situational awareness in real time [12]. Popular media, newspapers, magazines [10], government commissions, governments [3][13][16][25][58], parliaments [7][9][26], and expert reviewers [45] have shown growing interest in these topics.

GenAI is characterised by its capability to generate new artefacts on the foundation of what has been learned. It does not rely on coincidences, but on recognised and learned patterns to generate synthetic data [12]. It can autonomously create data, texts, processes, programs, sounds, sound sequences, voice contributions, images, and videos. Based on this ability, it can offer translation services, make predictions and forecasts, and devise implementation plans [55]. Data generation creates synthetic data for modelling, scenario planning, and optimizing policy formulation. Text generation accelerates reporting and the drafting of speeches and other legal-technical documents. The optimization of existing processes and the generation of new ones enhances procedural workflows in parliaments for increased efficiency and effectiveness. Thanks to generative programming, genAI also has the potential to automate planning and software engineering tasks. Speech and sound generation can improve communication, but also pose risks of generating falsified messages and audio deepfakes that discredit individuals, parties, and parliamentary groups. Image and video generation creates visual content for data visualization. It can also be used to create forged photos and lip-synchronised deepfake-videos designed to cause confusion in parliament, administration, press, and in the public. Translation services semi-automatically translate text between languages. Predictions and forecasts use algorithms to construct future projections. These tools may, for instance, assist lawmakers in formulating policies based on accurate forecasts [55]. Some studies focus on the socio-technical context, highlighting the creative capabilities of generative models [35][57].

AI and genAI could potentially be utilized in parliament. Researchers are actively exploring the implications of AI and genAI on parliamentary operations, assessing their potential, opportunities, risks, and challenges posed by these technologies [17][18][19][20][54][53]. Through collaborative efforts with scientists, administrative staff, and decision-makers from parliaments, 210 proposals for the use of AI in parliaments were generated and evaluated [56]. It became evident that ParITech [33] and the use of AI in parliaments are not just technical issues, even though several (generative) AI models and technologies are already suitable for use. This phenomenon also presents challenges in ethical, legal, and administrative areas, along with practical limitations that intersect with fundamental democratic principles of society. Security risks in the government context have also been addressed. Several national security agencies and intelligence services have developed an international guideline for the secure development of AI systems [40].

In Europe, there was no comprehensive legal framework for the use and application of AI and its products, or for the generated content. However, on December 9, 2023, the EU reached an agreement between the European Parliament and the European Council on planned AI legislation. After its entry into force (expected in August 2024), the AI Act will apply directly to all EU member states. It contains a number of regulations and requirements for the use of AI, including its use in the public sector and in parliaments [14][15]. Some governments and supranational unions are already working on comprehensive frameworks. Numerous soft law initiatives, such as recommendations, strategy papers, declarations of intent, and guidelines [7][13], address the ethical development and principles of AI use or critique the guidelines themselves [21][24][30][38][41][57].

2.2 Large Language Models (LLMs)

A language model is a probabilistic model of a natural language, capable of generating probabilities for a series of words based on the text corpora it was trained on, which can include one or multiple languages [32]. Large language models (LLMs) combine larger training datasets, feedforward neural networks, and transformers [51]. Based on concepts of natural language processing and natural language generation, they generate new types of texts and have surpassed recurrent neural network-based models and pure statistical models. LLMs can produce answers in natural, easily understandable language, as well as being embedded in chatrooms as chatbot and create summaries and analyses that make extensive text documents more accessible. LLMs also require an infrastructure that includes hardware or cloud platforms for their development, training, and operation, such as high-performance computation optimized for AI and deep learning [4].

Since the release of ChatGPT, built on the LLM GPT-3.5 architecture, by OpenAI in November 2022, there has been increased focus on researching the potential applications, deployment strategies, and the associated risks and challenges of LLMs [1]. The rapid development of many large language models (LLMs) presents several opportunities. LLMs can automate many tasks currently performed by humans. They understand texts and can generate new, comprehensible content. Due to their sophisticated training, they possess a vast amount of data, information, and knowledge to generate answers and solve problems. When prompted correctly, they exhibit impressive creativity. Additionally, LLMs can assist with analyses, develop programs to meet specific requirements, generate new processes and make impact as an idea machine [10]. Notable examples of LLMs include cloud models with proprietary

licenses (closed source) like OpenAI's GPT models (GPT-3.5 and GPT-4, used in ChatGPT and Microsoft's CoPilot), Google's PaLM and Gemini, Baidu's ERNIE 3.0 Titan, Anthropic's Claude, Aleph Alpha's Luminous as well as open-source models that can be run locally without restrictions like Meta AI's Llama 2, Mistral's Mistral 7B or Starling 7B or BigScience's Bloom [4][21]. These models are widely available via the Internet. They are often the subject of studies exploring topics such as their effects on scientific education and research [8][44], or their policy implications [23][31]. The questions of what happens inside the black box LLM and the quality of outcomes also play an important role [4][22][43][47][60].

2.3 LLM in Parliament

Regarding the possibilities presented by LLMs, there is the question of whether, when, to what extent, and under what conditions Members of Parliament (MPs) and parliamentary staff may access tools for text generation, text, and data analysis, as well as image and video generation as part of their responsibilities. Even if access is denied by the parliament administration, it is likely that MPs will independently acquire and use these tools from the Internet for their mandate purposes, assuming personal responsibility. Employees of parliament become increasingly frustrated when they are denied professional access to LLMs but use them privately and see which benefits selected services offer. Therefore, it is crucial to take early and proactive measures to prevent potential harm or unauthorized disclosure of valuable data to third parties.

Following the publication of ChatGPT by OpenAI in November 2022, interest in using these and other LLMs in parliaments worldwide increased. Some trendsetter utilized already cloud models or set up servers with IT partners to begin experimenting. The workshop held at Zeppelin University in July 2023 [59] provided one of the first opportunities to share experiences, impressions, concerns, and worries. Given the sensitivity of parliamentary tasks and legislative issues, participants proceeded with caution. Speakers showcased their projects and initial prototypes, including those from the European Union and Greece [28][34][37][39]. In February 2024, Parla was introduced for the State parliament of Berlin as an AI assistant for written enquiries and red numbers. It is based on ChatGPT and searches through the parliamentary database, identifies the most relevant documents for an inquiry, and summarizes relevant content into a response [42]. In March 2024, the first manual how to deal with generative AI in the US Congress was published [58]. The Inter-Parliamentary Union presented their views in an issue brief in April 2024 [29]. In Germany, the first guideline by a party was presented by the SPD in July 2024 [48].

