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ARTIFICIAL INTELLIGENCE FOR THE MEDIA AND SOCIETY

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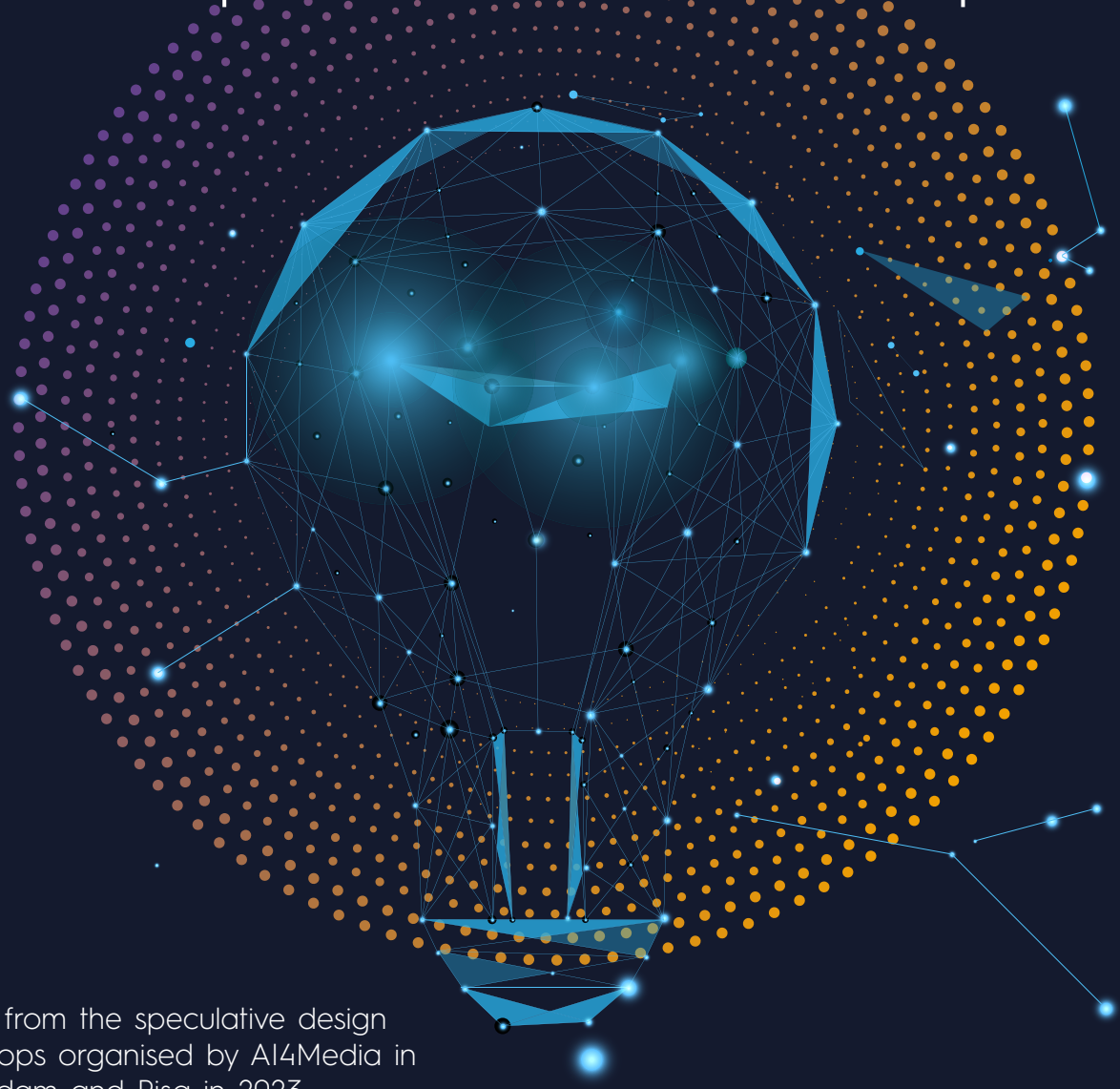
AI4Media Speculative Scenarios Booklet

Exploring AI Potential and Collaborations in the Evolving European Media Landscape



Results from the speculative design workshops organised by AI4Media in Amsterdam and Pisa in 2023

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 951911

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Introduction

Researchers in Europe are developing a wide array of AI techniques that could benefit the media sector - from sentiment analysis and text-based video retrieval to video feature classification and synthetic speech detection. But how can we bridge the gap between research and application and bring these technologies closer to the industry professionals and their workflows?

