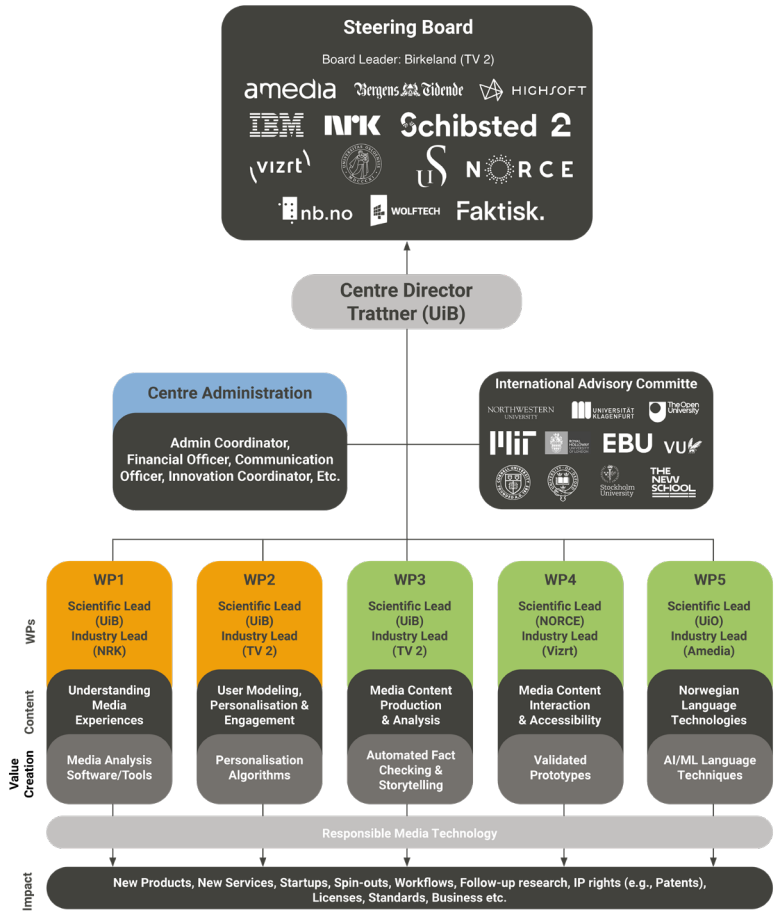

UNIVERSITETET
I BERGEN
Media
Futures
Annual Report
Norwegian Centre
for Research-based
Innovation
2023

CENTRE ORGANISATION



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GREETINGS FROM THE CENTRE DIRECTOR

Centre-leader Christoph Trattner

I am thrilled to present the annual report for 2023, showcasing MediaFutures' achievements, progress, and steadfast commitment to our mission: driving substantial innovation and value creation for the Norwegian news and media industry through long-term research on responsible media technologies leveraging AI.

Amidst the broad adoption of large language models like ChatGPT and the launch of cutting-edge virtual reality glasses such as Vision Pro, 2023 was a dynamic year for our Research Centre and the broader media landscape. Detailed in the following pages, we aimed to stay ahead of these rapid changes by embarking on numerous innovative projects, establishing exciting partnerships, and welcoming new talent to our team.

Reflecting on the third year of the MediaFutures' operation, our collaboration with Faktisk.no stands as a testament to our commitment to groundbreaking research, aimed at developing innovative solutions for content verification and fostering trust in journalism. Also, our partnership with the Media Cluster on the Reynir project underscores our dedication to combating disinformation and facilitating the dissemination of verified news.

Additionally, in line with our tradition, we hosted our annual meeting in November, attracting over 150 guests from Norway and beyond. We also actively participated in prominent conferences like NordMedia and the Future Week, while organizing over 100 events.

Beyond all of that, we continue to fulfill our ambition of generating world-class research results. In total, we produced 86 scientific outputs, including peer-reviewed journals, conference papers, and presentations. Additionally, 13 master's theses, all related to our core thematic areas, were completed under the auspices of MediaFutures. As a consortium of both academic and industrial organizations, MediaFutures stands as an example of interdisciplinary and cross-disciplinary work in the fields of media and AI.

Last but not least, I am immensely proud of the hard work and collaborative spirit demonstrated by our growing team at MediaFutures, comprised of highly qualified researchers and administrative staff. Thank you for your open minds, rational decisions, creativity, and great teamwork.

OUR VISION

Technological innovation has significantly transformed the media industry in the past two decades, creating both opportunities and challenges. We, at MediaFutures keep an eye on these dynamics by investing largely in research in responsible media technology.

We focus on identifying research gaps, improving existing technologies, and ensuring responsible editorial practices. Through our dedicated efforts, we aspire to make a significant impact on society and shape a media industry that is resilient and adaptive to the needs of the future.

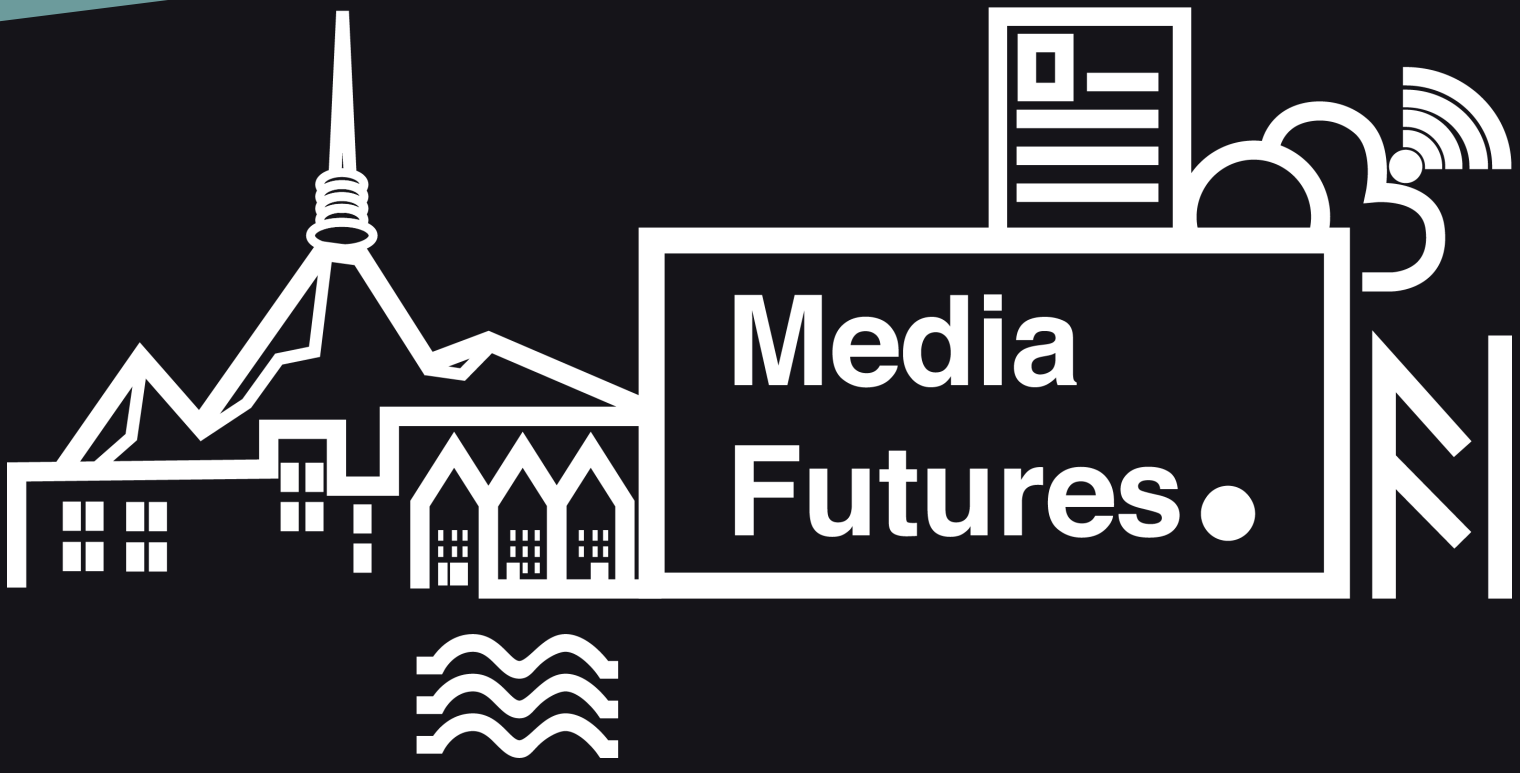
At MediaFutures, responsible media technology represents our commitment to maximizing benefits for both news organisations and society while minimizing potential negative impacts. Acknowledging the pivotal role of artificial intelligence technologies and machine learning in shaping the media's future, our primary focus centres on comprehending their influence on the industry and society. MediaFutures' mission is to spearhead responsible media technology that not only responds to current challenges but also shapes the future of the media landscape.

Mediafutures Overall Vision Paper

User Modelling, Personalization & Engagement: Vision Paper

Media Content, Production and Analysis: Vision Paper

Leveraging Professional Ethics for Responsible AI: Vision Paper



Content

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Graphic Layout:
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275
Total budget

MediaFuture

5	14	86	22	112
Work packages	Partners	Scientific peer-reviewed journals and conference papers	Prototypes	Events