3 Options for the Integration of LLMs in the Parliamentary Workspace

3.1 LLMs in the Parliamentary Workspace

This section explores the options for integrating LLMs into the parliamentary workspace to answer the first research question RQ1 about the main characteristics and capabilities of LLMs for a parliament. There are several options for the make-or-buy-decision and several choices for technical implementation. Decisive for the performance level are the requirements and differences in terms of cyber security level, national security requirements, privacy, neural networks, transformers, accuracy, training datasets, official languages to be covered, linguistic diversity, and explainable AI. Also relevant are the LLM service providers, the LLM services, the used training

datasets, the training courses and the LLM benchmarks, which are discussed below. For the law-making process, the use of LLMs and its major dependencies has been investigated in a 2024 European Commission study [21].

For the main decision on whether to make or buy an LLM and an LLM application, there are five options [4]. The first option to buy an end-to-end application without LLM controllability means purchasing a complete application where the LLM cannot be controlled or modified. The second option to buy an application with a limitedly controllable LLM, an application would be bought that includes an LLM component with some level of transparency and control. The third option to make an application and to buy a controllable LLM means to develop an own application and integrate it with a procured LLM that can be controlled via APIs. The fourth option to make an application and to fine-tune an LLM involves developing an own application and customizing an LLM. An existing LLM, either bought or open source, would be fine-tuned to fit the specific needs. The fifth option is to make an application and pre-train the LLM from scratch. This option requires developing both the application and the LLM entirely from the ground up [4].

Additionally, there are four choices for where to position the server for the LLM. Parliaments can rely on publicly accessible, cloud based LLMs for the parliamentary working environment, provide their own internal LLMs only in the parliamentary working environment, combine both in a hybrid solution or tolerate the use of private LLMs (BYO LLMs, Dark LLMs). Cloud-based LLM services with a proprietary licence, such as those offered by OpenAI, Microsoft, Google and many other LLM service providers, are accessible via the public Internet and can be used via API interfaces. A contract is concluded with the service provider to regulate rights and obligations. Alternatively, on-premises solutions can be used, in other words the implementation and operation of LLMs on own servers or high-performance notebooks within the parliament's IT infrastructure to ensure data protection and data security. This is particularly suitable for open source LLM that can be run locally on the intranet without any restrictions. Parameters can be changed locally and LLMs can be trained confidentially with documents. The range of services is increasing here, as companies and lawyers, for example, have a need for scalable LLMs in a trustworthy environment in which it is ensured that training data, prompts, and result cannot technically be shared with others. In this way, the parliamentary groups could be provided with their own LLMs. Hybrid solutions, the combination of cloud-based and on-premises solutions to achieve a balance between flexibility and security, would be another option. "Bring your own LLM" is an unfavourable option. However, it becomes necessary when there is no LLM available in parliament and it cannot be provided by parliament due to cost, data protection, security, or other reasons. In this case, it will hardly be possible to prevent employees from using the LLMs available to them privately for parliamentary business purposes via the Internet or mobile phone.

A retrieval-augmented generation system (RAG) is a service option for LLMs, when query-based AI cannot provide customised answers and the accuracy of generative AI causes problems. In a RAG-based LLM system, a query model is used to find relevant information from existing information sources, while the generative model takes the queried information, synthesises all the data and transforms it into a coherent and contextual answer [5][6]. RAG-based LLMs have already started to be evaluated for practical applications that necessitate exchange with complex legal corpora [34].

The need for a privacy proxy for an LLM in the parliamentary workspace arises from the necessity to balance the powerful capabilities of LLMs with the requirements of data privacy and security. LLMs in parliaments often process vast amounts of data, some of which may be sensitive or confidential. A privacy proxy can ensure that such sensitive data is either anonymized or made unrecognisable before being processed by the LLM, thereby protecting individuals' privacy and organizational confidentiality. Secondly, it can help enforce the General Data Protection Regulation (GDPR) in the European Union by filtering out or masking personal data, ensuring that the LLM's operations handle personal data in compliance with legal requirements and do not violate these laws. Thirdly, the direct exposure of raw data to an LLM poses a risk if the model is compromised or misused. A privacy proxy can mitigate these risks by pre-processing data to strip out unnecessary details, ensuring that only the minimum required information is exposed to the model. This helps to enhance user's trust while leveraging the powerful capabilities of LLMs.

The required transparency and explainability depends on the fields of application in parliament. In some cases, it must be ensured that the decisions and proposals of an LLM are comprehensible and verifiable. With the help of ChatGPT, a study has compiled the most relevant fields of application for LLMs in a parliament [57]. LLMs are principally suitable for the creation of draft laws, taking minutes of plenary sessions, translation of documents as well as the generation of agendas, Q&A sessions, responses to any requests, presentations, analyses, and reports. LLMs could also create speeches and addresses, letters, and emails. Other possible fields of application are legislative research and analysis, constituent engagement, policy drafting and analysis, committee support, fact-checking and misinformation detection, procedural guidance, public opinion analysis, training, onboarding, knowledge dissemination, issue tracking and monitoring [57].

3.2 LLM Service Providers

There are several LLM providers in the market, such as OpenAI, Google, Meta, Baidu, Aleph Alpha, and Mistral AI, each offering LLMs with different strengths, but also disadvantages. Each of these companies is working on making its LLM even smarter. This raises the question of whether parliaments should rely on a single LLM service provider or use a platform that keeps their options open. Such a platform would need to make LLMs and tools from different cloud providers accessible and comparable through a standardized interface. Due to dynamic developments, there is currently a great deal of uncertainty for solution developers in selecting and testing the right LLMs and determining which are suitable for specific applications. However, such an approach would ensure the ability to fulfil another requirement to avoid lock-in effects: the possibility to exchange any LLM service and any LLM service provider at any time.

Open API interfaces enable seamless integration of LLM functionalities into existing IT systems, such as document management systems, customer relationship management systems, and workflow tools. From an information management perspective, the first question to address is which LLM service provider and services can be used in a parliamentary context, and which should be avoided due to cybersecurity and national security requirements.

