STOA workshop

Generative AI:
opportunities, risks
and challenges

Participants’ booklet
Generative AI: opportunities, risks and challenges

STOA Workshop
Tuesday, 7 November 2023, 14:00 – 17:00 CET
Room SPAAK 7C50

Participants’ booklet
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1. Programme

14:00 - 14:10  Welcome and Introductory remarks
  • Ivars IJABS, MEP and STOA Vice-Chair

14:10 - 14:25  Introduction by the moderator of Panel 1
  • Jan HAJIČ, Professor of Computational Linguistics, Charles University, Prague

14:25 - 15:20  Panel 1: Understanding the Technology
  • Yordanka IVANOVA, DG CNECT, European Commission
  • Andrejs VASIĻJEVS, Tilde and University of Latvia
  • François YVON, CNRS & Sorbonne Université
    Q&A session

15:20 - 15:35  Break

15:35 - 15:50  Introduction by the moderator of Panel 2
  • Ana GARCIA ROBLES, Secretary General, Big Data Value Association

15:50 - 16:40  Panel 2: Social and ethical effects of Generative AI
  • Yordanka IVANOVA, DG CNECT, European Commission
  • Marko GROBELNIK, Jozef Stefan Institute, Slovenia
  • Kris SHRISHAK, Irish Council for Civil Liberties (ICCL)
    Q&A session

16:40 - 17:00  Closing remarks
  • Ivars IJABS, MEP and STOA Vice-Chair

The event will be held in English only, without interpretation.
The event will be webstreamed. The link will be published on the event page.
2. Introduction

Generative Artificial Intelligence (AI) is a branch of AI that focuses on the development of algorithms capable of generating original and creative outputs, such as texts, images, music, and more. One of the most prominent examples of generative AI is Large Language Models (LLMs), which have been at the forefront of recent breakthroughs in AI research. Large Language Models, such as OpenAI's ChatGPT, are built using deep learning techniques and trained on massive datasets containing vast amounts of text from diverse sources. LLMs have demonstrated impressive capabilities in various applications, such as natural language understanding, question answering, content generation and translation. While these technologies are expected to bring huge benefits in the coming years, spurring innovation in many sectors such as industry and education, their disruptive nature raises questions among general users, NGOs and policymakers around privacy and intellectual property rights, liability and accountability, and concerns about their potential to spread disinformation and misinformation. EU lawmakers need to strike a delicate balance between fostering the deployment of these technologies while making sure adequate safeguards are in place.

To maximize the benefits and mitigate risks related to the adoption of generative AI, the European Union should take stock of current and planned investments and policy actions, such as the European AI Strategy, Digital Single Market, and Horizon Europe programs. These efforts can be leveraged to support research, development, and innovation in generative AI, while also addressing the ethical, legal, and social implications of these technologies.

To secure the European Union's strategic autonomy and global competitiveness in generative AI, it is crucial to invest in research and development, foster collaborations between academia and industry, and promote the growth of European AI startups. Developing EU-based LLMs and technologies can help reduce dependency on external players and foster a competitive ecosystem.

EU lawmakers are currently engaged in protracted negotiations to define an EU regulatory framework for AI that would subject 'high-risk' AI systems to a set of requirements and obligations in the EU. The exact scope of a proposed artificial intelligence act (EU AI act) is a bone of contention. While the European Commission's original proposal did not contain any specific provisions on general-purpose AI technologies, the EU Council has proposed that they should be considered. Scientists have meanwhile warned that any approach classifying AI systems as high-risk or not depending on their intended purpose would create a loophole for general purpose systems, since the future AI act would regulate the specific uses of an AI application but not its underlying foundation models.