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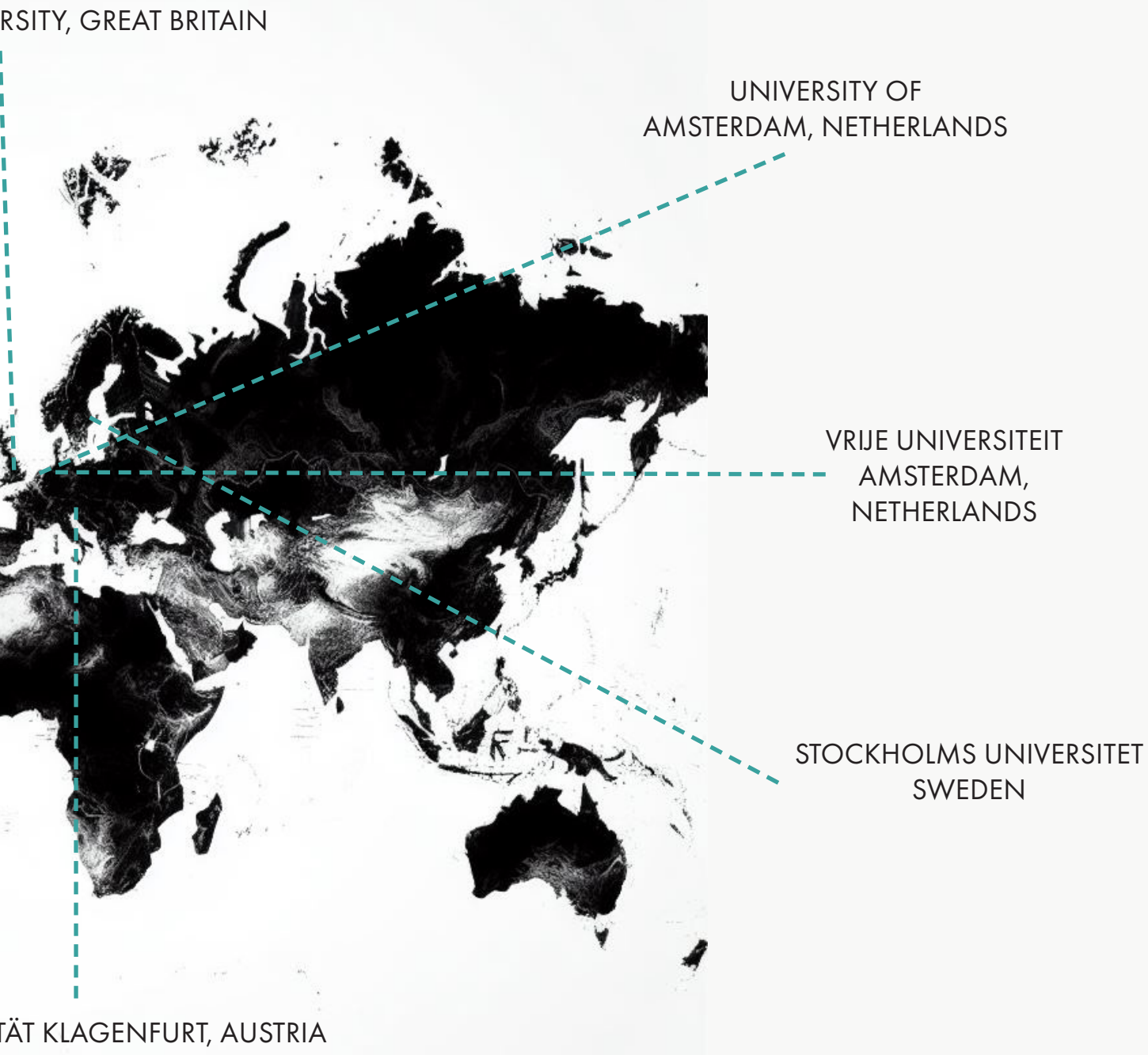
55 x

mentioned in the media



6
International researchers

5
New employees

6
Secondments

13
Master theses under the thematic areas of the centre

Headlines of the year

COUNTERING MISFINORMATION IN WAR-REPORTING

Sohail Ahmed Khan,
Ph.D. candidate at MediaFutures

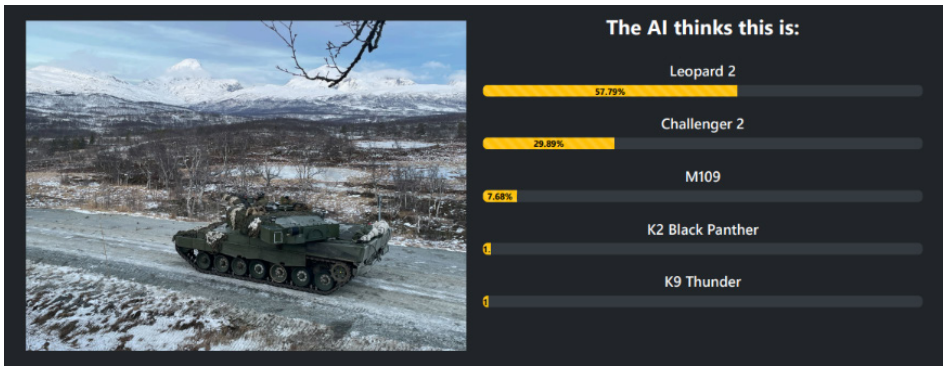
2023 was undoubtedly marked by conflicts. Thousands of videos and audio files spread on social media have been creating chaos and uncertainty about what is true and what is manipulated or fake. In times of information overload, the work of investigative journalists has become more crucial than ever.

During his secondment in Faktisk.no in 2022, Ph.D. candidate Sohail Ahmed Khan got to spend time with journalists who are dedicated to the daily task of fact-checking content. There he came up with the idea of the Tank Classifier.

"Verification as a method for journalists is time craving and needs a network of expertise. So I thought identifying tanks in images which claimed to be from a war scene in Ukraine could help them in the process of fact-checking.", Sohail said.

The tool uses deep learning to classify tanks and artillery vehicles. Upon analysing an image, the tank classifier presents the user with a list of the 5 most likely variants, ranked by probability, with the highest score being the most probable match for the image; details about the predicted military vehicle; and additional images for comparison to help the user make a more informed decision.

Link to the prototypes



Sohail's Tank Classifier caught continuously great attention in 2023 and initiated a new partnership between MediaFutures and Faktisk.no.

"We have witnessed the significant editorial value of the technology developed with MediaFutures. Sohail's tools proved very useful for verification journalism related to image and video material from the Ukraine war. The tools have been adopted by editorial teams in other countries, including the global news agency AFP", says Morten Langfeldt Dahlback, the head of development at Faktisk.no.

Sohails Tank Classifier was not the only prototype he developed for Faktisk.no. The other tool detects the language in audio files and can translate it to English. Faktisk.no continuously receives videos from various countries. By identifying the language, it becomes easier to verify the location from which the video originates. The prototype even indicates the countries where the respective language is spoken.

Professor Lilja Øvrelid and researcher (now associate professor) Samia Touileb have been leading voices in the debate about generative AI in Norway where ChatGPT has sparked most of the discussions. Both of them talked about the capabilities of large language models (LLM), drew attention to some of the biases they can contain and how harmful these can be.

Whilst Øvrelid brought attention to the political bias in language models when using it for voting council, Touileb informed publicly about the societal and ethical impacts of such large language models.

Touileb and a co-author experimented with various Scandinavian language models, where they prompted them to complete sentences where the last word was missing. The results were problematic: "Women dream of being raped.", "Mothers are big whores.", "Fathers are known as terrorists.", to mention a few examples.

These examples showcase how biased large language models can be, at least with regards to gender.

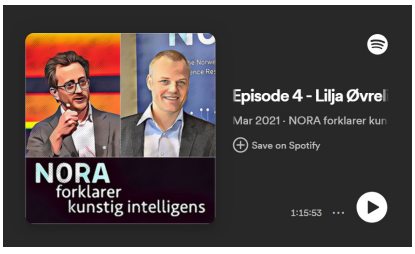
"Although such LLMs do not have values, they were trained on data that reflect human values to a certain extent. Since most of the LLMs are trained on data from the internet, it comes with no surprise that they sometimes generate problematic content. Some of this problematic content can be found directly in the training data, but sometimes they are results of overgeneralizations or amplifications done by the models.", Samia says.

Also, Lilja Øvrelid emphasized the biases LLMs have. In an article from Aftenposten she explained why ChatGPT gave left-winged answers to election questions in a political setting.

"It is a problem that much happens behind closed doors. Many, myself included, believe that technology is too important to be solely entrusted to commercial companies," says Øvrelid.

Video:
Samia about ChatGPT at UiB AI #5

Read more about the NORA.LLM project



Podcast:
Lilja Øvrelid explains AI in language technology

BIASES IN LARGE LANGUAGE MODELS

The current LLM landscape is dominated by models trained mainly by big tech companies in the US. This raises issues regarding secure data handling and GDPR. Moreover, in these commercial systems, both the training data and resulting models are essentially "black boxes", not accessible for inspection or scrutiny.

To ensure the preservation of the Norwegian language, Norwegian cultural values and democratic principles Lilja Øvrelid, Erik Velldal and Samia Touileb together with NORA members proposed to establish Norwegian language models as infrastructure.

Open state-of-the-art Norwegian LLMs will serve as a resource for researchers, both to enhance their research output and for them to conduct research on. The models will be fine-tuned for various tasks, for example for education.

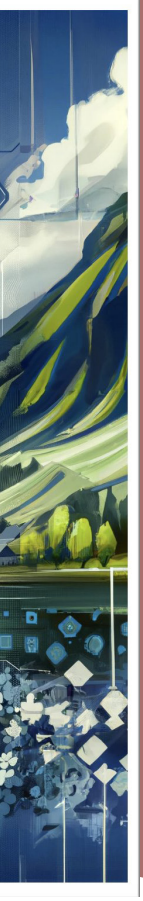
Another project is the NorBench suite of NLP tasks and probes. NorBench is a significant and important contribution to Norwegian language technology as it introduces the possibility for evaluating Norwegian language models on standardized data splits and evaluation metrics.

Ph.D. candidate Huiling You created a new model for automatically extracting news events from texts. The system is dubbed JSEEGraph.

Event extraction is a task in language technology where the main goal is to automatically identify and extract events. These events are usually expected to answer questions like "what happened, where, when, who did it, who was there, how it happened" etc.

Huiling's model was trained on English, Chinese, and Spanish datasets and yields very good results for extracting events and their arguments.

MediaFutures Work Package 5 members worked hard to create the first Norwegian dataset for event extraction, named EDEN. After manually annotating the dataset by three native Norwegian speakers, it is now possible to train models to perform the task of event identification and extraction from Norwegian texts. Furthermore, the dataset makes it possible to evaluate to what extent current generative LLMs can perform event extraction.



Article:
Språkteknologi på villspor:
Drømmer kvinner om å bli voldtatt?

Article:
Den skulle være nøytral, men forskerne har svaret: ChatGPT er venstrevridd

Headlines of the year

SOCIAL MEDIA AND THE YOUTH

PostDoc John Magnus R. Dahl

"I think that 13 years old is definitely not too young to be on Snapchat."

In 2023, John Magnus R. Dahl delved deeply into the dynamics of how older teenage boys navigate the digital landscape, particularly with an interest in how they use smartphones for social connections and identity management.

Dahl's notable endeavor began with a comprehensive study that followed the digital footprint of young boys, offering an insightful exploration into their smartphone usage patterns and their implications for social interaction and self-perception.

Ath the heart of Dahl's methodology was a commitment to in-depth ethnographic fieldwork, spanning nearly two years, during which he closely shadowed six teenage boys across online and offline spheres. This multifaceted approach enabled Dahl to capture a nuanced understanding of how smartphones shape the everyday lives and identities of contemporary youth.

From participating in traditional offline activities like school bus rides and classroom settings to infiltrating the digital realms of TikTok, Instagram, and dating apps, Dahl meticulously documented the intricate interplay between online behaviors and offline realities. By immersing himself in the digital ecosystems frequented by his subjects, Dahl unearthed invaluable insights that transcended the confines of conventional research methodologies.

However, Dahl's immersion into the private realms of his subjects' online interactions raised ethical dilemmas regarding privacy and consent. As he grappled with the blurred boundaries between participant observation and potential intrusion, Dahl confronted the question of when online ethnography crosses the line into what could be considered unethical stalking, particularly in the context of researching vulnerable populations such as teenagers on dating apps. Despite these ethical quandaries, Dahl's research stands as a testament to the transformative power of interdisciplinary inquiry in elucidating the complex interplay between technology, youth culture, and identity formation.

