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DRAFT REPORT

on artificial intelligence in education, culture and the audiovisual sector
(2020/2017(INI))

Committee on Culture and Education

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MOTION FOR A EUROPEAN PARLIAMENT RESOLUTION

on artificial intelligence in education, culture and the audiovisual sector (2020/2017(INI))

The European Parliament,

- having regard to Article 167 of the Treaty on the Functioning of the European Union,
- having regard to the Commission report of 19 February 2020 to the European Parliament, the Council and the European Economic and Social Committee on the safety and liability implications of Artificial Intelligence, the Internet of Things and robotics (COM(2020)0064),
- having regard to the Commission White Paper of 19 February 2020 entitled ‘Artificial Intelligence - A European approach to excellence and trust’ (COM(2020)0065),
- having regard to the Commission communication of 19 February 2020 to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions entitled ‘A European strategy for data’ (COM(2020)0066),
- having regard to the Commission communication of 25 April 2018 entitled ‘Artificial Intelligence for Europe’ (COM(2018)0237),
- having regard to the Commission communication of 17 January 2018 to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Digital Education Action Plan (COM(2018)0022),
- having regard to its resolution of 12 February 2019 on a comprehensive European industrial policy on artificial intelligence and robotics¹,
- having regard to its resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics²,
- having regard to its resolution of 1 June 2017 on digitising European industry³,
- having regard to its resolution of 11 September 2018 on language equality in the digital age⁴,
- having regard to Rule 54 of its Rules of Procedure,
- having regard to the opinions of the Committee on Civil Liberties, Justice and Home Affairs, the Committee on the Internal Market and Consumer Protection, the Committee

¹ Texts adopted, P8_TA(2019)0081.

² OJ C 252, 18.7.2018, p. 239.

³ OJ C 307, 30.8.2018, p. 163.

⁴ OJ C 433, 23.12.2019, p. 42.

on Legal Affairs and the Committee on Women's Rights and Gender Equality,

- having regard to the report of the Committee on Culture and Education (A9-0000/2020),
 - A. whereas artificial intelligence (AI) technologies are being developed at a fast pace, and are increasingly being used in education, culture and the audiovisual sector;
 - B. whereas the availability of high-quality and meaningful data is essential for the development of AI;
 - C. whereas the use of AI raises many concerns regarding the ethics and transparency of data collection, use and dissemination; whereas the benefits and risks of AI in these sectors must be carefully assessed;
 - D. whereas high-quality, fast and secure pervasive connectivity, high-capacity networks, IT expertise and digital equipment and infrastructure are preconditions for the broad deployment of AI in the Union;
 - E. whereas it is essential to ensure that people in the Union acquire the necessary skills to prepare themselves for the increasing presence of AI in all aspects of human activity;
 - F. whereas AI can be used to improve learning and teaching methods, notably by helping education systems to use data to improve educational equity and quality, whilst promoting personalisation and better access to education;
 - G. whereas culture plays a central role in the use of AI at scale and is emerging as a key discipline for cultural heritage thanks to the development of innovative technologies and tools and their effective application to respond to the needs of the sector;
 - H. whereas AI can be used to create innovative ways to make datasets of cultural artefacts held by cultural institutions across the Union widely accessible whilst allowing users to navigate the vast amount of cultural and creative content;
 - I. whereas the use of AI for media content, notably personalised content recommendations, raises issues regarding cultural and linguistic diversity;
 - J. whereas AI could have a substantial impact on special needs education, as well as on the accessibility of cultural and creative content for people with disabilities;
 - K. whereas AI-generated fake content, such as 'deepfakes', is growing exponentially and constitutes an imminent threat to democracy;
 1. Reiterates the importance of developing quality and inclusive data systems for use in deep learning as the use of low-quality, outdated, incomplete or incorrect data may lead to poor predictions and in turn discrimination and bias; highlights that it is essential to develop capabilities at both national and Union level to improve data collection and systematisation;
 2. Stresses the need to address the ethical and legal issues raised by the use of AI such as the transparency and accountability of algorithms and the ownership, collection, use and dissemination of data;