This is the focus of **AI4Media**, a Centre of Excellence delivering next-generation AI research and training at the service of media, society and democracy. The network brings together researchers, developers and media professionals from across the EU to translate fundamental AI research into concrete solutions to support the media industry value chains now and in the future.

Over the past years, the Centre of Excellence explored ***seven use cases*** that cover a variety of topics such as disinformation, news research and production, media moderation, organisation of audiovisual archives, game design, human-machine artistic co-creation, and social sciences research.

As new AI techniques emerge and mature, they open possibilities for new application areas in the media industry. This prompts us to explore the horizon - what future use cases and scenarios can we imagine for these technologies? What new business opportunities will they create for the media sector?

Speculative Designs

To this end, AI4Media organised two **Speculative Design sessions** - creative workshops to develop future-oriented scenarios in the media sector supported by AI-enhanced tools. Using both future thinking and design thinking approaches, participants worked in teams to envision the future of media. The workshops were designed and facilitated by ***ZEZA Learning Experience Design.***

Based on the AI4Media catalogue of AI ***techniques*** and ***software***, over 50 participants took part in co-creating **nine innovative scenarios** that respond to challenges faced by the media industry.

The scenarios presented in this booklet aim to inspire researchers and media practitioners to forge connections between the capabilities offered by fundamental AI research and the urgent challenges faced by the media industry.

The scenarios are not ready-to-market ideas but, essentially, paint a picture of the future potential of technologies in the AI4Media ecosystem. The connected technologies can make parts of these scenarios possible.

AI4Media seeks collaboration with media partners and small to medium enterprises for further testing of the technologies detailed in this document and to gather feedback from media professionals. If you're interested in collaborating, please contact us at ***info@ai4media.eu***

First Speculative Design workshop in Amsterdam, the Netherlands in June 2023

Second Speculative Design workshop in Pisa, Italy in October 2023

Scenario 1:

RecGraph

Citizens become much more dependent on news recommender systems which they cannot control nor have insights into how they operate. A lot of content is AI-generated or manipulated while often news recommendations lack diversity and contribute to the creation of information bubbles. How can we give back control to users and increase the transparency of recommender systems?

The idea

AI plays a significant role in recommender systems, and yet it remains beyond the consumers' understanding and control how such recommender systems work to serve their best interest and needs and not the interests of private companies and advertisers. What if there was a way to make recommendations more transparent, give insights on possible biases and understand why certain things are recommended and others are not?

AI4Media partners have developed knowledge-graph based techniques for explainable recommender systems in the news domain. These techniques use graphs that incorporate a large amount of knowledge (user profiles, content features, etc.) to visually represent how the recommendation process works, using different levels of complexity.

Illustrator: Magda Rysuje

RecGraph is a plug-in for recommender systems that exploits the aforementioned technology to increase the transparency and understandability of recommender systems while also allowing the user to change the parameters that affect recommendations, thus making sure that recommended content is of high-quality, diverse and relevant to the user's interests. RecGraph presents multidimensional visual knowledge graphs on the user's screen that analyse the recommendations they get and the rationale behind them, based on the personal data and the content information used to generate these recommendations. Furthermore, the plug-in can offer add-ons for diversity score estimation, deepfake & disinformation detection, frame analysis and fallacious argument classification, adding this information on the visual graph using tags to tag content and content sources. In addition, the plug-in allows the user to tailor the recommendation process by, for example, excluding sources that are tagged as disinformation spreaders or favouring sources with high diversity scores, or filtering information based on topics of interest and more.