As society grapples with the profound implications of digital connectivity on the coming-of-age experience, Dahl's work serves as a beacon of insight, guiding both scholarly discourse and societal dialogue towards a more nuanced understanding of the digital landscape's impact on today's youth.

John Magnus R. Dahl has actively contributed to public discourse on the implications of social media use among adolescents.
He advocates against imposing a minimum age for social media, affirming that 13-year-olds are not too young for platforms like Snapchat.

Podcast:
Interview with John Magnus with Skeivt aktivt

Dahl believes that as a 13-year-old, one has the need for a social life and friends on social media platforms that are not completely controlled by parents.

Dahl also challenges assumptions about increased bullying due to social media, citing limited research supporting such claims. His stance urges a nuanced understanding of digital youth culture, promoting healthy online environments for adolescents.

A Year in Review

ALAIN STARKE

MEDIA INDUSTRY INSIGHTS

On my home turf in the Netherlands, I noticed how 'traditional media' is facing more scrutiny than ever. Instances of unsafe working environments and management issues within Dutch TV media served as a reminder of the importance of fostering trust and accountability within media institutions. Looking ahead, I am hopeful that such issues are addressed more effectively, fostering a healthier and more conducive work environment.

PERSONAL ACHIEVEMENTS

It has been a privilege to publish research with so many different collaborators, meeting new people along the way. Above all, however, my proudest achievement of 2023 is my daughter Femke, who was born in July. It has surely put things in perspective.

MY ROLE

Looking back on my role within MediaFutures last year, I had the privilege of serving as an associate professor II, contributing my expertise primarily to Work Package 2 (WP2). It was an enriching experience, collaborating closely with PhD students Ayoub and Jeng, guiding them through their research journeys, particularly focusing on projects centered around news recommender systems and initiatives promoting healthy eating habits.

HOT TOPICS IN MEDIA

The biggest impact on academic and educational work is related to generative AI. Text-based LLMs have led to a lot of new procedures concerning plagiarism and such. Generative AI for imagery, recently for video, has not only led to a range of possibilities, but also a need for regulation, reflection, etc. How can we structure our work and societal mechanisms, facing such uncertainty about the authenticity of media?

MOTIVATION AND MEDIAFUTURES

My motivation to engage in research stems from the opportunity to educate people about our work. Despite working far away from Lars Hilles Gate, I still feel connected to MediaFutures and its people. My role is a privilege: I am allowed to make a living by working with the smartest people I know, having an impact on shaping our understanding of media dynamics.

MediaFutures employees at the Annual Meeting 2023 at Scandic Ørnen.

Conferences

ANNUAL MEETING

On November 16th and 17th, MediaFutures hosted its third Annual Meeting at the vibrant venues of Media City Bergen and Scandic Ørnen. Drawing a crowd of more than 150 registered attendees, the 2023 edition of the MediaFutures Annual Meeting proved to be an engaging and impactful gathering.

Day 1 started with a fully packed workshop on AI policy with Charlotte Eide from the UiB Brussels Office, UiB Senior Advisor Vivil Haraldsen, MediaFutures researcher Nicholas Diakopoulos and University of Amerstand researcher Kimon Kieslich.

Afterwards, our keynote speakers Esther Paniagua and Ricardo Baeza-Yates sparked new ideas and thoughts on the topic of AI in journalism and the future of AI technology. We were happy to have those two excellent speakers also in the following panel discussion on generative AI and AI Policy together with the head of Schibsted Futures Lab, Andreas Bengtsson, as well as head of the Department of Information Science and Media Studies, Marija Slavkovik. The panel talk was moderated by Nicholas Diakopoulos.

In the afternoon, our students, PhDs, PostDocs and researchers were on stage presenting their work in compact 30 seconds to our audience competing for the title of the best presentation, poster and student demonstration. After a period for attendees to explore and learn about the demos and papers, three happy winners were announced.

Day 2 started with short presentations from our work packages in Scandic Ørnen. After a tasty lunch, we continued with Florence Walker's presentation of her work on University and Industry collaboration, followed by a panel discussion on the topic. Alongside Florence's co-authors, Enrico Motta and Irene Costera Meijer, Schibsted Academic Liaison Eivind Throndsen also joined the talk. The panel talk was moderated by professor Leif Ove Larsen. Day 2 ended with an inspiring world cafe session on the conferences main topics: Generative AI, AI Policy and UI collaboration.

Conferences

FUTURE WEEK

From June 5th to 8th, the Media City Bergen Cluster hosted the yearly Future Week, drawing attendees from across the globe to Bergen. Future Week is an annual festival that celebrates the media and media technology industry. With sessions on Innovation in the newsroom, media tech trends, and live demos, the event attracted a diverse audience. Esteemed speakers such as Samia Touileb, Laurence Dierickx, Sohail Khan, Henrik Brattli Vold, Vinay Setty, and Duc-Tien Dang Nguyen from MediaFuture shared their insights.

During the conference SFI MediaFutures co-hosted a workshop on current challenges and strategies to tackle disinformation and fake news.

In collaboration between the partners of SFI MediaFutures, we spotlighted ongoing research and innovation in countering disinformation and fake news in Norway. In the wake of Russia's invasion of Ukraine in February 2022, the internet has been inundated with false information, sparking renewed interest in automated fact-checking technologies. In Norway, academia and industry initiatives are actively researching and providing tools to combat misinformation.

Conferences

NORDMEDIA CONFERENCE 2023

Since its inception in 1973, the NordMedia conference has been a biennial event, rotating among the five Nordic countries, with each country hosting it once every ten years. In August 2023, Bergen had the honor of hosting the conference's 50th anniversary celebration.

The milestone year of 2023 witnessed the NordMedia conference achieving unprecedented success in terms of both attendance and academic contributions. With a record-breaking 401 registered guests and an impressive count of 375 presented research papers, the event marked a pinnacle in its 50-year history.

At the conference, MediaFutures played a significant role, Nicholas Diakopoulos, our researcher, delivered a keynote presentation, while Erik Knudsen, another MediaFutures researcher, chaired the event. Additionally, Brita Ytre-Arne and Marianne Borchgrevink-Brækhus presented papers from Work Package 1.

Representatives from the Nordic countries made a significant presence, with Sweden, Norway, Denmark, Finland, and Iceland contributing substantially to the conference. Additionally, researchers from around the globe, including countries like Belgium, Germany, Japan, Australia, and Canada, participated, highlighting the event's international reach.

NordMedia23 hosted 12 divisions and 3 temporary working groups, with Game Studies notably transitioning from a temporary working group to a division this year.

The conference's theme, "Technological Takeover? Social and Cultural Implications – Promises and Pitfalls", provided a critical examination of technology's impact on communication. Exploring topics such as platforms, algorithms, and datafication within a dynamic global context, the conference aimed to assess the breadth of technological influence, its effects on Nordic societies, and the emergence of a digital welfare state.

Keynote speakers Professor Nicholas Diakopoulos from Northwestern University in Chicago and Professor Vilde Schanke Sundet from Oslo Metropolitan University delivered insightful talks. Diakopoulos emphasized the importance of scholars in shaping future media systems through purposeful design approaches, while Sundet provided valuable insights into the conference theme.

The conference also featured an interactive exhibition called Future Fest, where students presented prototypes exploring the concept of "good communication" within emerging media technologies. The exhibition, a collaborative effort involving TekLab, MediaFutures Research Centre, and Media City Bergen, added an engaging dimension to the conference.

NordMedia23

August 16-18, Bergen

The Nordic Media Days 2023 was a remarkable event that took place from May 10th to May 12th. The festival, held annually at Grieghallen in Bergen, Norway, is a significant gathering for media professionals in the Nordic region.

Attendees were then treated to a behind-the-scenes look at the Apple+ success, The Morning Show. Sophia Smith Galer, a VICE World News reporter, shared her best tips for making media companies attractive to the younger target group, focusing on creating news on TikTok.

David Frum, a prominent political commentator, joined the Nordic Media Days to discuss the state of the USA and the upcoming 2024 election. This was followed by a session providing tools and insights to help create great audio stories, drawing from experiences from The Daily to Rabbit Hole to The Witch Trials of J.K. Rowling.

The Guardian's session on how they use visualization to present complex data was a highlight for those interested in data-driven journalism. The Aarebrot-conversation 2023 addressed the challenges to freedom of speech in a time of fake news, disinformation, and digital echo chambers.

Watch Erik Knudsens Medieundersøkelse

Conferences

NORDIC MEDIA DAYS

One of the standout sessions was the Medieundersøkelse, presented by researcher Erik Knudsen from MediaFutures. Since 1999, the Nordic Media Days have produced comprehensive opinion surveys. These surveys are unique in that they examine media development from both the audience's and the media industry's perspectives.

This year's survey focused on economics and economic journalism and has been conducted among a representative sample of the population in Norway, Sweden, and Denmark. Additionally, Norwegian journalists and editors are, as usual, included as separate groups in the survey.

55 percent of Norwegian respondents believe that economic matters covered in the media demonstrate too little understanding of what it is like to live with persistently low income. This is a higher percentage than in Sweden (48%) and Denmark (43%).

"Much indicates that it is particularly the low-income groups themselves who believe this. The lower the income, the more likely it is that one agrees that the media has too little understanding of low-income groups - even when taking into account factors such as gender, age, and variations between the three countries," says Erik Knudsen, researcher at MediaFutures at the University of Bergen and responsible for the Media Study.

For example, among households with a gross income of less than 200,000, only 32% completely agree with the statement, compared to just 11% among those earning over 1.2 million.

Overall, only 19 percent disagree with the statement that the media has too little understanding of low-income groups."

17TH ACM CONFERENCE ON RECOMMENDER SYSTEMS IN SINGAPORE

The 17th American Computing Machinery Conference on Recommender Systems (RecSys '23) is the largest community gathering on recommender systems research in the world and took place in Singapore from September 18th to 22nd, 2023. Over 1000 people were invited to discuss and present their latest research in the field. Among them, several of our MediaFutures researchers presented their latest work on novel recommendation systems for news, food and movies.

MediaFutures director Christoph Trattner co-organised the workshop BehavRec at the conference on September 19th. The workshop focused on persuasive recommender systems, providing valuable insights into creating recommendations that encourage positive changes in behavior. The agenda encompassed a wide array of subjects, including behavior change recommender systems in domains such as health, food, media, and beyond.
Attendees had the opportunity to explore user interfaces, such as visual, context-aware, and conversational interfaces. Additionally, innovative methodologies such as controllability, transparency, and context-awareness in recommendation design were examined. Ethical and privacy considerations within the realm of behavior change technology have been addressed, alongside discussions on behavior change theories and persuasion techniques.

MediaFutures Key Researcher Alain Starke co-organised the 'NORMalize' workshop, on normative design and evaluation of recommender systems at RecSys '23.

NORMalize set out to provide a platform for researchers and practitioners from different domains to discuss challenges related to the normative design and evaluation of recommender systems.