STOA has published more than 30 publications on artificial intelligence since 2016. In addition to the standard studies, STOA published a series of other publications, like 'What if?' and At-a-glance publications providing awareness-raising overviews of current and relevant techno-scientific trends, as well as blog posts, articles, interviews, videos and podcasts (see AI Repository). With this new event, more specifically dedicated to generative AI, STOA aims to:

- explore, highlight and discuss the opportunities, risks and challenges related to the rapid advances in generative artificial intelligence in areas such as Large Language Models;
- provide an overview of research and development trends and discuss necessary prerequisites to secure the strategic autonomy of European Union and its competitiveness in the global race for leadership in generative AI;
- assess disruptive effect of generative AI on social, economical and political processes and discuss necessity for regulatory mechanisms to cope with the related risks;
- take stock of the EU current and planned investments and policy actions and their relevance to maximize the benefits and mitigate risks related to the widespread adoption of generative AI.
3. Welcome and introductory remarks

Ivars IJABS, MEP and STOA Vice-Chair

Ivars Ijabs is a Member of the European Parliament and 2nd Vice-Chair of the Panel for the Future of Science and Technology (STOA). He is a member of the Committee on Industry, Research and Energy (ITRE), and the Delegation for relations with the United States, and a substitute member of the Committee on the Internal Market and Consumer Protection (IMCO), the Delegation for relations with the countries of the Andean Community, the Delegation for relations with the countries of Southeast Asia and the Association of Southeast Asian Nations (ASEAN) and the Delegation to the Euro-Latin American Parliamentary Assembly. From 2014 to 2019 Ivars Ijabs was Chairman of the Board of the Foundation for an Open Society DOTS. From 2009 to 2013 he was Chairman of the Board of the Latvian Association of Political Scientists. Since 2018 he is a Corresponding member of the Latvian Academy of Science.

4. Speakers

4.1. Jan HAJIČ, Professor of Computational Linguistics, Charles University, Prague

Jan Hajič is a full professor of Computational Linguistics and a deputy director of the Institute of Formal and Applied Linguistics at Charles University, Prague, Czech Republic. He also holds a director position of a Language Technology Infrastructure LINDAT/CLARIAH-CZ in the Czech Republic, which is part of the EU CLARIN network. His work experience includes industrial research (IBM Research, NY, USA) and academia (at home and at Johns Hopkins University). He has published more than 180 papers, and a book on computational morphology. He has been the PI or Co-PI of numerous international research projects, including an NSF large ITR project “Malach” and an NSF PIRE project on semantics and machine translation. Since March 2016, he holds an adjunct professor position at the University of Colorado Boulder, working with Martha Palmer and others. He is also the chair of the executive board of META-NET, the European language technology network.
4.2. Ana GARCIA ROBLES, Secretary General, Big Data Value Association

Ana García Robles serves as the Secretary General of the Big Data Value Association (BDVA). With a background in engineering, she possesses a wealth of experience in design, innovation, and technology strategy both in both the private and public/private sector. Her expertise spans across diverse domains, including Telecommunications, Big Data, Artificial Intelligence, and Living Labs, with a strong focus on applying technology in sectors such as Urban Innovation, Health, Agri-Food, Mobility, Education, and the Public Sector. Her extensive experience extends to European public-private research and innovation ecosystems and partnerships, where she has excelled in managing communities, projects, research and innovation programs, as well as developing technological roadmaps in collaboration with industry, research institutions, and the public sector. Ana is speaker at conferences, an inventor, and a contributor to various publications in the fields of Big Data, Artificial Intelligence, Smart Cities, and innovation ecosystems.

4.3. Yordanka IVANOVA, DG CNECT, European Commission

Yordanka Ivanova is a Legal and Policy Officer in the European Commission (DG CNECT) in the unit responsible for AI Policy Development and Coordination. She is one of the team members who drafted the Commission proposal for the AI Act and who follow now the ongoing negotiations with the Council and the European Parliament. Yordanka also follows international activities related to AI, including in particular cooperation with the OECD and Council of Europe.
4.4. Andrejs VASIĻJEVS, Tilde and University of Latvia