RecGraph will also leverage LLMs, by offering a chatbot assistant that will explain why specific content was recommended, how the user profile is generated or adapted, etc. Moreover, RecGraph can use (upon consent) data from other users of the recommender system to visualise your profile or the recommendations you get compared to those of the community of users, thus providing, on one hand, insights about possible eco-chambers or information bubbles and allowing you, on the other hand, to explore or select alternative information clusters. RecGraph gives back the control to users and allows them to make sure that they get diverse and unbiased news recommendations, which can also be tailored to the needs and interests of the moment. RecGraph aims to provide a universal standard on how companies present and explain news recommendations data.

Available technology developed by AI4Media to be used for this product development:

- Explainable graphs for explainable news recommendations - Access ***here***;
- Fairness metrics and algorithms to mitigate bias for datasets and ML models - Access ***here***;
- Measuring fairness under unawareness of sensitive attributes - Access ***here***;
- MeVer image/video deepfake detection service - Access ***here***;
- MeVer NetworkX: social network analysis and visualization for tracing disinformation - Access ***here***;
- Fake speech detection - Access ***here***;
- Automatic detection of bot-generated tweets - Access ***here***;
- News framing analysis - Access ***here*** and ***here***;
- Fallacious argument classification in political debate - Access ***here***.

Scenario 2:

AI assistants for fact-checking

With fake news and speculation on the rise, fact-checking becomes an increasingly demanding work. The IFCN (International Fact-Checking Network) is experiencing a huge demand to empower fact-checkers across the world using its principles, but is struggling to meet that demand with assessors and the workload the assessment entails.

The idea

The code of principles of the International Fact-Checking Network (IFCN) at Poynter is a series of commitments organisations abide by to promote excellence in fact-checking. The institution defends that nonpartisan and transparent fact-checking can be a powerful instrument of accountability journalism. This is done by assessors who verify if fact-checkers are following ***IFCN's code of principles***. Assessors could be journalists, researchers or a variety of experts in fact-checking. However, the assessors' work is challenging as it requires going to each principle and randomised samples to validate the compliance with these principles. This process can be aided with AI tools.

AI4Media can offer AI tools to create an AI system that uses LLMs called the **Fact-Checking Assessors' Assistant**. This AI system aims to assist in decision making with the compliance of the code, avoid a random evaluation and alleviate the workload needed for the assessment of the compliance with the principles. AI could be trained to understand IFCN's five principles, of which each is determined by six criteria. This could be done by a prompting engine approach which will pass these criteria and provide a score for each of them through examples that can aid the assessor's evaluation.

Illustratror: Magda Rysuje

Available technology developed by AI4Media to be used for this product development:

- MeVer image/video deepfake detection service - Access ***here***;
- MeVer NetworkX: social network analysis and visualization for tracing disinformation - Access ***here***;
- Fake speech detection - Access ***here***;
- LLM-assistant for news analysis - Access ***here***.

Scenario 3:

ImpACT

Disinformation, news avoidance and distrust are becoming a big problem in the public media fora. Political discourse is populist and geared to manipulate voters. Voters don't know who to trust and struggle to distinguish facts from opinions.