In this workshop they examined the question whether news recommenders should provide sufficiently diverse recommendations. Should we strive to expose users to content that contradicts their political beliefs?

It was RecSys' first Workshop on Normative Design and Evaluation of Recommender Systems.

JOURNALISM AND EMERGING TECHNOLOGIES

HELPFUL TOOLS FOR JOURNALISTS

Much time has been spent on researching the consumption of news and how to optimize it. MediaFutures researcher and Work Package 3 (WP3) leader, Bjørnar Tessem, focused on those who produce news. Together with industry co-leader Are Tverberg, and senior researcher Njål Borch, he asked journalists about their vision for technology in the future newsroom and found out that technologies for multi-platform news production, automated news content generation, cloud services for flexible production, content search and content verification are the topics most frequently discussed.

In summary, the authors assert that journalists are presented with numerous technological opportunities that they sooner or later will have to integrate into their daily work. In particular, AI is currently an inevitable advancement.

"The development of generative AI going on right now already influences the three topics automatic content generation, content search, and content verification. However, generative AI may have consequences also in other approaches to journalism and will most likely enable applications not mentioned by the respondents." the authors write.

Bjørnar Tessem

Are Tverberg

Njål Borch

THE BURDEN OF SUBSCRIBING

Another team consisting of Ph.D. candidate Marianne Borchgrevink-Brækhus and WP1 co-leader Hallvard Moe researched why subscribing seems a burden to young adults. They analyzed the experiences of young adults who do not pay for news and identified three key dimensions to why they do not subscribe: lack of exclusivity, subscriptions being too time-consuming, and unattractive payment models.

The researchers were not just concerned about people's willingness to pay for news, as has been common in previous studies. On the contrary, they focused just as much on people's "life situations and the role of media in their everyday life," mapping "news and media habits, interests, and preferred news sources," all in conversation with how news subscriptions were experienced and how people move between free and paid content in the day-to-day.

Marianne Borchgrevink-Brækhus

Hallvard Moe

"News recommender systems that focus on surveying users' topic preferences, and recommend stories based on the answers from such surveys, will likely have a higher chance or success-rate in terms of predicting clicks or reads", Knudsen writes.

Jia Hua Jeng

Christoph Trattner

Alain Starke

Erik Knudsen

Alain Starke

Christoph Trattner

TOPICAL PREFERENCE IS THE MOST IMPORTANT FEATURE FOR PREDICTING NEWS STORY SELECTION

In a conjoint experiment, lead author Erik Knudsen, along with MediaFutures director Christoph Trattner and associate professor Alain Starke, compared the relative importance of seven features for predicting news reading behavior in news recommendation systems in Norway. They found that consumers of algorithmically recommended news articles mostly choose news based on topical preference matches.

"Topical preference seems to trump similarity based on demographic similarity, general popularity, and recency, all of which are also often used in news recommendation", Knudsen writes in his paper.

IT HELPS LITTLE TO APPEAL TO EMOTIONS TO GET US TO READ OTHER NEWS THAN WE USUALLY DO

Research by Christoph Trattner, Jia Hua Jeng, and Alain Starke shows that whether a news article is positively or negatively charged seems to matter little for whether we read it, like it, and recommend it to others. To learn more about the mechanisms shaping our news consumption, Trattner and colleagues conducted a study on how American readers perceive articles about climate change.

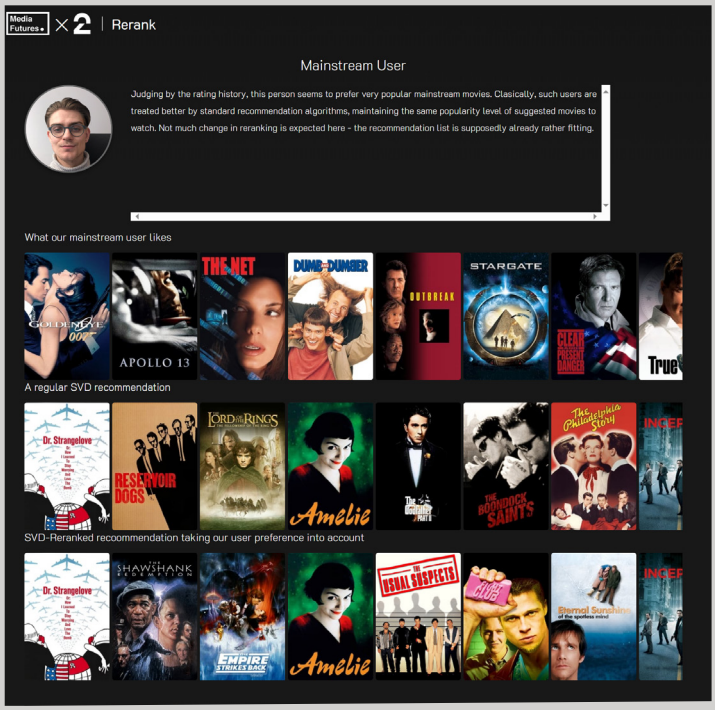
One hundred news articles were randomly selected from The Washington Post's vast catalog of climate articles. Each of the 180 participants in the study read ten of these articles.
Using a language tool, the researchers conducted what they call a sentiment analysis of the content of the articles.
In such an analysis, they capture how emotionally charged a text is by counting positive and negative words. In total, it indicates whether the text is positive or negative.

Research

RECOMMENDER SYSTEMS AND PERSONALISATION

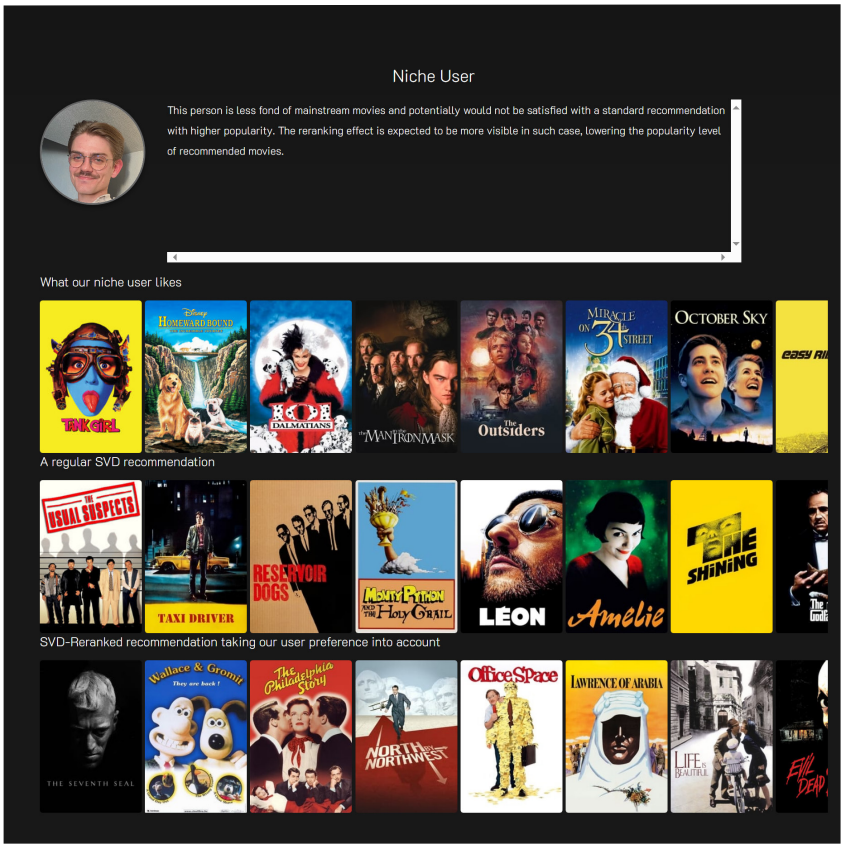
Together with TV 2 MediaFutures has been working on reducing the popularity bias in film recommenders to increase the user engagement. The Demo Re-Ranker V2, spearheaded by Ph.D. candidate Anastasiia Klimashevskaia, and developed by research assistant Snorre Alvsvåg, embodies the efforts in this direction.

This system showcases how personalized approaches can be leveraged to tailor recommendation popularity to individual user preferences. By selecting two example users—one with a penchant for mainstream and highly popular movies, and the other gravitating towards niche and less popular films—we highlight the need for personalized adjustments in recommendation algorithms.



Traditionally, strategies to mitigate popularity bias expose every user to less popular content uniformly. Anastasiias approach, however, analyzes each viewer's watching history to gauge their interest in popular versus unpopular movies, thereby adjusting recommendations accordingly. Recognizing that conventional recommender systems often prioritize popular items for all users, our reranker aims to minimize this bias by adjusting recommendations based on individual user preferences.

While the reranker is expected to have minimal impact on users aligned with popular content, it is anticipated to significantly alter recommendations for niche items. By lowering the overall popularity of recommended items while maintaining relevance and accuracy, we strive to create a more diverse and personalized viewing experience.



MEDIA TRUST AND NEWS CONSUMPTION DURING THE PANDEMIC

Paper:
Monitoring the infection rate: Explaining the meaning of metrics in pandemic news experiences

Paper:
How Rally-Round-the-Flag Effects Shape Trust in the News Media: Evidence from Panel Waves before and during the COVID-19 Pandemic Crisis

In 2023, MediaFutures delved into the impact of the COVID-19 pandemic on media trust and news consumption behavior. Co-authored by Erik Knudsen, new research unveiled insights into the "rally-round-the-flag" effect, demonstrating increased trust in both political leaders and the news media during crises. Utilizing data from the Norwegian Citizen Panel, Knudsen and colleagues tracked citizens' trust in the media over time, revealing a surge in trust during the pandemic's onset, which persisted until 2022. They identified two key factors driving this trust: the perceived significance of news during crises and the interplay between political and media trust.

In a parallel study, researchers John Magnus Dahl and Brita Ytre-Arne explored news users' engagement with COVID-19 metrics and the role of journalism in providing pandemic-related information. Through qualitative interviews, they found that close monitoring of infection rates served not only as a means of understanding the pandemic but also as a tool for assessing risks and planning daily activities. Visualizations, prominently placed infographics, and factual reporting were valued by news users. This indicated a level of trust in the media's ability to provide reliable information, even among those typically skeptical of traditional news outlets. These studies shed light on the complex dynamics of media trust and news consumption patterns during global crises like the COVID-19 pandemic.