3.3 LLM Services

LLMs could provide services for parliaments such as chatbots and virtual assistants, translation and multilingual capabilities, data analysis and forecasting, information

management, training, and professional development as well as process design and coding. These services could be part of an LLM application. Reflecting on the various conceivable LLM services, it should be recognized that language models can work with language but do not necessarily produce only text-based results. LLMs can also generate images and other visualizations (text-to-image LLM services), audios (text-to-audio LLM services) and videos (text-to-video LLM services). Image- and video-generating AI creates new types of visualizations based on text input and learned training datasets. This function assists MPs in creating visual representations for their arguments, sketches, or photorealistic images of construction projects. Visualizations are often more persuasive than texts because the brain processes them more quickly.

In this context, parliaments must quickly determine which types of prompts (text, image, audio, video) are most effective for their intended applications. Developers face the challenge of designing and testing the right prompts and deciding which ones are suitable best for use in the parliamentary workspace.

If there are already best practices for prompt engineering with LLMs, it would be highly beneficial to have a platform for knowledge sharing and transfer. Such a platform or portal should provide suitable prompts for various tasks, including document summarization, translation, meeting transcriptions, public engagement, training and onboarding, and document and speech preparation.

For text-to-image LLMs, the platform should include suggestions and templates for visualization prompts that transform ideas, collections, and designs into understandable and appealing images, figures, artworks, and designs.

For text-to-video LLMs, it would be valuable to offer suggestions for prompts that visualize objects through short films. This would allow projects to be viewed from different camera angles, making the three-dimensional embedding of a construction project in its natural environment, for example, visible and creating a lasting fascination.

3.4 Training the LLM with Parliamentary Data

For effectively training LLMs for parliamentary purposes, the essential datasets should include official materials available in the official languages of the parliament. This includes laws, ordinances, questions, reports, and ratified minutes, which can be used without infringing data protection or copyright laws [57]. These datasets provide the foundational content and context necessary for LLMs to understand and generate responses relevant to parliamentary proceedings and governance. Also relevant are freely accessible data and documents from parliamentary information systems, legislation portals, and websites of ministries and agencies. Training sessions take time, but they are crucial for compiling and utilizing these datasets effectively. LLMs designed for parliamentary use can utilize this data to generate responses that directly reference relevant documents, including historical records from previous electoral periods. It's important to note that using copyrighted material, personal data, or sensitive documents for publicly available LLMs is not permissible. Checking and correcting potential biases in the models, training datasets and documents is also crucial to ensure fair and unbiased results.

3.5 LLM Literacy and Capacity Building of Parliamentary Staff

The effective integration of LLMs in parliaments relies on adhering to established guidelines for AI introduction [19][20][46][48]. Literacy and training of parliamentary

staff in LLM usage are critical pillars. Comprehensive training is essential, covering both the technical aspects of LLMs and their practical applications in parliamentary workflows. These training programs must strictly comply with legal frameworks and regulations governing AI usage in parliamentary settings. It is crucial to provide hands-on training that familiarizes staff with LLM functionalities relevant to their daily tasks, allowing for controlled experimentation to explore LLM capabilities within defined boundaries. Addressing data protection and ethical implications is paramount during the integration of LLMs into parliamentary processes. Continuous updates to training programs are necessary to incorporate advancements in LLM technology and mitigate uncertainty. Integrating LLM deployment into the change management process of parliaments is another crucial aspect. Emphasizing the benefits of LLMs in enhancing efficiency and effectiveness in parliamentary operations will help to garner support from the staff council and other stakeholders.

3.6 Benchmarks

Establishing proven and recognized benchmarks for LLMs and LLM services that can reliably assess response quality would certainly be desirable. These benchmarks would provide a standardized framework for evaluating the performance and effectiveness of LLMs across various applications and contexts.

Currently, there are several benchmarks for LLMs, such as the Trustbit benchmarks [50] and the HuggingFace Open-LLM-Leaderboard [27]. However, developing and establishing benchmarks specifically tailored for parliamentary use will be an important area for future research. This requires standardized methods that result in reliable evaluative statements about response behaviour.

Future LLM benchmarks for parliaments would enable the assessment of freely available LLMs on the market against the specific requirements of parliamentary settings. Benchmarking services could also evaluate the quality of internal parliamentary LLMs that have been trained and fine-tuned using a collection of parliamentary documents. Such comparisons could reveal differences in cybersecurity levels, national security requirements, support for official languages, linguistic diversity, or explainable AI capabilities. Recommendations based on proven LLM benchmarks could guide parliamentary bodies in selecting suitable LLMs. Comparison rings could help establish minimum standards for LLMs and identify leaders in the field. Such an initiative would not only benefit national parliaments but also sub-national legislative bodies and local councils, which may also face challenges in navigating the diverse offerings of LLMs [57].

4 SWOT-Analysis for LLMs in the Parliamentary Workspace

Based on the discussion in the academic workshop on the use of AI and LLMs in parliaments in July 2023 [17][59], further results of prompts reflecting the use of LLMs [57] and subsequent considerations, an overall picture emerges that could be translated into a SWOT analysis. Despite the strengths and opportunities that these technologies offer, it is essential to consider their weaknesses and threats as well [57]. Table 1 offers a balanced evaluation aimed at addressing the second research question RQ2. It provides a thorough understanding of both the benefits and challenges involved in integrating these technologies into parliamentary workflows. The table provides a broad summary of how these high-risk technologies are used and their implications for legislation and representative institutions. Each of these elements is detailed below.