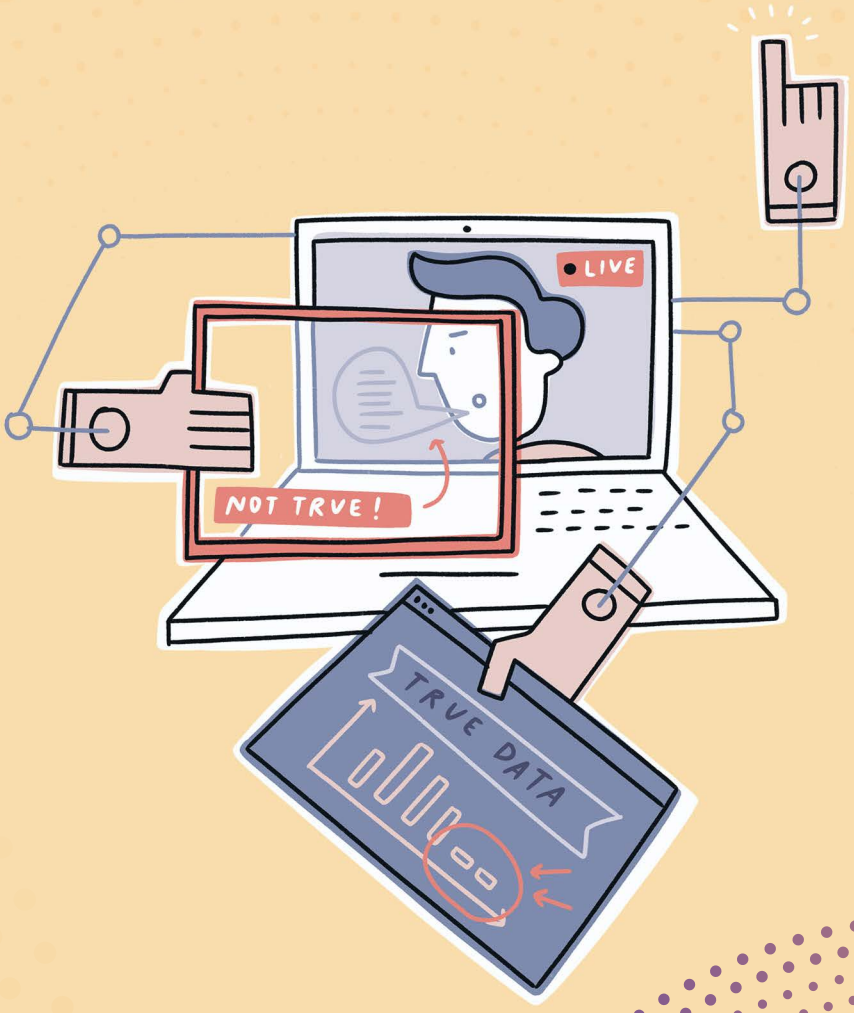
The idea

With the rise of populist and divisive political rhetoric, the spread of disinformation, the creation of information echo chambers, and the intentional conflation of opinions with scientific facts are becoming more prevalent in the current media landscape.

Media literacy becomes a necessary 21st century skill so that people, and especially voters in democratic societies make informed choices about the governance and leadership of the social and economic systems they are part of. What if AI technologies could be used for fact checking statements in favour of the consumers so they help them navigate their civic and political participation and the complexity of their systems.

In the AI4Media consortium, we have developed AI fact-checking technologies that could be plugged into broadcasting live political debate and inform the viewers in real-time whether what is shared is true. **ImpACT**, is an AI technology that can curate and factcheck the arguments that are being shared and align them to the interest and impact on the consumer based on their socio-economic profile. This way voters can better understand political agendas and estimate trustworthiness of political leaders.

Illustratror: Magda Rysuje



Available technology developed by AI4Media to be used for this product development:

- Fallacious argument classification in political debates - Access ***here***;
- DISPUTool 2.0: Multi-layer argumentative analysis of political debates - Access ***here***;
- Detecting speaking persons in video - Access ***here***;
- News framing analysis - Access ***here*** and ***here***.

Scenario 4:

Media Score

Media news is driven and moderated only by popularity. The most viewed, the most clicked and most read is what is worth reading and what becomes the truth.

The idea

When using data analysis on news data, certain topics get more attention than others. This does not necessarily mean that the highlighted topics are the most important ones. They are simply the most present. This is even more the case when multimodal news content needs to be analysed. By doing so, certain topics get underrepresented, which can improve negative framing.

The AI4Media consortium has found a solution for this challenge, called **Media Score**. *Media Score* supports workflows that allows users to pull multimodal content from a news outlet's content management systems and to analyse & report on a range of domain-specific biases (including sentiment, emotion, framing, demographics). With this information, we can help both journalists to cover underrepresented topics in more balanced ways and news consumers to better assess & understand biases in the news they are consuming. This improved transparency allows the media to reduce polarisation and helps play an essential and active role in an informed & democratically engaged society.