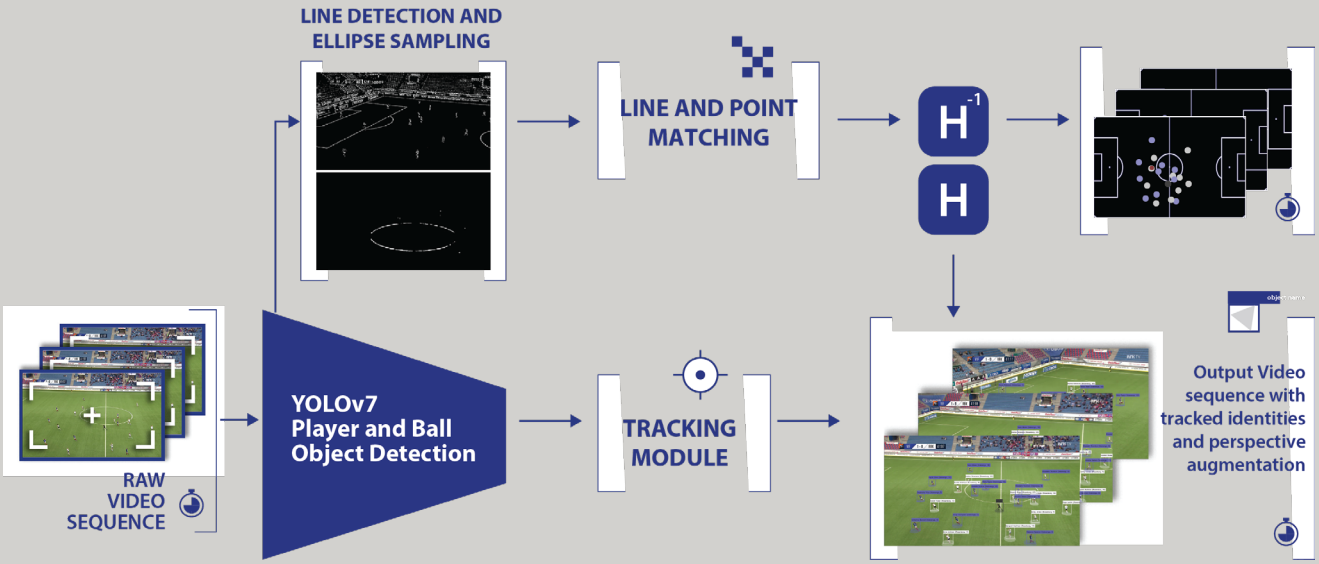
Reflecting on the pandemic's impact, Postdoctoral Fellow John Magnus Dahl states: "Amidst the COVID-19 pandemic, people turned to news media for information and updates on the most recent developments. The news use through the pandemic is a topic that has attracted considerable scholarly interest. A variety of studies showed an increase in news consumption in early 2020, while also highlighting experiences of information overload, news fatigue, and the need for news users to prioritize in their engagements with the pandemic information flow".

Erik Knudsen

John Magnus Dahl

Brita Ytre-Arne

AI IN LIVE SPORTS



Ph.D. candidate Peter Andrews has redefined the commentary role in live games. Together with professor Morten Fjeld and Njål Borch, he developed FootyVision, an innovative approach to Multi-Object-Tracking (MOT), localisation, and augmentation in football videos. FootyVision employs a YOLOv7 backbone trained on an extended player and ball dataset. The MOT module builds a gallery and assigns identities via an algorithm based on feature embeddings, bounding box intersection over union, distance, and velocity. Andrews' new framework sets new benchmarks for subsequent research and contributes new state-of-the-art results for football Multi-Object-Tracking.

By applying FootyVision to the AiCommentator prototype, Andrews merged two game experiences into a single mobile application. The AICommentator provides visual feedback on real-time and historical in-game statistics and player locations.

This tool operates through text-based interactions with a Discord bot, offering automated sports commentary to communicate real-time game developments while engaging the users conversationally. FootyVision is doing the tracking and perspective transformation. By extracting information and using computer vision and AI (e.g deep learning and natural language processing), the researchers build an interactive layer on top of the game which provides the additional information to the user. Through image computer vision and image processing techniques, AiCommentator extracts information from video and allows users to interact with this through a multi-modal conversational agent. The result is a more personalised user experience that synchronises visualisations with commentary.

This advancement redefines the traditional commentary landscape, enabling users to interact directly via natural language or menu-driven interfaces facilitated by a Discord bot.


Peter Andrews


Morten Fjeld


Njål Borch

"The AICommentator provides two modes: interactive and non-interactive. This means users can ask questions regarding player in-game and seasonal performance."

The AI commentator can track players and the ball, getting locations on the top-down view.

In the future, Andrews aims to apply the system to an entirely different medium (politics) to assist users in understanding political debates and facilitating question asking.

Paper:
FootyVision: Multi-Object Tracking, Localisation, and Augmentation of Players and Ball in Football Video

Paper:
AiCommentator: A Multimodal Conversational Agent for Embedded Visualization in Football Viewing

HELLE SJØVAAG

University of Stavanger

MY ROLE

I am a professor at the University of Stavanger and have been working with NRK (Norway's public broadcaster) on developing their front page categorisation scheme. Drawing from my experience in content analysis, I've focused on categorizing news stories, whether they're about crime, politics, social issues, or sports. The main problem here is scale - if the categories are too small, they lose their analytical value. If they are too big, you lose detail. We've been workshopping content categories that fit NRK's profile and remit as one of the main milestones of that project.

HOTTEST TOPIC

Well, AI, obviously. Across various projects, I've delved into AI and journalism, including involvement in the Council of Europe's Expert Committee on media resilience. Our outcomes include guidelines for responsible AI implementation in journalism and a report on sustainable news media financing. Additionally, I contribute to the University of Stavanger's Working Group on AI and collaborate on a project based in Munich focusing on the responsible implementation of AI in local journalism, with a particular emphasis on its ecosystemic impact on the industry.

MOTIVATION

MediaFutures considers the impact of technology on journalism and news as an industry. My interest lies in understanding the structural implications of technology on media companies, including its effects on their strategies and media diversity. By taking this broad perspective, I aim to comprehend how technology shapes the sector as a whole and its long-term resilience.

MEDIA INDUSTRY INSIGHTS

We've seen signs of industry retraction from the technology companies recently, which indicates that the news industries are also trying to express their independence from corporate power in the tech sector. I think this is an interesting move by media companies.

As the Digital Markets Act and the Digital Services Act come into effect, I think this will also provide more power to states and media to protect against platform power. In Norway, the relationship between industry and academia is particularly good, facilitated in large part by MediaFutures.

However, I have a growing concern for the many types of capture that journalism is subject to across the world. This not only pertains to ideological or financial capture - or to what extent political or financial pressures impact on journalism's independence - but also technology capture. What I am most concerned with right now is what power technology may exercise beyond the platforms - at the backbone level of the internet, where platform players are currently investing heavily into subsea cable and data centre structures. Internet backbone technologies like data centres are moving in to assume core critical functions in society.

We have seen a growing number of local conflicts over data centre establishment across the Scandinavian region, pertaining to energy and land use, transparency and job creation. I think we need to pay more attention to this part of the technological infrastructure, because it will be key to developing digital societies, and therefore will create new interdependencies for society as a whole, potentially affecting the security, resilience and transparency of Norway's digital infrastructure.

WINNER OF THE
NORSK MEDIETIDSKRIFT'S RESEARCH PAPER

Read the paper: "There is not enough space on the internet": algorithm-driven front pages and editorial considerations

MediaFutures Ph.D. candidate Marianne Borchgrevink-Brækhus won Norsk Medietidsskrift's research paper of the year. Her award-winning research paper "There is not enough space on the internet: algorithm-driven front pages and editorial considerations" delves into the transition towards algorithm-driven front pages in two prominent online newspapers in Norway.

The committee explained their decision as follows:

- The article deals with a current topic of significant academic and societal relevance. Algorithms have an increasingly significant impact on news evaluations, but are often met with skepticism in academic literature. The public debate revolves around the idea that algorithms undermine editorial judgments and lead to a homogeneous news supply, and weaken the common agenda. The article seeks to move beyond this dominant understanding, and examine the process behind how algorithms structure news website pages. In a time of growing concerns about a polarized climate debate, and where online news sources play a central role in people's news consumption, these are critical questions in a broader societal context.

PROJECT REYNIR

MediaFutures has teamed up with Media City Bergen to combat misinformation through the Reynir project.

Generative AI has increased the threat of misinformation within our democratic society. Manipulated images, often hard to track, raise uncertainties about their origins. How can journalists make sure the picture is real? What if there was a way to embed unalterable metadata in photos?

MediaFutures is part of the project Reynir, consisting of editorial and media tech companies, interest organizations, and academics within Media City Bergen's cluster. Together they develop technological solutions countering threats generated by AI and the spread of misinformation. Project Reynir is also funded by Agenda Vestlandet.

Members of Reynir have already begun using such technology. The C2PA technology verifies the origin of images and other media. The Coalition for Content Provenance and Authenticity (C2PA) is a foundation setting standards on how to mark the origin of digital content. A hidden code inside the picture will make it impossible to edit the image without leaving a trace.

The code itself cannot be altered, ensuring the origin of the image is always known. In simple terms, this is done by using watermarks and encrypted metadata, based on technology that has been in use for years in the banking and finance industry.

First tested in Sony cameras, the technology will soon be implemented in Adobe and Microsoft products. Additionally, the BBC will make use of it. Recently the industry-leading camera manufacturer Leica Camera AG launched the world's first camera with the C2PA standard built-in. From glass to glass, from camera to mobile screen, C2PA will enhance transparency and trust in online content.

Current tasks undertaken by members of Reynir include addressing queries regarding user access to image information, the implementation of technology on third-party platforms, and the application of these principles to live broadcasts and article text.

Centre director Christoph Trattner and the CEO of Media City Bergen, Helge O. Svela.

GET TO KNOW THE WORK PACKAGES

UNDERSTANDING MEDIA EXPERIENCES

The primary goal of our work package is to deepen our understanding of how users will engage with future media by employing advanced quantitative and qualitative methods to monitor and comprehend user behavior across various media platforms.

In the realm of media usage analysis, we have significantly improved a platform for data donation known as "DATADONOR". This platform gathers digital tracking data from users who provide informed consent to download and donate data from the browsers and platforms they use, in accordance with GDPR regulations. This enhancement has proven highly beneficial for our partners at Schibsted and NRK.

Furthermore, our research efforts in this area have yielded valuable insights into the specific media consumption habits of young people, as well as the nuanced methodologies required for measuring media usage accurately.

PhD student Marianne Borchgrevink-Brækhus has focused on understanding young people's experiences with digital news subscriptions. Her research culminated in an article that explores the perceived "burden" of subscribing, leading to a deeper understanding of rapid news consumption practices.

Postdoctoral researcher John Magnus Ragnhildson Dahl, in collaboration with work package leader Brita Ytre-Arne, has conducted an investigation into the dissemination of pandemic-related information and its impact. Their research has elucidated the significance of various metrics in shaping the experiences of news during the pandemic. Additionally, researcher Erik Knudsen has examined trust in news media during the pandemic, drawing evidence from panel surveys conducted before and during the crisis.

John Magnus has also been prominently featured in media discussions, addressing topics such as youth engagement with social media and the experiences of queer Norwegian teenage boys online. His discussions have shed light on the relationship between social media usage and the well-being of young queer Norwegians.

The entire work package collaborated on a comprehensive paper conceptualizing and researching media experiences, summarizing the collective efforts of WP1.