Table 1: SWOT-Analysis for AI in Parliament

Strengths	Weaknesses
• Analytical Capabilities • Generative AI Skills • Enhanced Communication • Continuous Learning • Adaptability and Multilingual Skills • Scalability and Consistency • Rapid Response • Creativity	• Dependence on Technology • Dependence on Training Data • Technical Limitations • Hallucinations • Lack of Sensitivity to False Information, Irony and Sarcasm • Limited Critical Thinking • Confidentiality and Security Risks
Opportunities	Threads
• Text Creation and Drafting Support • Scheduling • Transcription Services • Translation Services • Policy Analysis and Briefing • Speechwriting Assistance • Letter and Email Assistance • Legislative Research Assistance • Constituent Engagement • Training and Education for Staff	• Reduced Human Interaction • Lack of Human Judgement • Bias and Ethical Concerns • Unintended Legal Consequences • Authenticity and Accountability • Erosion of Skills • Impact on Employment • Quality of Literacy • Manipulation and Misuse • Unintended Political Influence

4.1 Strengths

In combination with RAG and privacy proxies, LLMs are currently unlocking several new opportunities for parliaments, MPs, and parliamentary staff by utilizing analytical, generative, and communicative AI skills [55]. LLMs can process vast amounts of data, identify patterns, and generate insights that human analysts might miss. This ensures legislative proposals are backed by comprehensive data analysis, leading to more informed and effective policymaking. As an assistant, LLMs create first drafts for policy documents, speeches, and reports, and brainstorm harder questions for public consultations. In this way, they also provide an additional element for parliamentary oversight by generating detailed and thought-provoking content. In combination with RAGs, LLMs help to articulate complex ideas clearly, concisely, and persuasively, making information accessible to MPs, the media, and the public. LLMs enhance communication by drafting speeches, preparing press releases, and crafting responses to inquiries. The goal is to improve communication to build trust and transparency between parliament and the public.

LLMs can learn continuously from new data and evolving political landscapes, remaining current and increasingly effective over time. They are able to adapt to various political topics and daily political business requirements, generating documents in a desired style and providing feedback almost in real-time. LLMs can handle different topics and requirements with remarkable adaptability. Their multilingual capabilities ensure effective communication across diverse linguistic groups. They offer scalability and can handle large volumes of work consistently and accurately. They remain patient and courteous, ensuring a professional and respectful interaction every time. LLMs provide rapid responses to prompts or other requests, generating professional content such as complex texts, images, and videos. While not truly intelligent, their language

models possess a vast amount of data, information and knowledge, enabling them in combination with RAGs to deliver accurate and timely information [57][52].

4.2 Weaknesses

IT managers in parliaments are worried about the reliance on available LLMs and the training data they use, as well as their current technical limitations. These issues include generating incorrect information (hallucinations), lacking contextual understanding, mishandling false information, irony, and sarcasm, and lacking serious critical reflection on such results. This is because an LLM is not truly intelligent but operates as a probabilistic language model with extensive knowledge that quickly provides characters, words, data, answers, and information [57]. It is important to remember that humans ultimately need to decide how to use new technologies like LLMs, for better or worse. Therefore, the use of LLMs in parliament raises numerous ethical questions, particularly regarding the intentions behind its introduction, data protection, algorithm fairness, and potential impact on employees, the population, and human rights [52].

LLMs function as black boxes, lacking transparency in their operations, energy consumption during training, and the sources of information they use (documents). Understanding how these technologies can be trained, improved, or influenced by uploading documents is also limited. Users frequently encounter daunting challenges in crafting precise prompts and evaluating the quality of generated content, highlighting these as significant issues. Sometimes, LLMs produce false content and artifacts (hallucinations), providing linguistically appropriate but factually incorrect answers [48]. Neutral observers might call this lying. For any parliament, it is crucial to establish methods for detecting and managing such errors effectively with implementing verification mechanisms, using RAGs, and establishing error management protocols. LLMs treat learned information as accurate, whether it is correct or not, making them susceptible to disinformation, fake news, irony, and sarcasm [57]. But politicians and their teams must learn to understand, adjust to, and counter these misleading arguments. Without serious critical reflection on the results, this could lead to a useless AI-driven argument battle or, even worse, the dissemination of fake-news and false information.

Like almost all digital systems on the Internet, the current LLMs can only offer limited guarantees for confidentiality, data protection and IT security. These security vulnerabilities create opportunities for cyberattacks, misuse, and unauthorized access, which are significant weaknesses of such systems. Of particular concern are LLM service providers from countries with political or military interests in accessing parliamentary queries and uploaded documents, especially those with existing legislation allowing for such tapping. This raises serious concerns about potential misuse and surveillance. At least the technical limitations, hopefully, will be overcome in a few years, especially with the help of RAG and privacy proxies.

4.3 Opportunities

LLMs offer a wide range of possibilities for new applications in the parliamentary environment. These include generating high-quality and understandable text, creating summaries, facilitating brainstorming sessions, and producing other creative content. LLMs can significantly aid in drafting bills, policy proposals, and administrative documents by generating well-structured, coherent, and legally sound drafts. This capability helps to enhance document quality, reduce conflicts, and prevent inconsistencies. The

precision and clarity required in legislative drafting are areas where LLMs excel, offering exceptional capabilities when accuracy is paramount. Moreover, LLMs can streamline administrative tasks such as scheduling, calendar management, reminders, and meeting coordination through intelligent automation. In meetings, LLMs provide invaluable assistance in agenda setting, minute taking, and real-time transcription, ensuring accurate capture of discussions. Furthermore, most LLMs offer translation and interpretation services, facilitating multilingual communication within parliament. This capability promotes inclusivity by enabling all members, regardless of language proficiency, to fully participate in discussions and comprehend documents. Ultimately, these advancements contribute to better decision-making processes within parliamentary settings [57].

There is a further potential for LLMs in automating policy analysis and generating concise, insightful briefings. LLMs have the capability to identify trends, compare policies across different jurisdictions, and offer evidence-based recommendations. This aids legislators in making informed decisions and developing effective policies. LLMs analyse relevant data to produce clear reports and visualizations, which MPs can utilize to form opinions and make decisions. Their capacity to anticipate legal challenges and propose solutions proactively positions LLMs as invaluable tools in the policy-making process.

LLMs can also offer substantial support for speechwriting, letter writing, and email correspondence, especially when combined with privacy proxies. These drafts are tailored to match the speaker's style and meet the expectations of the audience. LLMs can incorporate key messages, rhetorical techniques, and pertinent data, thereby enhancing the effectiveness of public addresses. This ensures clear and effective communication with constituents, stakeholders, and other officials, maintaining a high standard of correspondence and ensuring accurate and appropriate message delivery. Additionally, LLMs can handle complex legislative research tasks more efficiently when combined with RAGs and privacy proxies. They can swiftly analyse legal texts, case studies, laws, and precedents to provide relevant information, supporting sophisticated legislative research activities.