Andrejs Vasiļjevs is the co-founder and a board member of Tilde, as well as a senior researcher at the University of Latvia. Until 2022 he served as executive chairman of Tilde, a leading European language technology company specializing in machine translation and other AI-based technologies for complex languages. He is dedicated to driving innovation and fostering extensive collaboration between industry and academia to advance multilingual solutions for digital Europe. He initiated the creation of national language technology platforms in several countries and led the creation of the consolidated European Terminology network, EuroTermBank. He is actively involved in the implementation of the Language Data Space, an intrinsic part of the European language data ecosystem. He is a deputy chair of the Multilingual Europe Technology Alliance META-NET and serves on the board of directors of the Big Data Value Association (BDVA). He has previously served as the chair of the Northern European Association for Language Technology (NEALT) and was elected to the Council and Bureau of the UNESCO Information for All Programme. He holds a PhD in Computer Science from the University of Latvia and is an Honorary Doctor of the Academy of Sciences of Latvia.

Key message:

With their ability to understand, interpret, and generate a plethora of languages, Generative AI, particularly large language models (LLMs), has a transformative impact on the diverse linguistic ecosystem of Europe. Language technologies and LLMs are crucial for smaller languages. To ensure the use and sustainable development of a smaller language, it should receive the same support and opportunities in AI as larger languages do. AI-based language services should be readily accessible to all sectors, including the public one, businesses and education. This approach is well-recognized in Latvia, where the national language technology platform HUGO.LV provides free online services such as machine translation, spoken language processing, and virtual assistants. The integration of LLMs into this platform enhances the quality and breadth of the language technology service capabilities. Language data is the foundational element for the effectiveness and accuracy of LLMs. As such, it is essential to ensure that language data is representative of the diversity of European languages and cultures. LLMs can then be deployed to provide essential AI-based language services across public sectors, businesses, and educational institutions, boosting the technological vitality of smaller languages.

The deployment of LLMs also raises new challenges, including ethical aspects and data representativeness. It is essential to ensure that LLMs are deployed in an ethical and responsible manner, respecting the privacy and security of linguistic data. Additionally, it is important to address the issue of data representativeness to ensure that LLMs are trained on a diverse set of data that reflects the diversity of European languages and cultures. Despite the challenges, the potential benefits of generative AI for nurturing European linguistic diversity are vast. By collaborating and innovating, AI developers, policymakers, and linguistic communities can work together to ensure that the blossoming of AI resonates with the preservation and enrichment of Europe’s rich and diverse linguistic heritage.
Françcois Yvon is a senior CNRS researcher at the ISIR laboratory of Sorbonne Université in Paris, France, working on Machine Translation and Multilingual Language Models. Before this F. Yvon has been leading activities in Machine Translation at LISN / LIMSI in Orsay for more than 15 years, resulting in more than one hundred scientific publications on all aspects related to the development and evaluation of multilingual language processing technologies, from word and sentence alignment to translation modelling and evaluation, including recent work on multi-domain adaptation in Machine Translation and on cross-lingual transfer learning issues. He has acted as coordinator or Principal Investigator in multiple past national and international projects in Machine Translation such as Quaero or H2020/QT21 and has supervised more than 25 PhDs on related topics. Between 2013 and 2020, Dr. Yvon was also the general director of the LIMSI laboratory in Orsay. He is a board member of the European chapter of the Association for Computational Linguistics, of the MetaNet network, and has recently contributed as an expert on linguistic technologies for the French language to several European projects (European Language Resource Collection, ELE - European Language Equality, ELG - European Language Grid).