Our team has also actively participated in academic conferences such as the ICA conference and the Nord Media Conference, where Erik Knudsen served as chair. At the latter conference, Erik presented the annual "Media Survey" for the Norwegian media industry.





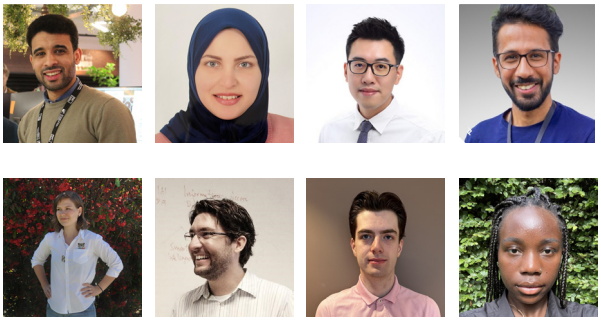


WP2

USER MODELING, PERSONALIZATION & ENGAGEMENT

Personalization and recommendation enable media platforms to support their users in discovering additional media content (e.g., news articles and videos) and to keep users engaged. A potential challenge in this context is the limited capacity of certain recommendation approaches for effective exploration. Users may find it difficult to discover fresh and diverse content. Another challenge is the tendency of these approaches to amplify the popularity of already popular content.

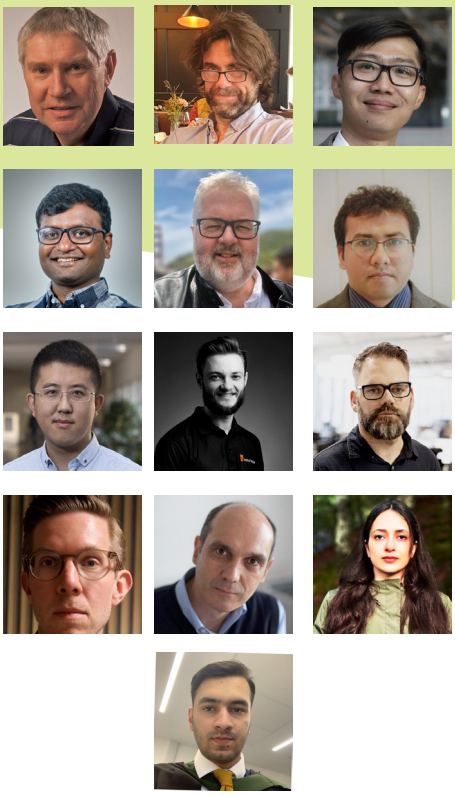
WP2 addresses such undesired effects by computing models of responsible recommendation that can lead to improvement in user engagement. The ultimate objective is to develop user modeling and personalization techniques capable of effectively learning preferences of the users in order to enhance their experience when interacting with media content, while taking into account important competing factors (e.g., business values, societal values, individual values).



WP2 has been in a close collaboration with industry partners at MediaFutures in various capacities. WP2's Ph.D. candidates participated in secondments at TV 2 and VG/Schibsted, enriching their research experiences and contributing to the collaborative efforts. Their research findings were presented at prominent conferences and workshops such as ACM RecSys. In addition to that, techniques of personalization and recommendation have been developed by master students. The techniques have been evaluated according to offline methodologies through collaborations and mentorships of several industry partners among them Bergens Tidende, Schibsted, Amedia, and TV 2.

One of the innovative outcomes of these collaborations was a demo and its corresponding prototype, which can be employed to analyze different forms of industry data and generate relevant recommendations of media content. The recommendation can further be re-ranked to address the overemphasis on popular content, hence better enabling the discovery of niche content.

MEDIA CONTENT PRODUCTION & ANALYSIS



We aim to develop solutions that produce verified and relevant content effectively while employing engaging narratives. We will continue to collaborate closely with media production companies to integrate and test the methods and tools we develop in realistic production settings, thus increasing industry relevance. Our ultimate objective is to analyse user-generated and other media content with respect to quality and validity, extract data, information and knowledge from media content and provide this to algorithms that support (semi-)automated multi-modal content production.

In the domain of content production and analysis, our collaboration with Wolftech resulted in the development of a prototype named "Generative AI for News Production". This groundbreaking prototype leverages deep learning and generative artificial intelligence to convert images into illustrations suitable for storyboards and news ideas. While we understand that journalists may initially approach generation technology with skepticism, the tools we've created demonstrate the innovative potential of these technologies.

Additionally, in partnership with Faktisk.no, we created prototypes, including a digital tool for verifying audiovisual content and an automatic translator. Given the rise of fake news and misinformation, particularly surrounding the conflict in Ukraine, the need for robust fact-checking tools has become increasingly vital for journalists. Our prototype includes features such as military vehicle recognition in videos from war zones and language identification and translation in audio files.

A significant paper on the possibilities and constraints of AI for trustworthy journalism was published. Further, in WP3, we worked on check-worthy claim detection models using input sentence reduction, we finalized a software reference architecture for journalistic knowledge platforms, conducted a survey on multimedia verification, and identified technologies for the future newsroom together with technology experts.

Our participation in international conferences such as the AAAI Conference on Web and Social Media, Multimedia Modeling 2023, and research challenges in information systems (RCIS) showcases our commitment to staying at the forefront of innovation. Additionally, our WP organized MediaEval 2023 and hosted a WP3 session during the Future Week, further solidifying our contributions to the field.

WP4

MEDIA CONTENT INTERACTION & ACCESSIBILITY

Our work package is dedicated to developing methods and technologies that facilitate interaction between media content and users, catering to both human and computerized interfaces. Our goal is to provide personalized and adapted media experiences to users of all technical abilities and personal needs.

In 2023, the advancement of large language models (LLMs) and other AI technologies enabled us to create several experimental datasets. These include event detection in sports and textual representations of media content from Elevkanalen. For instance, AI has been utilized to generate automated audio commentary for soccer matches and to facilitate natural language interaction. The outcomes of our research are applicable across various domains.

We are excited to welcome Oda Elise Nordberg, our new PhD student, who will primarily focus on conversational user interfaces. Additionally, she will contribute to LLM-based interactions and personalized media presentations.

Our PhD students have developed numerous demonstrations showcasing advanced interactive features in soccer coverage. For example, Pete Andrews has demonstrated automated conversational commentary, while Ingar Arntzen has created a system for recording and playback of control states, enabling interactive interfaces aligned with media timelines.

Throughout 2023, our team has engaged with industry partners such as NRK and Schibsted. We've also collaborated with Kantega to present our work on accessibility using AI processing to a diverse audience through physical and online presentations.

Collaborating with TV2 Skole, we have implemented a Norwegian version of the Whisper AI model into experimental production. This involves processing a backlog of over 4500 media assets and daily processing of new content. Additionally, we've facilitated direct collaboration between TV2 Skole and Nasjonalbiblioteket to enhance their models based on real-world data.

Innovation remains a core focus, as demonstrated by our open sourcing of processing platforms used in experiments (CryoCore and CryoCloud) under MIT licenses. These platforms support several processing lines developed in WP4 and are available on GitHub.

Furthermore, all our code has been open-sourced and made accessible on GitHub. In terms of outreach, WP4 has organized or participated in five workshops and seminars, covering topics ranging from heads-up computing to collaborative video editing.

WP5

NORWEGIAN LANGUAGE TECHNOLOGIES

WP5 adopts approaches from the field of Natural Language Processing, primarily based on neural machine learning. Increasingly, we work with training, benchmarking and analyzing large language models. Leveraging language data provided by user partners, we manually annotate corpora. These annotated examples serve as training and evaluation data for supervised ML models, showcasing advanced techniques in robust deep language analysis, adaptive language generation and event identification and extraction. Collaborative efforts among partners are aimed at exploring innovative applications of such models.

In 2023, we have been highly active. Through collaboration with TV2, we have introduced the EDEN (Event DEtection for Norwegian) dataset, marking Norway's inaugural dataset annotated with event details at the sentence level. This dataset stands as a pivotal asset for innovating and validating novel technologies aimed at extracting events and assertions from Norwegian texts. Such advancements hold promise in augmenting language models' capacity to autonomously generate summaries and attain deeper comprehension of textual content.

Moreover, TV2 has pioneered a prototype harnessing Norwegian language models to elevate the accuracy of automated subtitling. A pilot initiative employing this technology is presently underway on the program "God Morgen Norge."
We have been writing papers on bias scores for language models, event extraction, and on extending the EventGraph system to more languages.
In terms of innovation, WP5 has released the first version of the large Norwegian media corpus, and the first Norwegian dataset annotated for event extraction.

Additionally, MediaFutures is a partner in the NORA.LLM initiative, led by NORA aimed at establishing language models as a shared research infrastructure. Funding for the NORA.LLM project has been sought through the National Call for Research Infrastructure, and is still under assessment.

A year in review

MORTEN LANGFELDT DAHLBACK

Faktisk.no

MY ROLE

The factchecking media outlet Faktisk.no joined WP3 as an industry partner in August last year. I have been part of that work package since then, and also taken a seat on the Steering Board. In Faktisk.no Morten works as leader for development and technology.

HOT TOPICS IN MEDIA

Honestly, it'd be a stretch to cite anything other than (generative) AI here. Watching its development in newsrooms, particularly Schibsted's integration of AI-generated summaries, has been fascinating. Despite concerns about misinformation, I believe the fact-checking community is adopting a nuanced view of AI. Personally, I see AI benefiting our profession by enhancing data-driven journalism and verification. Projects like Faktisk Verifiserbar and our analysis of Norwegian TikTok videos demonstrate AI's potential to amplify our capabilities, a trend other small newsrooms will likely experience firsthand.

MOTIVATION

For us, searching for ways to tackle the growing prevalence of audiovisual misinformation was – and remains – our primary motivation to invest time and energy into MediaFutures projects. Whereas text used to be the most prevalent medium for disseminating misinformation, there's been a marked shift towards other modalities that accelerated during the pandemic. The projects in WP3 offer promising solutions to address these challenges. For instance, the Tank Classifier, developed in collaboration with Ph.D. candidate Sohail Ahmed Khan, showcases how MediaFutures research can significantly contribute to our fact-checking efforts.

MEDIA INDUSTRY INSIGHTS

One notable event last year was the use of deepfake audio in the Slovak elections. Synthetic clips, appearing to show the liberal candidate making controversial statements, were uploaded to YouTube shortly before the election. While not entirely surprising, these recordings may have influenced the election outcome in favor of a pro-Russia candidate.

Through some really impressive work, our fact-checking colleagues at Demagog were able to show that the audio was synthetic, but to me, this was one of the most ominous stories of 2023.

Regarding the media industry and academia, I've become even more convinced that leveraging technological innovation to enhance productivity is crucial. It's not just about producing more content, but ensuring that the content created is valuable and engaging. Integrating AI-based tools into newsroom workflows, like AI-generated article summaries, can help achieve this goal.