For MPs, there are numerous potential applications when utilizing LLMs in engaging with their constituencies. LLMs can assist in analysing public opinion, tracking issues, monitoring developments, and predictive analyses. They enhance constituent engagement by managing communication channels, responding to inquiries, and gathering feedback. By analysing sentiment and trends in constituent concerns and social media, LLMs help legislators to address the needs and opinions of their electorate more effectively. They also continuously monitor various issues, identifying critical developments and changes. LLMs can also play a pivotal role by providing comprehensive LLM training and educational resources for parliamentary staff. They can generate tailored learning materials, conduct interactive training sessions, and offer ongoing support, ensuring that staff acquire the necessary knowledge and skills to excel in their roles.

4.4 Threats

The integration of LLMs in parliaments brings about several potential threats that necessitate careful assessment and consideration [29]. These threats underline the importance of applying appropriate regulations to mitigate risks effectively. In the European Union, the European AI Act serves as a foundational framework for guiding

such regulatory efforts. Additionally, specific guidelines tailored for parliamentary settings have been compiled [19][20] to address these concerns. The risks associated with LLMs in parliaments encompass various dimensions: Reduced human interaction, lack of human judgement, bias and ethical concerns, unintended legal consequences, authenticity and accountability, erosion of skills, impact on employment, literacy, manipulation and misuse and unintended political influence.

As LLMs start to take over tasks traditionally handled by humans, there is a concern about reduced human interaction and the loss of human judgement. Human judgement is crucial in various situations, especially for crafting nuanced policies and bills that consider diverse perspectives and societal implications. Machine-generated texts may lack the richness and contextual understanding necessary for such nuanced policymaking, potentially leading to flawed analyses and misguided policy decisions that do not align with public will or needs. Moreover, LLMs trained on biased or incomplete datasets can perpetuate and even amplify biases and unintentional discrimination. This can result in biased policy recommendations and legislative texts that disproportionately affect certain groups, leading to ethical concerns and potential legal liabilities. Additionally, relying on LLMs for drafting legal documents introduces risks of errors and uncertainties in legal language, which could create loopholes, misinterpretations, and challenges in court. Similarly, using LLMs for translation and interpretation may lead to inaccuracies in capturing the precise meaning and cultural nuances of original texts, undermining effective communication and decision-making.

There are also concerns regarding authenticity and accountability when LLMs generate content for controversial or impactful policies without clear accountability from human parliamentarians. This lack of transparency can erode trust in parliament and its representatives among citizens who expect clarity in responsibility and the ability to hold officials accountable. Furthermore, the long-term implications include potential skill erosion among MPs, staff, and parliament employees who may become overly reliant on LLMs for tasks such as interpreting complex legal texts and drafting legislation. This dependency could lead to a decline in critical thinking and communication skills essential for an effective governance. The potential for job and knowledge losses is another concern. A resulting decline in literacy quality can have wide-ranging implications, affecting the overall effectiveness and quality of parliamentary work. Moreover, there are also socio-political implications, including the potential for LLMs to concentrate decision-making power in fewer hands or entities, thereby impacting democratic processes and representation.

Furthermore, the dangers of deliberate political influence and manipulation by third parties must not be ignored. In the political arena, where the best arguments, proposals, and decisions are crucial for optimal solutions, there is a risk that actors might intentionally manipulate or misuse LLM systems and their training datasets. Such manipulation and disinformation efforts must be identified and prevented to protect the integrity of the parliamentary process. Additionally, there is concern over the use of text-to-audio and text-to-video generators for deliberate falsification, such as attributing false statements to individuals. These deepfakes technologies could create convincing but fake audio or video content, undermining trust, and accountability. Security risks and vulnerabilities are also significant issues, especially regarding data protection and privacy. If LLMs learn from inputs containing real personal data, there is a risk of data breaches and misuse of sensitive information. In addition,

copyright infringements should be avoided by ensuring that LLMs are not trained with copyrighted material without permission [48].

Addressing these risks requires robust regulatory frameworks, ethical guidelines, and proactive measures to safeguard against misuse, bias, security vulnerabilities, and privacy breaches associated with LLMs in parliamentary contexts [48]. It is crucial to carefully assess these potential risks and implement appropriate measures to minimize them while maximizing the benefits of LLM technology in parliamentary operations.

5 Reflection and Comments

5.1 General reflections

Reflecting on the SWOT analysis, what does the integration of LLMs mean for parliamentary workspaces (RQ3)? It is challenging to make general statements about the use of LLMs in parliaments because their effectiveness depends on various factors, such as the specific use case, the make or buy decision, the chosen LLM version, deployment method (cloud or on-premises), trained dataset, service provider, impact assessment, and evaluation. LLMs could be beneficial or detrimental depending on their application. It remains uncertain which implementations will succeed or fail in the long term. The global emergence of ChatGPT since late 2022 suggests that disruptive changes, driven by trials, successes, and innovative solutions, are on the horizon. The SWOT analysis highlights valuable perspectives for introducing LLMs in parliaments, emphasizing the need for careful management to prepare LLMs to be ready for regular operations in parliament.

In considering cloud based LLMs for parliamentary contexts, careful attention must be given to political interests, confidentiality, and national security. Discussions on the feasibility of creating and implementing custom LLMs tailored for national parliaments are ongoing within the Inter-Parliamentary Union's Parliamentary Data Science Hub. To ensure the autonomy of parliamentary administrations, it is crucial to maintain flexibility in switching between LLM providers to avoid dependencies. This flexibility is vital, especially in the event of disputes with LLM providers, allowing for alternative solutions or the development of in-house LLM systems. Benchmarks to be established will help to differentiate and evaluate the offers and providers more precisely.

5.2 Reflections on the European AI Act and LLM in Parliaments

The European Union's AI Act establishes a framework for regulating and prohibiting AI in Europe. Developing and implementing AI-based systems for parliamentary use within the EU requires careful attention to ethical, legal, social, and safety-related aspects. According to the AI Act, parliaments that use AI can be considered high-risk areas for application due to the potential implications on democratic processes and the rule of law. Potential risks include the manipulation of elections and voters, direct influence on political decisions, and impacts on parliamentary and governmental functions. Thus, regulating AI in parliaments is essential to avoid actions that threaten democratic governance.