Illustrator: Magda Rysuje

Available technology developed by AI4Media to be used for this product development:

- News framing analysis - Access ***here*** and ***here***;
- Partial audio matching to support framing analysis in audiovisual archives - Access ***here***;
- Target-dependent sentiment classification in multilingual news - Access ***here***;
- Text sentiment analysis - Access ***here***;
- Framework for automatic annotation of TV personalities - Access ***here***.

Scenario 5:

Style-o-Mater

**Audio content is popular and in demand in an ever more interconnected world.
This requires creators to stay innovative by transcending language and cultural barriers so they can reach their global audience.**

The idea

We live in a world abundant in audio content that is available on the fingertips of the audience. While the content could be personalised and consumed in a fragmented way, the market is saturated with offers of music and podcasts regulated with copyrights. The media sector is facing a mass influx of personalised news and entertainment and there is a massive increase of competition. With the technological development of efficient production tools, producing content has become easy, while the language barriers still exist as limitation of access for different audiences. Even though the audience consists of digital natives there is a high need for good content recommenders and curation. The challenge for creators lies in tailoring their content creation to produce personalised, high-quality material that resonates with global audiences.

In the AI4Media consortium, we have come up with a potential product/service that could support content curators, educators and storytellers with a better way to create unique and inspiring audio content. Introducing the **STYLE-O-MATER**: using popular music tracks from all over the world to perform AI-powered style/genre transfers with real world examples for global audiences. This way the audiences can transcend the language barrier and get access to knowledge and art from other cultures.

Illustratror: Magda Rysuje

Available technology developed by AI4Media to be used for this product development:

- Multi-Dimensional modeling of music similarity - Access ***here***;
- Automatic music classification - Access ***here***;
- DDSP-Piano - Neural sound synthesizer informed by instrument knowledge - Access ***here***.

Scenario 6:

ExplAIner

In a highly globalised and complex world, news travel fast but remains complicated and inaccessible for all the diverse audiences, which creates gaps for speculation, misinterpretation and fake-news.