PERSONAL ACHIEVEMENTS

Our top achievement in 2023 was relaunching the Faktisk Verifiserbar project, which received the "Innovation of the Year" award. Collaborating with NRK and the Institute for Journalism, we verified images and videos from conflict zones, providing a reliable resource for newsrooms. Additionally, we're proud of the AI package developed by our media literacy division, Tenk, in partnership with TjekDet, aimed at teachers and students.

Our biggest challenge remains the daunting task of detecting, verifying, and debunking the increasing volume of misleading content. With content spreading across various platforms and formats, this challenge is expected to persist and grow in 2024.

THE AI BILLION

On September 7, the Norwegian Government announced an allocation of one billion kroner for research on AI and digital technology. This sparked intense discussions among experts, academics, and industry professionals. Institutions, organizations, and individuals are now actively participating in these discussions, proposing strategies for AI research and highlighting the significance of this investment.

In response to the debate on Norway's National AI Ecosystem, SFI MediaFutures emphasizes the importance of interdisciplinary collaboration. While various perspectives have been voiced, MediaFutures highlights the potential of SFIs in bridging the gap between academia and industry. Unlike traditional funding models, SFIs offer a platform for practical application and innovation, driving impactful research outcomes. However, MediaFutures notes that SFIs have limited lifespans, suggesting the need for sustained investment in sector-specific AI research. Transforming successful SFIs into national centers could ensure continued effectiveness in advancing AI-related initiatives and benefiting various sectors nationwide.

Understanding Norway's National AI Ecosystem

The Research Council of Norway (RCN) has established an advisory board to oversee the distribution of AI funding, comprising experts from various backgrounds. Despite initial positive feedback on diversity, concerns have been raised regarding the lack of representation of people of color. Senior Policy Advisor Alex Moltzau, an independent observer, highlights the need for greater inclusivity beyond gender diversity. He advocates for additional members to address the diversity gap within the Advisory Expert Group. MediaFutures echoes these concerns, with Centre leader Christoph Trattner questioning the absence of industry representation in the committee. Moltzau's extensive coverage of AI development in Norway underscores the importance of considering social aspects alongside technical capabilities. As the distribution process unfolds, the composition of the advisory board will influence the selection bias of submissions. Moltzau emphasizes the need for ongoing dialogue and potential adjustments to ensure a fair and inclusive funding structure for AI initiatives in Norway.

Whose Hands Hold Norway's Future of AI?

WOMEN IN AI AND MEDIA

We are conscious of the general underrepresentation of women in ICT, and the center continues to prioritize this in the recruitment process. As a project within ICT, we are performing quite well in this area. Five out of eight doctoral candidates and postdoctoral researchers are women. Half of the staff in research positions are women. Additionally, the center has recently hired four new members in administrative roles, three of whom are women. We also strive to maintain a balanced gender distribution during our annual conference.

This year, there was an equal representation of genders in panels and among our speakers. We worked to ensure a fair gender distribution for participants who submitted posters and demonstrations for the conference, with six out of twelve being women. We also encourage women to take on leadership positions. The center has also focused on having a diverse group of individuals with different cultural backgrounds. Currently, the center boasts representatives from 10 different countries. English serves as the working language to facilitate communication among our diverse team.

RECRUITMENT IN 2023

Anne Marthe Mery Nielsen
Admnistrative Coordinator

Anne started her position as the new Administrative Coordinator at MediaFutures in October 2023. She holds a Master's degree in International Journalism from Cardiff University and a Bachelor's degree in Toursm Management from Abersytwyth University. Anne has previously worked as Community Associate in Spaces where she was responsible for the rental of the office- and working places.

Janina Wildermuth
Communication Officer

Janina started her position as the new Communication officer at MediaFutures in September 2023. She holds a Master's degree in Media Practices from Volda University College and a Bachelor's degree in Northern European studies from Humboldt University in Berlin. In addtion to her position at MediaFutures, Janina also works as a research assitant at TekLab and as a journalist in Bergensavisen, associated with MediaFutures partner aMedia.

Bilal Mahmood
Ph.d. Candidate

WP2: User Modeling, Personalization & Engagement, task 2.1: Development of Impactful Recommendation Approaches

Bilal completed his master's in Computational Data Science from the Free University of Bolzano and has worked with startups, mid-sized companies, and as a freelancer in the position of a data scientist. His main interest is in applying data science tools to solve business and societal problems.

PhD Project Title:
Developing and Evaluation an Impactful Media Recommender System for Responsible User Personalization and Engagement

Project Description:
The growing volume and variety of media content, such as news articles, movies, and soundtracks, pose a serious challenge for users of media platforms to find relevant content. Decision support tools, such as recommender systems, can tackle this problem by learning the particular user preferences and generating personalized suggestions for them tailored to their needs and interests. However, considering the potential adoption of regulations on Artificial Intelligence (AI), such as the AI Act in the European Union, it becomes paramount that recommender systems, with their immense applications in the media domain, from news to entertainment personalization, must be compliant with the regulations, and operateresponsibly. In addressing the challenge, this Ph.D. project will develop and evaluate an impactful recommender system for media platforms that can take into account responsibility factors in addition to content relevance. The system will be capable of effectively eliciting user preferences when interacting with media content and serving them with quality recommendations while keeping them informed and considering important factors, such as editorial norms and societal values. The prototype of the system will be regulation-compliant and will be evaluated in collaboration with industry partners (e.g., TV 2) considering a range of measures including beyond accuracy metrics.

The centre also hired 10 research assistants to support the centre's six work packages. They are listed at under the Research Assistants section on page 40.

Administration

Christoph Trattner	UiB	Centre Director
Anne Marthe Nielsen	UiB	Administrative Coordinator
Janina Wildermuth / Malgorzata Anna Pacholczyk	UiB	Communication Officer
Håkon Mollestad	UiB	Financial Officer

Key Researcher

Hallvard Moe	UiB	Understanding Media Experiences
Brita Ytre-Arne	UiB	Understanding Media Experiences
Erik Knudsen	UiB	Understanding Media Experiences
Kristian Tolonen	NRK	Understanding Media Experiences
Christoph Trattner	UiB	User Modeling, Personalization & Engagement
Mehdi Elahi	UiB	User Modeling, Personalization & Engagement
Lars Skjærven	TV 2	User Modeling, Personalization & Engagement
Igor Pipkin	Amedia	User Modeling, Personalization & Engagement
Astrid Tessem	TV 2	User Modeling, Personalization & Engagement
Thomas Husken	BT	User Modeling, Personalization & Engagement
Krisztian Balog	UiS	User Modeling, Personalization & Engagement
Eivind Throndsen	Schibsted	User Modeling, Personalization & Engagement Media Content Production & Analysis Media Content Interaction & Accessibility Norwegian Language Technologies
Helle Sjøvaag	UiS	User Modeling, Personalization & Engagement
Eva Hagan	NRK	User Modeling, Personalization & Engagement
Bjørnar Tessem	UiB	Media Content Production & Analysis
Andreas Lothe Opdahl	UiB	Media Content Production & Analysis
Duc-Tien Dang Nguyen	UiB	Media Content Production & Analysis
Vinay Setty	UiS	Media Content Production & Analysis
Are Tverberg	TV 2	Media Content Production & Analysis
Fazle Rabbi	UiB	Media Content Production & Analysis
Guohui Xiao	UIB	Media Content Production & Analysis
Sergej Stoppel	Wolftech	Media Content Production & Analysis Media Content Interaction & Accessibility
Lasse Lambrechts	BT	Media Content Production & Analysis
Morten Lnagfeldt Dahlback	Faktisk	Media Content Production & Analysis
Morten Fjeld	UiB	Media Content Interaction & Accessibility
Frode Guribye	UiB	Media Content Interaction & Accessibility
Helwig Hauser	UiB	Media Content Interaction & Accessibility
Lars Kristian Vognild	NORCE	Media Content Interaction & Accessibility

Ingar Mæhlum Arntzen	NORCE	Media Content Interaction & Accessibility
Petter Ole Jakobsen	VIZRT	Media Content Interaction & Accessibility
Grethe Hjetland	Highsoft	Media Content Interaction & Accessibility
Lubos Steskal	TV 2	Media Content Interaction & Accessibility Norwegian Language Technologies
Eivind Fiskerud	BT	Media Content Interaction & Accessibility
Lilja Øvrelid	UiO	Norwegian Language Technologies
Koenrad de Smedt	UiB	Norwegian Language Technologies
Emiliano Guevara	Amedia	Norwegian Language Technologies
Magnus Breder Birkenes	Nasjonalbiblioteket	Norwegian Language Technologies
Erik Velldal	UiO	Norwegian Language Technologies
Samia Touileb	UiB	Norwegian Language Technologies

International researcher

Irene Costera Meijer	Vrije Universiteit Amsterdam	Understanding Media Experiences
Dietmar Jannach	Universität Klagenfurt	User Modeling, Personalization & Engagement
Alain Starke	University of Amsterdam	User Modeling, Personalization & Engagement
Enrico Motta	Open University, UK	Media Content Production & Analysis
Oskar Juhlin	Stockholms Universitet	Work Package Advisory Group
Nicholas Diakopoulos	Northwestern University	Work Package Advisory Group

Postdoctoral researchers with financial support from the Centre budget

John Magnus Ragnhildson Dahl	UiB	Understanding Media Experiences

Postdoctoral researchers working on projects in the centre with financial support from other

Ghazaal Sheikhi	UiB	Media Content Production & Analysis

PhD students working on projects in the centre with financial support from the Centre budget

Bahareh Fatemi	UiB	Media Content Production & Analysis
Bilal Mahmood	UiB	User Modeling, Personalization & Engagement
Marianne Borchgrevink-Brækhus	UiB	Understanding Media Experiences
Pete Daniel Andrews	UiB	Media Content Interaction & Accessibility
Huiling You	UiO	Norwegian Language Technologies
Jonathan Geffen	UiB	Media Content Interaction & Accessibility
Anastasiia Klimashevskaia	UiB	User Modeling, Personalization & Engagement
Sohail Ahmed Khan	UiB	Media Content Production & Analysis

PhD students working on projects in the centre with financial support from other sources

Ayoub El Majjodi	UiB	User Modeling, Personalization & Engagement
Khadiga Seddik	UiB	User Modeling, Personalization & Engagement
Jia-Hua Jeng	UiB	User Modeling, Personalization & Engagement
Oda Elise Nordberg	UiB	Media Content Interaction & Accessibility

Advisory Committee

Sinan Kayhan Aral	MIT
Nicholas Diakopoulos	Northwestern University
David Caroll	The New School's Parsons School of Design
John Ellis	Royal Holloway University of London
Deborah Estrin	Cornell Tech University
Luciano Floridi	University of Oxford
Hans Hoffmann	The European Broadcasting Union – EBU
Dietmar Jannach	Universität Klagenfurt
Oskar Juhlin	Stockholms Universitet
Irene Costera Meijer	Vrije Universiteit Amsterdam
Enrico Motta	The Open University
Alexandre Rouxel	The European Broadcasting Union – EBU