The European AI Act imposes stringent requirements on the development and operation of high-risk AI technologies. These include heightened transparency standards, the creation of technical documentation, adherence to EU copyright laws, and the dissemination of comprehensive summaries of training data. The Act mandates a fundamental rights impact assessment, with more rigorous obligations for applications posing systemic risks. Foundation models meeting specific criteria must undergo

evaluations, address, and mitigate systemic risks, and undergo adversarial testing. Serious incidents must be reported to the European Commission, and cybersecurity is prioritized.

Regulating the introduction and use of AI in parliamentary workspaces is the responsibility of parliaments and their elected representatives. As guardians of democratic principles, parliamentarians must proactively establish comprehensive frameworks addressing the ethical, legal, and societal dimensions of AI implementation and governance. Organisational and technical measures must therefore be introduced [19][20]. Most importantly, parliaments need to maintain a balance between technological innovation and safeguarding democratic institutions.

5.3 Provisional Impact Assessment

Reflecting on the impacts of integrating LLMs into the parliamentary workspace, several critical stimuli, acceleration, and diversity of perspectives can be expected. LLMs can help identify critical, unpopular, or dangerous positions in a debate and highlight flaws in the argumentation. The opposition might exploit this for tougher attacks, requiring government representatives to be better prepared. The advantages of LLMs in terms of speed, usefulness, and diversity of perspectives encourage increased use. With minimal effort and a well-crafted prompt, different perspectives can be revealed, alternative viewpoints can be reflected, and new insights can be gained. This could improve outcomes and speed up parliamentary processes. A brilliant prompt can uncover known and unknown data treasures, making them accessible and useful. However, the results of LLM prompts can be accurate, partly accurate, inaccurate, or even incorrect. The better the results, the more LLM services will be used. Parliamentary users must handle the results, evaluate their suitability, and then use, modify, or reject them. This requires additional skills in dealing with LLMs and LLM services. If users lack these skills, especially in a parliament where correctness and accuracy are essential, the use of LLMs should be strongly discouraged. However, the temptation to use LLMs and LLM services due to their speed advantages might lead to overlooking the need for accuracy and proper evaluation. Training programs are essential to bridge this gap, ensuring that users can appropriately manage the opportunities and risks associated with LLMs [57].

6 Conclusions, Perspectives and Outlook

In summary, LLMs can already play a role in various aspects of parliaments today. However, as the reflections on the three research questions have shown, those responsible should start using them carefully, gradually gain experience, and always use the results in a reflective manner [57]. The use of AI in parliament is becoming widespread, with a wide variety of suitable LLMs already available on the market. Many MPs are already using these tools in both their parliamentary and private lives. Parliaments should therefore be prepared for the use of LLMs by MPs and their staff. These technologies promise politicians increased efficiency, better data analysis, and more informed decisions for their policies, justifying the additional expenditure.

However, an important decision must be made regarding providing a secure workplace in parliament. Can each MP and staff member continue to use their own LLM for parliamentary business indefinitely? Or will the parliamentary IT provide a safe and secure LLM platform or an entire LLM suite with several secure LLMs to choose from and separate training data rooms for parliamentary groups, tasks, and other relevant

teams? Additionally, IT must be capable of replacing an LLM service at any time if it no longer meets their requirements.

In the next years, LLMs are expected to be significantly more advanced than current or early generations [29], driven by user demand, continuous research and development, and technological advancements like RAGs and privacy proxies. Addressing the issues of transparency, training complexity, and the challenges of user interaction with LLMs is essential for their effective integration into parliamentary settings. Enhancing transparency (through explainable AI and source disclosure), improving training, and monitoring processes, educating users, and establishing robust regulatory frameworks with clear regulations and accountability measures can mitigate potential risks. This approach will enable parliaments to effectively leverage the benefits of LLM technology.

LLMs will gradually change parliamentary procedures and collaboration over the coming years, sometimes without being noticed from the outside. There is already a demand for high-quality LLMs in parliaments. They could be integrated into repetitive and time-consuming tasks, such as filling out forms, document management or process management. By using LLMs, these tasks should be completed faster and with fewer errors. While LLMs have numerous strengths and opportunities, their weaknesses and risks also need to be addressed appropriately. Guidelines for the introduction and use of LLMs in the parliamentary arena are essential for this purpose.

The question of whether LLMs can be used in the parliamentary arena, and thus in politics and legislation, can be answered with: "Yes, but only with restrictions." There is no certainty about the truthfulness of the answers generated by LLMs, which is of utmost priority in the parliamentary context. Therefore, any content generated by LLMs should only be used as a basis for reflection and further processing by humans. This cautious approach ensures that the benefits of LLMs are harnessed while maintaining the integrity and reliability of parliamentary processes [57][29].

This also addresses a weakness of this analysis, as this contribution looks at the scene from the perspective of July 2024, i.e. around 20 months after the release of ChatGPT in November 2022. The author can therefore only assess the current state of the art and science. With a view to technical progress, greater competition, and technical improvements in LLMs can be expected in the coming months and years, which will lead to changes, new offers and solutions tailored to parliaments in the cloud and in their own data centres. The assessment carried out may well lead to a different result with advanced technology, especially if the weaknesses and risks have been understood and remedied by the developers.

Even at the end of this contribution, some open questions remain, reflecting the ongoing development process. LLMs have no long tradition in parliaments. What technical aspects should an LLM for parliament include to effectively support parliamentary workflows? How to develop and establish an LLM benchmark specifically tailored for parliamentary use? The long-term implications of their use in parliamentary processes also need further interdisciplinary exploration: Do LLM-generated agendas already improve the quality of meetings and time management in MPs' offices and parliamentary groups? Are MPs' speeches becoming more comprehensible, convincing, and relevant thanks to LLMs? Are the outcomes and impacts of debates improving thanks to LLMs? Can better and more comprehensible laws be drafted with the help of LLMs? Do LLMs allow for a better assessment of the impact of legislation, such as regarding

bureaucracy, contradictions, and future lawsuits? Do LLMs support negotiations in the mediation process between chambers with convincing compromise proposals? Or will politicians reject this technology because they can no longer become fully involved as individuals? Also from a linguistic perspective, the qualitative differences in text generation across different languages also need deeper analysis in further studies [57]. There is much work to be done for introducing and integrating LLMs in parliament.