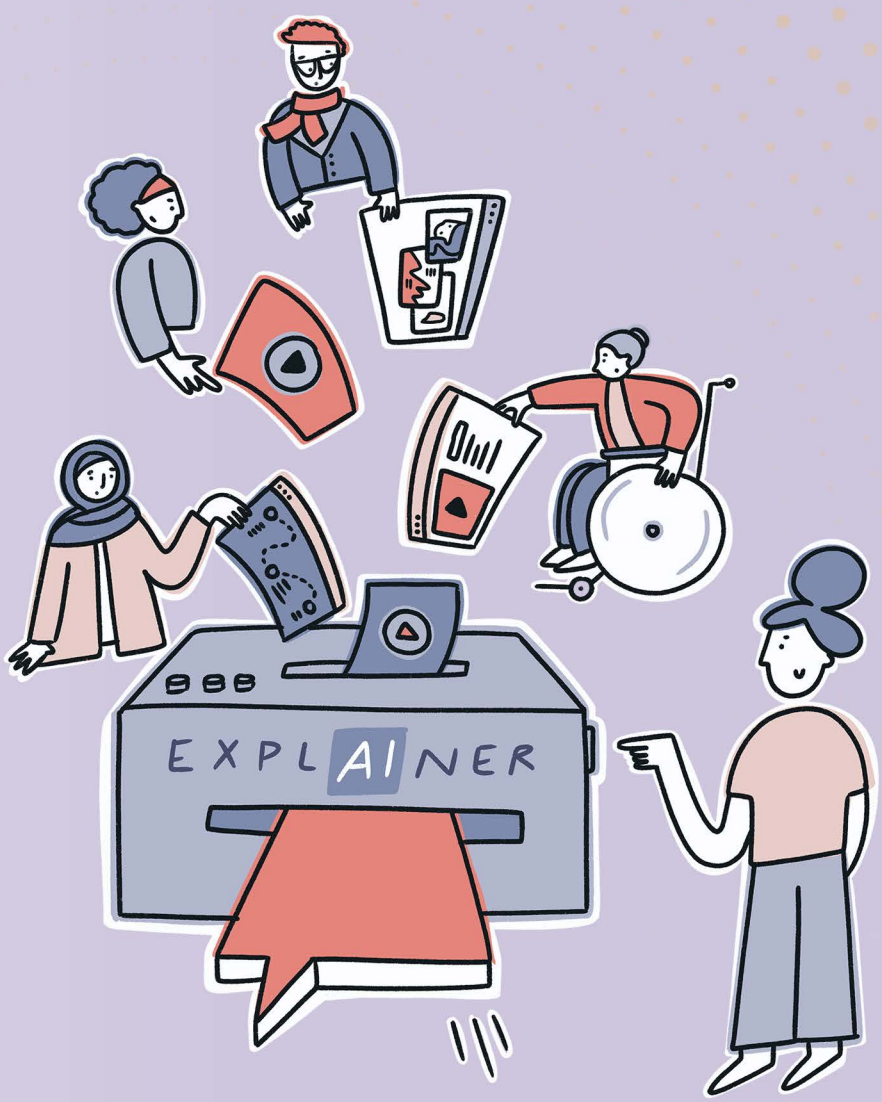
The idea

We live in a world that has a fast pace of change and is highly interconnected. Media stories become ever more complex to unravel and be served to different audiences to digest and understand the issues that could affect them. What if there was a way to adapt these stories to different contexts/users so they are more accessible? What if there was a way to both disseminate to a variety of audiences and sustain accuracy?

The AI4Media consortium has come up with a concept to address this challenge with the **ExplAIner**.

The ExplAIner uses draft stories and contextual user information (provided or gathered) to generate new visual stories based on context. This AI-powered technology could help media professionals/content creators with a better way to tell stories to diverse audiences, ultimately creating engagement and understanding so that there is a shared reality, instead of creating multiple "truths".

Illustratror: Magda Rysuje



Available technology developed by AI4Media to be used for this product development:

- VISIONE - Interactive video search and browsing tool supporting textual and visual queries - Access ***here*** and ***here***;
- Image-text matching and retrieval - Access ***here***;
- Seeding diversity into AI Art - Access ***here***;
- Explainable video summarization for advancing media content production - Access ***here***;
- Selecting diverse, aesthetically-pleasing and representative video thumbnails - Access ***here***.

Scenario 7:

M3Rec

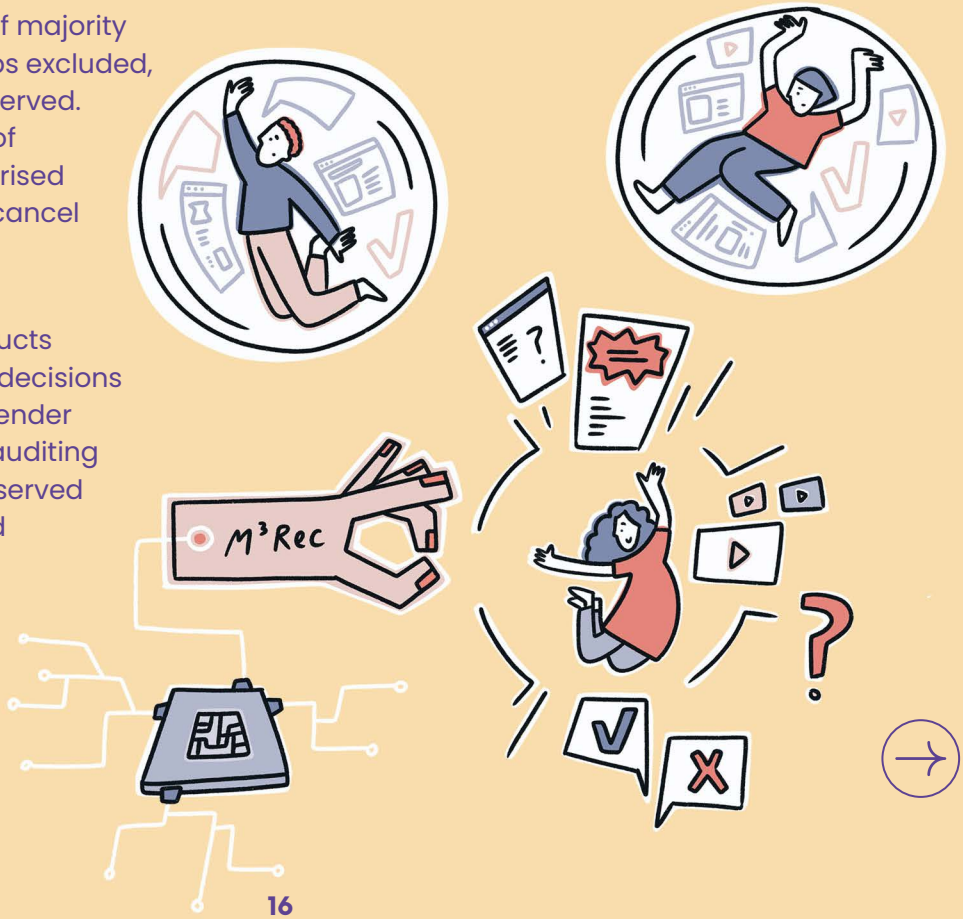
Media news gets monopolised.
A small number of private media conglomerates increasingly exert a significant influence on the media market. The need for diversified and non-biased news is dire. Public media organisations are considering alternative approaches to recommender systems that are both economically viable and serve the interests and needs of a diverse society.

The idea

Recommender systems promise competitive advantage to media organisations with large content libraries. But as a consequence, we are living in a society where media platforms tend to over personalise. Commercial algorithms are often designed to prioritise the interests and content consumption habits of majority groups, leaving minority groups excluded, underrepresented and underserved. Bubbles and echo chambers of like-minded people drive polarised perceptions of the truth and "cancel culture."

The algorithmic veil that obstructs value judgement and human decisions behind the design of recommender systems creates a barrier for auditing and accountability. Users get served information that is determined by business-oriented goals and values of big tech companies that are embedded in algorithmic choices.

The AI4Media consortium wants to inspire the development of recommendation systems for public media organisations that offer an alternative to commercial content platforms and business models.



Illustratror: Magda Rysuje

The M3Rec (Multilogical Multimodal Media Recommendation Platform) would allow small and middle-sized media companies to join forces and provide a rich content offering via a joint media recommendation platform that prioritises user and content diversity. M3Rec leverages the strength of the European media sector - its cultural, linguistic and societal diversity - as a compelling value proposition in contrast to big tech media platforms.

- *Breaking platform and modality silos*: instead of building separate content platforms, M3Rec invites European media organisations - including broadcasters, archives & libraries, production companies - to aggregate their offerings via a shared platform, providing users with access to video, audio, image and text content from across Europe. This ensures better visibility for small media organisations and creates a better user experience by breaking platform, genre and modality silos.
- *Customisable recommendations*: the M3Rec platform users have the agency to determine their recommendation preferences via filters focused on promoting diversity and curiosity. The ability to play with filters and adjust personalisation levels gives users a better understanding of how recommendation algorithms work.

Available technology developed by AI4Media to be used for this product development:

- VISIONE - Interactive video search and browsing tool supporting textual and visual queries - Access ***here*** and ***here***;
- Explainable recommendation - Access ***here***;
- Video summarisation - Access ***here***.

Scenario 8:

Podcast Mixtape

There is a vast array of podcast audio content available. In the sea of content listeners are stuck in a filter bubble with only-end user view. There is no possibility to dissect and search granular information they need / are interested in.