Education

3. Recalls the importance of strengthening digital skills at Union level as a prerequisite for the use of AI in education; calls on the Commission, in that regard, to make AI-related skills one of the main priorities of its next Digital Education Action Plan;
4. Stresses that the learning benefits of using AI in education will depend not on AI itself, but on how teachers use AI to meet the needs of both students and teachers; points out, therefore, the need for AI programmers to involve teachers in designing AI-sustainable solutions that are suitable for real-life educational environments;
5. Highlights, moreover, the need to train teachers so they can adapt to the realities of AI-powered education and acquire the necessary skills to use AI in a pedagogical and meaningful way;
6. Underlines the importance of training highly skilled professionals in the field of AI and of upskilling the future workforce to enable it to cope with the realities of an AI-driven labour market; thus encourages the Member States to upgrade their educational offers with AI-related skills and to put in place specific curricula for AI developers;

Cultural heritage

7. Stresses that AI can play a significant role in preserving, promoting and managing cultural heritage, notably by monitoring and analysing changes to cultural heritage sites caused by threats such as climate change, natural disasters and armed conflicts;
8. Stresses that AI provides new opportunities for cultural institutions, such as museums, to produce innovative tools for documenting and accessing cultural heritage sites, notably through 3D modelling and augmented virtual reality;
9. Stresses that good practices in AI for cultural heritage accessibility should be identified and shared amongst cultural networks across the Union;
10. Stresses that AI can also be used to monitor the illicit trafficking of cultural objects and the destruction of cultural property, whilst supporting data collection for recovery and reconstruction efforts;

Cultural and creative sectors (CCS)

11. Deplores the fact that culture is not amongst the priorities outlined in policy options and recommendations on AI at Union level, notably in the Commission's white paper of 19 February 2020 on AI;
12. Stresses the need to set up a coherent vision of AI in the CCS at Union level; calls on the Member States to strengthen the focus on culture in their AI national strategies to ensure that cultural diversity is safeguarded and promoted at Union level in the new digital context;
13. Calls on the Commission and the Member States to support critical public discourse on AI and to raise awareness of the benefits of its use in the CCS;

Audiovisual sector

14. Stresses that algorithms used by media service providers and video sharing platforms should be designed in such a way that they do not privilege specific works by limiting their ‘personalised’ suggestions to the most popular works, for targeted advertising, commercial purposes or to maximise profit;
15. Stresses, moreover, that the use of AI in algorithm-based content recommendations on online audiovisual media services, such video on demand services, may have a serious impact on cultural diversity, notably regarding the obligation to ensure the prominence of European works under Article 13 of the Audiovisual Media Services Directive (Directive (EU) 2018/1808);
16. Suggests establishing a clear ethical framework for the use of AI in media to ensure access to culturally and linguistically diverse content at Union level, based on accountable, transparent and inclusive algorithms; stresses, in that regard, that the framework should also address the misuse of AI to disseminate fake news and online misinformation;

Online disinformation: deepfakes

17. Recalls that with new techniques rapidly emerging, detecting deepfakes is becoming increasingly challenging because malicious deepfake makers can generate algorithms that can be trained to evade detection;
18. Welcomes recent initiatives and projects to create more efficient deepfake-detecting tools and transparency requirements; stresses, in that regard, the need to explore and invest in methods for tackling deepfakes as a crucial step in combatting misinformation;

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19. Instructs its President to forward this resolution to the Council and the Commission.

EXPLANATORY STATEMENT

“I believe that at the end of the century the use of words and general educated opinion will have altered so much that one will be able to speak of machines thinking without expecting to be contradicted”

Alan Turing, 1947

The last decade has been transformative for AI, arousing both fear and excitement for humanity. Seen as ‘the new electricity’, AI has advanced to the point that it will have such a systemic impact that it could substantially change all aspects of society for the next century. Whilst it is easy to understand the potential effects of AI on sectors such as telecommunications, transportation, traffic management, health care, evaluating its long-term effects on education, culture and the audiovisual sector is considerably more challenging. Although there is a consensus that AI and automation is likely to create more wealth and to simplify a vast array of processes, the use of AI has also raised serious concerns that it may result in an increase in inequality, discrimination and unemployment.