References

- [1] Albrecht, S. (2023). ChatGPT und andere Computermodelle zur Sprachverarbeitung – Grundlagen, Anwendungspotenziale und mögliche Auswirkungen. TAB-Hintergrundpapier Nr. 26. Berlin.
- [2] Al-Mushayt, O. (2019). Automating E-Government Services With Artificial Intelligence. IEEE Access, 7, 146821-146829. <https://doi.org/10.1109/ACCESS.2019.2946204>.
- [3] Bundesregierung der Bundesrepublik Deutschland (2018). Strategie Künstliche Intelligenz der Bundesregierung. Berlin.
- [4] Chang, P.Y.C., Pflugfelder, B. (2023). A Guide for Large Language Model - Make-or-Buy Strategies - Business and Technical Insights, appliedAI Initiative GmbH.
- [5] Chang, P.Y.C., Pflugfelder, B. (2024). Retrieval-augmented Generation Realized - Strategic & Technical Insights for Industrial Applications, appliedAI Initiative GmbH.
- [6] Cohesity (2024). Retrieval Augmented Generation (RAG). Retrieved from <https://www.cohesity.com/de/glossary/retrieval-augmented-generation-rag/>.
- [7] Committee on Artificial Intelligence (2023). Consolidated working draft of the framework Convention on Artificial Intelligence, Human Rights, Democracy and the Rule of Law. Strasbourg.
- [8] Cooper, G. (2023). Examining Science Education in ChatGPT: An Exploratory Study of Generative Artificial Intelligence. In: Journal of Science Education and Technology, vol. 32, pp. 444-452.
- [9] Council of Europe (2021). Artificial Intelligence, Human Rights, Democracy, And The Rule Of Law – A Primer, Council of Europe and The Alan Turing Institute, Strasbourg.
- [10] c't (2023): KI-Praxis – Mit künstlicher Intelligenz produktiver arbeiten, Heise Verlag.
- [11] Di Fede G., Rocchesso D., Dow S.P., Andolina S. (2022). The Idea Machine: LLM-based Expansion, Rewriting, Combination, and Suggestion of Ideas. In ACM International Conference Proceedings Series. Association for Computing Machinery, New York, pp. 623-627.
- [12] Etscheid, J., von Lucke, J., & Stroh, F. (2020). Künstliche Intelligenz in der öffentlichen Verwaltung. Digitalakademie@BW & Fraunhofer IAO.
- [13] European Commission (2020). White Paper on Artificial Intelligence – A European Approach to excellence and trust. Brussels.
- [14] European Commission (2021). Proposal for a Regulation of the European Parliament and of the Council. Laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts. Brussels.
- [15] European Parliament. (2024). Artificial Intelligence Act - Legislative Train Schedule. Retrieved from <https://www.europarl.europa.eu/legislative-train/theme-a-europe-fit-for-the-digital-age/file-regulation-on-artificial-intelligence>.
- [16] Executive Office of the President (2019). Maintaining American Leadership in Artificial Intelligence. Executive Order 13859 of February 11, 2019. Federal Register Vol. 84, No. 31. Washington D.C. pp. 3967
- [17] Fitsilis, F., von Lucke, J. (2023).: Beyond Contemporary Parliamentary Practice - Unfolding the institutional potential of Artificial Intelligence. In: The Parliamentarian - Journal of the Parliaments of the Commonwealth, 104(01): pp. 58-59.

- [18] Fitsilis, F., von Lucke, J., & Frank, S. (2023a). A Comprehensive Research Workshop on Artificial Intelligence in Parliaments. *International Journal of Parliamentary Studies*, 3(2), pp. 316-324.
- [19] Fitsilis, F., von Lucke, J., Mikros, G., Ruckert, J., Alberto de Oliveira Lima, J., Hershowitz, A., Philip Todd, B., Leventis, S. (2023b). Guidelines on the Introduction and Use of Artificial Intelligence in the Parliamentary Workspace. Version 1.
- [20] Fitsilis, F., von Lucke, J., & De Vrieze, F. (Hrsg.) (2024). Guidelines for AI in Parliaments. London: Westminster Foundation for Democracy.
- [21] Fitsilis, F., Mikros, G., Leventis, S. (2024). Overview of smart functionalities in drafting legislation in LEOS. Augmented LEOS – Final Report. European Commission.
- [22] Floridi, L., Chiriatti, M. (2020). GPT-3: Its Nature, Scope, Limits, and Consequences. *Minds & Machines* 30, pp. 681–694
- [23] Geertsema, P. G.; Bifet, A., & Green, R. (2023). ChatGPT and Large Language Models: What are the Implications for Policy Makers? <http://dx.doi.org/10.2139/ssrn.4424048>.
- [24] High-Level Expert Group on Artificial Intelligence (2019). Ethic Guidelines for trustworthy AI. Brussels.
- [25] His Majesty's Government (2018). Industrial Strategy Artificial Intelligence Sector Deal. Crown Copyright. London.
- [26] House of Lords (2024). Large language models and generative AI. London.
- [27] HuggingFace Open-LLM-Leaderboard: https://huggingface.co/spaces/open-llm-leaderboard/open_llm_leaderboard.
- [28] Hypernetica. (2023). Software Services for Parliament. Zeppelin University. Retrieved from <https://www.zu.de/institute/togi/assets/pdf/ai-parliament-2023/SL-230703-Hypernetica-Chatbot-Presentation-2023-Q3.pdf>
- [29] Inter-Parliamentary Union (2024). Using generative AI in parliaments. Retrieved from <https://www.ipu.org/file/19126/download>.
- [30] Jobin, A., Ienca, M., Vayena, E. (2019). The global landscape of AI ethics guidelines. In: *Nature Machine Intelligence*. 1(09), pp. 389-399.
- [31] Jungherr, A. (2023). Artificial Intelligence and Democracy: A Conceptual Framework. In: *Social Media + Society*. 9 (3), pp. 1-14.
- [32] Jurafsky, Dan; Martin, James H. (2021). *N-gram Language Models - Speech and Language Processing* (3rd ed.).
- [33] Koryzis, D., Dalas, A., Spiliotopoulos, D., & Fitsilis, F. (2021). Parltech: Transformation framework for the digital parliament. *Big Data and Cognitive Computing*, 5(1), 15, 1-16. <https://doi.org/10.3390/bdcc5010015>.
- [34] Mamalis, M.E., Kalampokis, E., Fitsilis, F., Theodorakopoulos, G., Tarabanis, K (2024). A Large Language Model based legal assistant for governance applications. Preprint. Retrieved from <https://osf.io/preprints/osf/94fmq>
- [35] Mazzone, M., Elgammal, A. (2019). Art, Creativity, and the Potential of Artificial Intelligence. *Arts* 2019, 8(1): 26, pp. 1-9.
- [36] McCarthy, J., Minsky, M.L., Rochester, N., Shannon, C.E. (1956). A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence, August 31, 1955. In: *AI Magazine* (2006), 27(4), pp. 12-14.
- [37] Melides, A. (2023). Transforming Parliaments with AI: The Role of EDIHs and Citizen Participation. Zeppelin University. Retrieved from <https://www.zu.de/institute/togi/assets/pdf/ai-parliament-2023/AM-230704-GR-digiGOV-innoHUB-AI-in-Parliaments.pptx.pdf>
- [38] Mittelstadt, B. (2019). Principles alone cannot guarantee ethical AI. *Nature Machine Intelligence*, 1/2019, pp. 501–507.
- [39] Moschopoulos, C. (2023). AI applications in European Parliament administration - current status. Zeppelin University. Retrieved from <https://www.zu.de/institute/togi/assets/pdf/ai-parliament-2023/CM-230704-AI-applications-in-EP.03.07.2023.pdf>
- [40] National Cyber Security Centre et al. (2023). Guidelines for secure AI system development, <https://www.ncsc.gov.uk/files/Guidelines-for-secure-AI-system->