Key message:

Generative AIs, in the form of Large Language Models, have transformed the language technology (LT) landscape. Todays language technologies are ever more effective, in an increasing number of practical situations, for an increasing number of users (citizens, workers, customers) and modalities (text, speech, sign languages). The same underlying mathematical models are also revolutionizing other technologies, such as image recognition and generation, robot command, computational biology and chemistery, to name a few. They open new perspectives to develop better and friendlier and more inclusive interfaces to the vast array of information available online. However, generative AIs rest on the exploitation of massive data sources, which only exist for a restricted number of textual genres, domains and languages. This greatly limitates the scope of application of these technologies, as well as their overall quality for large segments of the European population. The lack of linguistic diversity of existing data sources is already threatening the development of LTs for many official, as well as non-official, languages. This is where multilingual language technologies, such as machine translation or cross-lingual transfer learning, can help. This will however require a coordinate effort to make existing linguistic resources easier to discover, share, process and reuse, in a way that is both respectful of the content producers’ rights, and traceable for LT developers and end users.
4.6. Marko GROBELNIK, Jozef Stefan Institute, Slovenia

Marko Grobelnik is an expert researcher in the field of Artificial Intelligence (AI). Focused areas of expertise are Machine Learning, Data/Text/Web Mining, Network Analysis, Semantic Technologies, Deep Text Understanding, and Data Visualization. Marko co-leads the Department for Artificial Intelligence at Jozef Stefan Institute, co-founded UNESCO International Research Center on AI (IRCAI), and is the CEO of Quintelligence.com specialized in solving complex AI tasks for the commercial world.

He collaborates with major European academic institutions and major industries such as Bloomberg, British Telecom, European Commission, Microsoft Research, New York Times. Marko is co-author of several books, co-founder of several start-ups and is/was involved into over 50 EU funded research projects in various fields of Artificial Intelligence.

Marko represents Slovenia in OECD AI Committee (AIONE) and in Council of Europe Committee on AI (CAHAI). In 2016 Marko became Digital Champion of Slovenia at European Commission.

4.7. Kris SHRISHAK, Irish Council for Civil Liberties (ICCL)

Dr Kris Shrishak is a Senior Fellow at the Irish Council for Civil Liberties. He focusses on fairness, explainability and transparency in algorithmic decision making, surveillance, data rights, privacy and privacy enhancing technologies. Previously Kris was a researcher at Technical University Darmstadt in Germany where he worked on applied cryptography, privacy enhancing technologies and Internet security.

Key message:
Companies are deploying generative AI systems for their benefits while the harms are being seen and felt by people today. Harms to privacy and data protection, harms faced by copyright holders. There are also societal risks through the formation of oligopolies that control the infrastructure and harms in the form of false promises. Legislators and regulators should protect people from these harms by requiring independent audits and enforcing regulations.
5. About STOA

5.1. Mission

The Panel for the Future of Science and Technology (STOA) forms an integral part of the structure of the European Parliament. Launched in 1987, STOA is tasked with identifying and independently assessing the impact of new and emerging science and technologies.

The goal of its work is to assist, with independent information, the Members of the European Parliament (MEPs) in developing options for long-term, strategic policy-making.

The STOA Panel

The STOA Panel consists of 27 MEPs nominated from eleven permanent parliamentary committees: Agriculture & Rural Development (AGRI), Culture & Education (CULT), Employment & Social Affairs (EMPL), Environment, Public Health & Food Safety (ENVI), Internal Market & Consumer Protection (IMCO), International Trade (INTA), Industry, Research & Energy (ITRE), Legal Affairs (JURI), Civil Liberties, Justice and Home Affairs (LIBE), Regional Development (REGI) and Transport & Tourism (TRAN).

The STOA Chair for the second half of the 9th parliamentary term is Christian EHLER, with Ivo HRISTOV and Ivars IJABS elected as 1st and 2nd Vice-Chairs, respectively.

The STOA approach

STOA fulfils its mission primarily by carrying out science-based projects. Whilst undertaking these projects, STOA assesses the widest possible range of options to support evidence-based policy decisions. A typical project investigates the impacts of both existing and emerging technology options and presents these in the form of studies and options briefs. These are publicly available for download via the STOA website.

Some of STOA’s projects explore the long-term impacts of future techno-scientific trends, with the aim to support MEPs in anticipating the consequences of developments in science. STOA communicates its findings to the European Parliament by organising public events throughout the year.