The number of podcasts has almost doubled since 2019 and it's likely it shall grow as we move towards the future. Podcasts are also evolving from an audio only format to a complete multi channel content (including short video). This increase and evolution is due to the low barrier for entry for small, sometimes amateur, content creators, and easy repurposing of existing shows by traditional media (radio, tv). An increasing number of individuals are turning to podcasts as a means to enhance their personal growth. While the abundance of podcast production creates opportunities for access to diversified content it also leaves consumers feeling overloaded with content and stuck in their filter bubbles.

Using AI Technologies developed by the AI4Media consortium partners, users could generate their own **PODCAST MIXTAPE** focusing on their interest and topic they wish to listen to. Just like a mixtape with their favourite music, consumers could now get a mix of highlights about their favourite sports players / clubs, artists, places or topics of any kind with content selected from multiple podcast sources and platforms.

Illustratror: Magda Rysuje

Available technology developed by AI4Media to be used for this product development:

- Multi-dimensional modeling of music similarity - Access ***here***;
- Automatic music classification - Access ***here***.

Scenario 9:

PNNE

Rapid development of AI technologies can not keep up with the explanations of the "black boxes" behind it. This perpetuates conspiracy and mistrust in the technology and media. Technological tools are increasingly being developed to explain AI. Despite the positive intentions that guided the design of these tools, the explanations generated from these tools are not accessible to the media and wider public to understand the "hidden layers" of the AI systems integrated in their daily lives. The ethical and institutional requirements and regulations are the only means to control and enhance trustworthiness.

The idea

With corporate or media/journalism AI guidelines to which systems need to comply, the explainability and trustworthiness of AI technology becomes an urgent need. While there is an emergence of commercially provided algorithmic trustworthy AI toolboxes (e.g. IBM who provides an explainability tool) and research in this area, there are still examples of AI services that are not explainable, and users don't trust them and are hesitant to adopt them.

Both media managers and end users lack information about why a neural network in an AI system produces a specific outcome. This prohibits both trust and compliance assessment in the media industry. At present, the outcome of explainable AI tools and techniques is usually aimed at other AI developers and peer groups, hence it is not understandable or easy to use in the general media industry (which often lacks AI specialists which are difficult to recruit).

For that reason, there are opportunities to develop more suitable approaches for making explainable AI information available to different stakeholders in the media industry, comprising media professionals, managers, journalists, technologists and end users. Key objectives are to gain trust from all stakeholders and enable assessment against guidelines or regulation.

The AI4Media consortium has developed an Explainable AI component that helps to understand the judgments rendered by deep neural networks. However, just as with other explainable AI tools, the "explanations" generated are still highly technical and obscure. The **PNNE - PERSONAL NEURAL NETWORK EXPLANATOR** is a an AI system which can "translate" technical results from an algorithmic explainability component into personalised and understandable information for different target groups in the media industry, such as different types of media professionals/managers and end-users.

Illustratror: Magda Rysuje

This way a variety of user groups can better understand neural network decisions and outcomes in a language that is appropriate.

This would ultimately impact trustworthiness and enable better AI compliance in the media industry.

Available technology developed by AI4Media to be used for this product development:

- Explainable graphs for explainable news recommendation - Access ***here***;
- Explainable video summarization for advancing media content production - Access ***here***;
- Analysis of Anchors for text data - Access ***here***;
- Explainable authorship identification - Access ***here***.

Credits

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Acknowledgements:

We would like to express our gratitude to all the individuals who participated in the Speculative Design workshops that supported this publication.

This work is part of the AI4Media project - a Centre of Excellence delivering next generation AI Research and Training at the service of Media, Society and Democracy, funded by the European Union's Horizon 2020 research and innovation programme under grant agreement no 951911. The speculative scenarios presented in this document are produced by AI4Media partners, also in collaboration with experts affiliated with AI4Media as associate members or open call subgrantees.

April 2024

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We would like to collaborate with media partners and small and medium enterprises to further test the technology and gather user insights.

Are you interested in collaborating with us?

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Our Consortium

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