development.pdf?sc_src=email_3765039&sc_lid=361294739&sc_uid=ynhmtE2zh2&sc_lid=116.

- [41] Nguyen, A., Ngo, H. N., Hong, Y., Dang, B., Nguyen, B-P. T. (2023). Ethical principles for artificial intelligence in education. In: Education and Information Technologies, vol. 28, pp. 4221-4241.
- [42] Parla (2024). <https://www.parla.berlin>.
- [43] Pedreschi, D., Giannotti, F., Guidotti, R., Monreale, A., Ruggieri, S., & Turini, F. (2019). Meaningful Explanations of Black Box AI Decision Systems. Proceedings of the AAAI Conference on Artificial Intelligence, 33(01): pp. 9780-9784.
- [44] Peres, R., Schreier M., Schweidel, D., Sorescu, A. (2023). On ChatGPT and beyond: How generative artificial intelligence may affect research, teaching, and practice. In: International Journal of Research in Marketing, 40(02), pp. 269-275.
- [45] Perlman, A. (2024). The Legal Ethics of Generative AI. Suffolk University Law Review, 1-18, Forthcoming, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4735389.
- [46] Popvox Foundation (2024). The Modern Intern - 3 Steps For Working In Congress With GenAI. https://static1.squarespace.com/static/60450e1de0fb2a6f5771b1be/t/65ef47b9d15f07697a42eaab/1710180282939/The_Modern_Intern.pdf.
- [47] Shumailov, I., Shumaylov, Z., Zhao, Y., Gal, Y., Papernot, N., Anderson, R. (2023). The Curse of Recursion: Training on Generated Data Makes Models Forget. ArXiv, <https://arxiv.org/abs/2305.17493>.
- [48] SPD Bundestagsfraktion (2024). Leitlinien zur Nutzung von generativer KI in der parlamentarischen Arbeit, Positionspapier der SPD Bundestagsfraktion, Berlin. Retrieved from <https://www.spdfraktion.de/system/files/documents/position-ki-leitlinien.pdf>.
- [49] Stanford University (2021). Artificial Intelligence Index Report 2021, Stanford.
- [50] Trustbit benchmarks: <https://www.trustbit.tech/llm-benchmarks>.
- [51] Vaswani, A., Shazeer, A., Parmar, N., Uszkoreit, J., Jones, L., Gomez, AN., Kaiser, L., Polosukhin, I. (2017). Attention Is All You Need. 31st Conference on Neural Information Processing Systems (NIPS 2017), Long Beach, CA, USA.
- [52] von Lucke, J. (2014). KI-Technologien und ihre Auswirkungen auf die Verwaltungsarbeit. In: PDV News. 2024(1), p. 6-11.
- [53] von Lucke, J., Etscheid, J. (2020a). How artificial intelligence approaches could change public administration and justice. In: Jusletter IT, 21 December 2020.
- [54] von Lucke, J., Fitsilis, F. (2023). Using Artificial Intelligence in Parliament - The Hellenic Case. In: Lindgren, I., et al. Electronic Government. EGOV 2023. Lecture Notes in Computer Science, vol 14130. Springer, Cham, pp. 174-191.
- [55] von Lucke, J., Fitsilis, F. (2024). Technology Considerations regarding the Research and Development Agenda for the Use of AI in Parliaments. In: Government Information Quarterly, in Printing.
- [56] von Lucke, J., Fitsilis, F., Etscheid, J. (2023). Research and Development Agenda for the Use of AI. in Parliaments, in: David Duenas Cid, Nadzeya Sabatini, Loni Hagen und Hsin-Chung Liao (Hrsg.): DGO '23: Proceedings of the 24th Annual International Conference on Digital Government Research, Association for Computing Machinery (ACM), New York, pp. 423-433.
- [57] von Lucke, J., Frank, S. (2024). A few Thoughts on the Use of ChatGPT, GPT 3.5, GPT-4 and LLMs in Parliaments - Reflecting on the results of experimenting with LLMs in the parliamentary context. In: ACM Digital Government: Research and Practice. In printing.
- [58] White House (2022). Blueprint for an AI Bill of Rights. Washington D.C.
- [59] Zeppelin University (2023). <https://www.zu.de/institute/togi/ai-parliament-2023.php>.
- [60] Zhang, S. et al. (2022). OPT: Open Pre-trained Transformer Language Models. ArXiv, <https://arxiv.org/abs/2205.01068>.

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