Focus areas

STOA activities and products are varied and are designed to cover as wide a range of scientific and technological topics as possible, such as genetic engineering, antimicrobial resistance, energy, pollution, sustainable agriculture and fishing, artificial intelligence & digital technologies such as blockchain, 5G, satellite communications, IoT and Internet, Covid-19 and health in general.

These activities are clustered within three main thematic areas: Artificial intelligence & other disruptive technologies, The new Green Deal, and Quality of life. In addition, STOA’s work addresses four cross-cutting policy areas: Science, technology and innovation; Societal and ethical challenges; Economic challenges; and Legal challenges.

ESMH

The European Science-Media Hub (ESMH), operating under the political responsibility of the STOA Panel, is a platform to promote networking, training and knowledge sharing between the European Parliament, the scientific community and the media. The ESMH creates a network among policymakers, scientists and media involving science, academia, educational and research entities, and professional associations of journalists and scientists.

For journalists and media representatives, the ESMH organises training sessions and workshops on current technological developments, both as subjects of their reporting and as means of facilitating
their work. Via media monitoring and media intelligence tools, the ESMH follows the most popular topics in the field of science and technology on different platforms including journals, newspapers and social media.

The ESMH makes information available to journalists, other media and citizens about new scientific developments, as well as about scientific topics that attract media attention, and promotes information based on evidence.

**EP Forum for Academic Freedom**

In 2022, the STOA Panel established the EP Forum for Academic Freedom, as its new initiative. This authoritative platform monitors the state of play of the academic freedom in the EU member states and offers a platform to all stakeholders to discuss how to protect the academic freedom in Europe.

The EP Forum for Academic Freedom publishes studies and organises events to tackle the different aspects of the academic freedom.
## 5.2. STOA Panel members

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<td>Rosa D’AMATO (Greens/EFA, IT)</td>
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<td>EP Vice-President STOA Bureau member</td>
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<td>Christian EHLER (EPP, DE)</td>
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<td>STOA Chair STOA Bureau member</td>
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<td>Ivo HRISTOV (S&amp;D, BG)</td>
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<td>Ivars IJABS (Renew Europe, LV)</td>
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<td>Atidzhe ALIEVA-VELI (Renew Europe, BG)</td>
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<td>Lina GALVEZ MUÑOZ (S&amp;D, ES)</td>
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<td>David CORMAND (Greens/EFA, FR)</td>
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<td>Martin HLAVÁČEK (Renew Europe, CZ)</td>
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<td>Marina KALJURAND (S&amp;D, EE)</td>
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<td>Susana SOLÍS PÉREZ (Renew Europe, ES)</td>
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<td>Radan KANEV (EPP, BG)</td>
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<td>Barbara THALER (EPP, AT)</td>
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<td>Maria-Manuel LEITÃO-MARQUES (S&amp;D, PT)</td>
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<td>Victor NEGRESCU (S&amp;D, RO)</td>
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<td>Bronis ROPĖ (Greens/EFA, LT)</td>
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<td>Juan Ignacio ZOIDO ÁLVAREZ (EPP, ES)</td>
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<td>Jordi SOLÉ (Greens/EFA, ES)</td>
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INTA: International Trade  
ITRE: Industry, Research and Energy  
JURI: Legal Affairs  
LIBE: Civil Liberties, Justice and Home Affairs  
REGI: Regional Development  
TRAN: Transport and Tourism
5.3. STOA administration

Head of Unit - Scientific Foresight Unit (STOA)
Marcus SCHEUREN
Luisa ANTUNES
Marika ARMANOVICA
Andrés GARCÍA HIGUERA
Vasco GUEDES FERREIRA
Nera KULJANIĆ
Jurgita LEKAVICIUTE
Antonio VALE
Aleksander VALJAMAE

European Science-Media Hub (ESMH)
Svetla TANOVA, Coordinator
Vitalba CRIVELLO
Carolien Martina NIJENHUIS

EP Forum for Academic Freedom
Eszter FAY

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Michal HUBAR
Rachel MANIRAMBONA
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