The potential impact of AI on education, culture and the audiovisual sector is however rarely discussed and is mostly unknown. Yet this question is of utmost importance because AI is already being used to teach curricula, as well as to produce movies, songs, stories and paintings.

The purpose of this report is therefore to understand concretely how AI currently impacts these sectors and how future technological advances in AI will impact them further over the next decade. In particular, the Rapporteur reflects on how AI may transform these sectors and which particular regulatory challenges the Union may have to face in that regard.

(i) AI is reshaping education

AI is transforming learning, teaching, and education radically. The whirlwind speed of technological development accelerates the radical transformation of educational practices, institutions and policies. In this field, AI has many applications, such as customisable approaches to learning, AI-based tutors, textbooks and course material with customised content, smart algorithms to determine best teaching methods, AI game engines, and adaptive user models in personalised learning environments (PLE) which can allow early identification of difficulties, such as dyslexia or risks of early school leaving.

Personalised learning experience is the cornerstone of the use of AI in education. It would allow students to enjoy an educational approach that is fully tailored to their individual abilities, needs and difficulties, whilst enabling teachers to closely monitor students’ progress. However in order to make personalised education a reality, large amounts of personal data need to be collected, used and analysed.

The Rapporteur stresses in that regard that the current lack of access to personal data on students is likely to prevent the successful implementation of AI in education. It is thus

essential to ensure the safety and transparency of personal data collection, use, management and dissemination, whilst safeguarding confidentiality and privacy of learners' personal data. Moreover, addressing the risks of AI potential bias, as well as tackling the issue of data storage should be a priority in any initiatives for the wide deployment of AI in the education system at Union level.

Although there is little chance that teachers will be replaced by machines in the near future, the increasing use of AI in education implies the need to rethink education overall, as well as to reflect on the redefinition of teaching, the role of the teachers, and, as a result, the subsequent retraining required to adapt to a AI-based educational system.

Considering that less than 40% of teachers in the Union have received courses on ICT inclusion in the classroom throughout their Initial Teacher Education (ITE), the Rapporteur would like to stress the crucial importance of **training teachers so they acquire digital skills as a prerequisite to becoming familiar with AI**. They could then take advantage of AI technologies, but also make them aware of the potential dangers of AI.

This issue can also be seen more widely, with 42% of the Union population still lacking basic digital skills. There are also serious regional discrepancies in access to digital infrastructure and in digital skills attainment across the Union.

Emerging technology trends related to digital transformation, such as AI, have profound implications in terms of the skills required for the evolving digital economy. In particular, the notion of lifelong learning in AI has emerged as one of the key strategies for job security and employment in the digital era.

The Rapporteur suggests that citizens are trained to acquire the necessary digital skills, whilst carefully assessing what AI-related skills are needed today and in the future, and that the necessary measures are taken to address existing and emerging skill gaps.

It also crucial to ensure that the prerequisites for the deployment and the relevant use of AI, in terms of internet access, connectivity, networks and infrastructures, are met.

(ii) AI can be used to safeguard and promote cultural heritage

In recent years, AI has been of increasing relevance to cultural heritage, notably in response to potential modern threats, such as climate change or conflicts. AI can have various applications in that regard: it can be used to enhance users' experience by enabling visitors of cultural institutions and museums to create personal narrative trails or to enjoy virtual tour guides. Conversational bots could communicate in an interactive way about cultural heritage on any topics and in any language. They would also make the access to information easier whilst providing a vivid cultural experience to users.

AI could also facilitate the understanding of the history of the Union, such as how the 'Time Machine Project' aims to create advanced AI technologies to make sense of vast amounts of information from complex historical data sets stored in archives and museums. This enables the transformation of fragmented data into useable knowledge by mapping Union's entire social, cultural and geographical evolution. This may facilitate the exploration of the cultural, economic, and historical development of European cities, and improve understanding thereof.

(iii) AI changes the way the cultural and creative industries work, in particular the audiovisual sector

AI use is rapidly expanding in media with many applications:

- Data-driven marketing and advertising, by training machine learning algorithms to develop promotional movie trailers and design advertisements,
- Personalisation of users' experience, by using machine learning to recommend personalised content based on data from user activity and behaviour,
- Search optimisation, by using AI to improve the speed and efficiency of the media production process and the ability to organise visual assets,
- Content creation, by generating video clips from automatic video segments ready for broadcast and special effects, such as re-creating a younger version of an actor digitally or creating new content with a deceased actor,
- Script writing such as simple factual text creation (sports and news reports produced by robots), but also for writing fictional stories, such as the experimental short movie 'Sunspring',
- Viewer interaction on complex story lines, such as the last episode of the British series 'Black Mirror', 'Bandersnatch',
- Automated captioning and subtitling, such audio-to-text processes, for viewers with disabilities
- Automated content moderation on audiovisual content.

Whilst AI offers a wide range of opportunities in producing high quality cultural and creative content, the centralised distribution and access to such content raises a number of ethical and legal issues, notably on data protection, freedom of expression and cultural diversity.

Cultural and creative works, notably audiovisual works, are mainly distributed through large centralised platforms, which conditions media consumption to the proprietary algorithms developed by these platforms.

The Rapporteur points out that algorithm-based personalised recommendations are potentially detrimental to cultural and linguistic diversity, preventing under-represented cultural and creative content from appearing in suggestions provided by these systems. On the largest platforms, the criteria used to select or recommend a work are neither transparent nor auditable, and are likely to be decided on the basis of economic factors that solely benefit these platforms.

The question of cultural and linguistic diversity in recommendation systems is therefore crucial and must be addressed. The Rapporteur stresses the need to set up **a clear legal**

framework for transparent, accountable and inclusive algorithms, in order to safeguard and promote cultural and linguistic diversity.

Regulatory challenges triggered by AI applications within the audiovisual sector are also linked to existing legal acts, such as the AVMSD. Thus a more in-depth assessment might be needed as to the urgency and/or political momentum for future adaptations of these files to AI.

Whilst AI can help empower many creators, making CCS more prosperous and driving cultural diversity, the large majority of artists and entrepreneurs may not still be familiar with AI tools.

There is a lack of technical knowledge among creators precluding them from experimenting with machine learning and reaping the benefits they can bring. Therefore it is essential to assess which skills would be needed in the near future, whilst at the same time improving training systems, including upskilling and reskilling, guaranteeing lifelong learning throughout the whole working life and beyond.

In that context, the Rapporteur suggests **setting up an AI observatory with an objective of harmonising and facilitating evidence-based scrutiny of new developments in AI in order to tackle the question of auditability and accountability of AI applications in CCS.**

(v) Countering fake news

AI-technologies are increasingly used to disseminate fake news, notably through the use of ‘deepfakes’.

Deepfakes are synthetic images or videos generated by AI using ‘deep learning machines’ and generative adversarial networks (GAN). Humans cannot distinguish deepfakes from authentic content. Deepfakes can be used for all kinds of trickery, most commonly used for ‘face swaps’, from harmless satires and film tweaks to malicious hoaxes, targeted harassment, deepfake porn or financial fraud. The danger of deepfakes is to make people believe something is real when it is not, and thus may be used as a particularly powerful and potent weapon for online disinformation, spreading virally on platforms and social media, where they can influence public opinion, voting processes and election results.

Whilst AI is frequently singled out for its role in spreading fake news, it could also play a significant role in countering and combating fake news and disinformation, as evidenced by projects such as “Fake News Challenge”. AI systems can reverse-engineer AI generated fake news, and help spot manipulated content. However algorithms generating deepfakes are getting more and more sophisticated, and detecting them as a result is getting increasingly difficult.

The Rapporteur therefore stresses the need to **tackle the misuse of AI in disseminating fake news and online misinformation, notably by exploring ways to efficiently detect deepfakes.**