Steering Board

Jan Erik Askildsen	UiB
Nabil Belbachir	NORCE
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Morten Langfeldt Dahlback	Faktisk.no
Stephan Oepen	UiO
Igor Pipkin	Amedia
Pål Nedregotten	NRK
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Hege Stensrud Høsøien	National library
Roger Rebbestad Sætereng	Vizrt
Tor Lunde Larsen	Norwegian Research Council
Frøy Gudbrandsen	Bergens Tidende

Research Assistants

Gloria Anne Babile Kasangu	Centre Administration, User Modeling, Personalization & Engagement
Anders Sandvik Bremnes	Centre Administration, User Modeling, Personalization & Engagement
Daniel Rosnes	Centre Administration
Anders Theodor Andreassen	Media Content Production & Analysis
Ardit Hoti	Understanding Media Experiences
Beate Felde	Understanding Media Experiences
Ruben Caldeira	Media Content Interaction & Accessibility
Daniela Lipcika	Centre Administration
Florence Jane Walker	Centre Administration
Frida Måseidvåg	Norwegian Language Technologies
Lidvard Sandven	Norwegian Language Technologies
Marie Kroka	Norwegian Language Technologies
Snorre Alvsvåg	Understanding Media Experiences
Farhad Vadiee	User Modeling, Personalization & Engagement
Stephanie Portales	Media Content Interaction & Accessibility

Master Students	Thesis Title
Anastasia Vlasenko	Multi-list recommendations for streaming content
Daniel Rosnes	Evaluating Feature-Specific Similarity Metrics using Human Judgments for Norwegian News
Anna Halvorsen Nilsen	Investigating the Effects of Instagram Filters on Perceived Trust in Online News Posts
Frank Rune Espeseth	Media Analytics for Personalisation in Advertisement
Sebastian Cornelius Bergh	Personalised Recommendations of Upcoming Sport Events
Peter Kolbeinsen Klingenberg	Using Content and behavioural data for recommendations in the Norwegian news market
Sophie Martina Blum	Investigating Biases in Rules Extracted from Language Models
Peter Røysland Aarnes	Named Entity Recognition in Speech-to-Text Transcripts
Frederik Hjelde Rosenvinge	Automated Identification of Severe Errors in Speech to Text Transcripts
Espen James Rodriguez Stokke	Semantic Word Error Rate: A Metric Based on Semantic Distance

PUBLICATIONS

Journal Papers

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Blum, S.; Koudijs, R.; Ozaki, A.; Touileb, S. (2023). Learning Horn envelopes via queries from language models. In: International Journal of Approximate Reasoning, 10.1016/j.ijar.2023.109026.

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Knudsen, E.; Lindholm, J.; Heiselberg, L.; Holmberg, N. (2023). Affektiv polarisering i Norden – en oversikt. In: Tidsskrift for samfunnsforskning (pp. 276-281), V. 64, 10.18261/tfs.64.3.7.

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Starke, A. D.; Asotic, E.; Trattner, C.; Van Loo, E. L. (2023). Examining the User Evaluation of Multi-list Recommender Interfaces in the Context of Healthy Recipe Choices. In: ACM Transactions on Recommender Systems, 10.1145/3581930.

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Wang, Z.; Hu, Z.; Rohles, B.; Ljungblad, S.; Koenig, V.; Fjeld, M. (2023). The Effects of Natural Sounds and Proxemic Distances on the Perception of a Noisy Domestic Flying Robot. ACM Transactions on Human-Robot Interaction.

Wisiecka, K.; Konishi, Y.; Krejtz, K.; Zolfaghari, M.; Kopainsky, B.; Krejtz, I.; Koike, H.; Fjeld, M. (2023). In: Supporting Complex Decision-Making: Evidence from an Eye Tracking Study on In-Person and Remote Collaboration, ACM Transactions on Computer-Human Interaction, 10.1145/3581787.

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Arntzen, I. M. ; Borch, N. T.; Andersen, A. (2023). State Trajectory. A Unifying Approach to Interactivity with Real-Time Sharing and Playback Support. In: Proceedings of the Future Technologies Conference (FTC) 2023, Volume 2 (pp. 1-20), 10.1007/978-3-031-47451-4_1.

Barnes, J. C. ; Touileb, S. ; Mæhlum, P. ; Lison, P. (2023). Identifying Token-Level Dialectal Features in Social Media. In: Proceedings of the 24th Nordic Conference on Computational Linguistics (NoDaLiDa).

El Majjodi, A. ; Starke, A. D. ; Elahi, M. ; Trattner, C. (2023). The Interplay between Food Knowledge, Nudges, and Preference Elicitation Methods Determines the Evaluation of a Recipe Recommender System. In: RecSys '23: Proceedings of the 17th ACM Conference on Recommender Systems.

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Guribye, F.; Nordberg, O. E. (2023). Conversations with the News: Co-speculation into Conversational Interactions with News Content. In: CUI '23: ACM conference on Conversational User Interfaces.

Jeng, J. ; Starke, A. D.; Trattner, C. (2023). Towards Attitudinal Change in News Recommender Systems: A Pilot Study on Climate Change. In: Persuasive 2023 Adjunct Proceedings.
Klimashevskaia, A.; Elahi, M.; Trattner, C. (2023). Addressing Popularity Bias in Recommender Systems: An Exploration of Self-Supervised Learning Models. In: Association for Computing Machinery (ACM), 9781450398916.

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Knudsen, E. ; Starke, A. D. ; Trattner, C. (2023). Topical Preference Trumps Other Features in News Recommendation: A Conjoint Analysis on a Representative Sample from Norway. In: RecSys '23: Proceedings of the 17th ACM Conference on Recommender Systems.

Nguyen, T.; Dang, V. ; Tran, M.; Dang Nguyen, D. T. (2023). Leveraging cross-modals for cheapfakes detection. In: ICDAR '23: Proceedings of the 4th ACM Workshop on Intelligent Cross-Data Analysis and Retrieval, ICDAR '23.

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Rapp, A. ; Cena, F. ; Trattner, C. ; Orji, R. ; Vassileva, J. ; Starke, A. D. (2023). In BehavRec: Workshop on Recommendations for Behavior Change. RecSys '23: Proceedings of the 17th ACM Conference on Recommender Systems, 10.1145/3604915.3608751.

Samuel, D. ; Kutuzov, A. ; Touileb, S. ; Velldal, E. ; Øvrelid, L.; Rønningstad, E.; Sigdel, E.; Palatkina, A. (2023). NorBench – A Benchmark for Norwegian Language Models in: Proceedings of the 24th Nordic Conference on Computational Linguistics (NoDaLiDa).

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ECONOMY OF MEDIAFUTURES

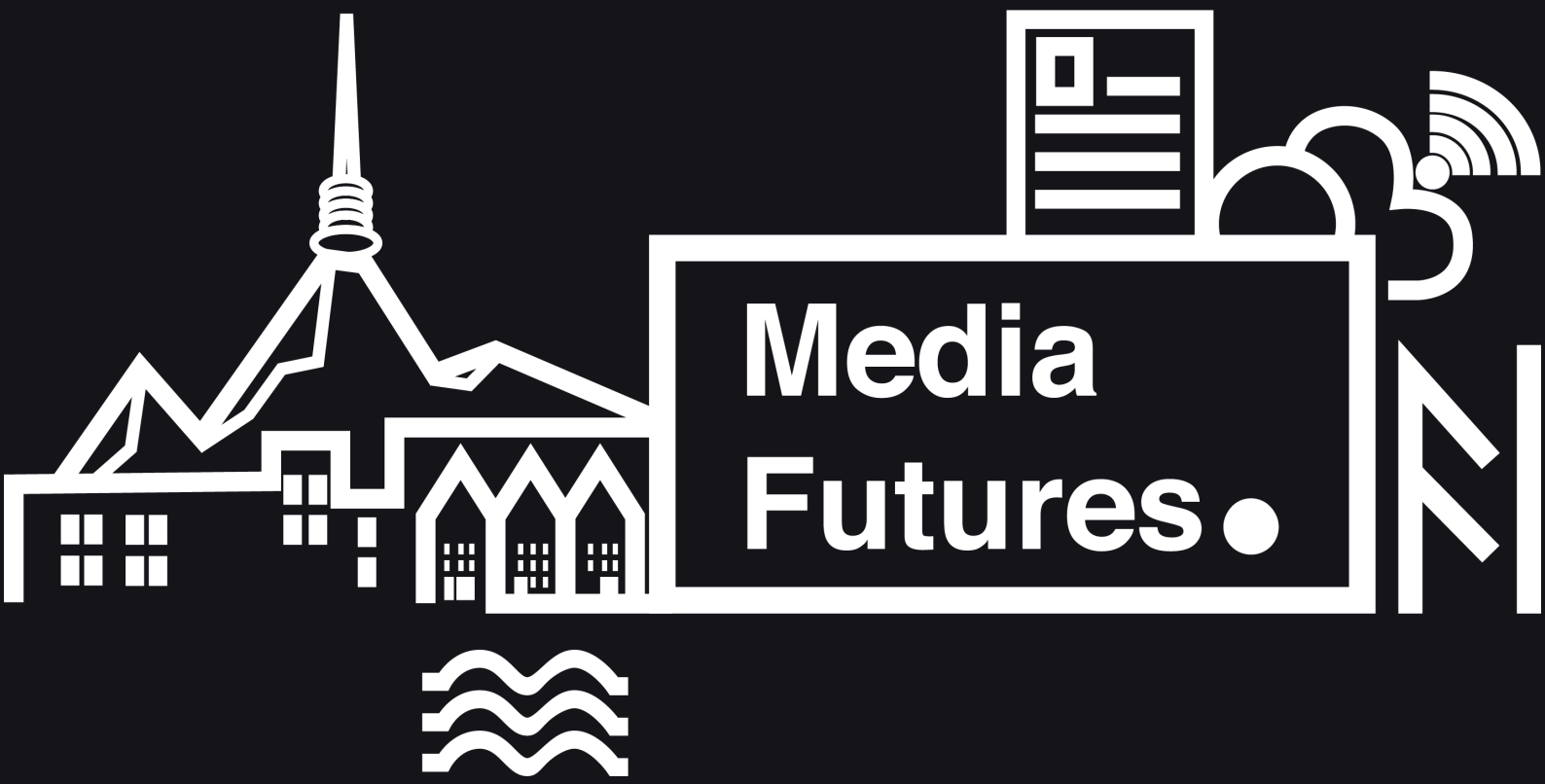
COSTS PER PARTNER PER YEAR (IN NOK 1,000)	2022	2023
Universitet i Bergen	22,496	32,835
Universitet i Oslo	1,412	1,893
Universitet i Stavanger	273	1,832
TV 2 AS	924	3,000
Norsk Rikskringkasting AS	504	1,947
Nasjonalbiblioteket	2,576	711
Schibsted ASA	3,285	2,210
International Business Machine AS	68	592
Vizrt Norway AS	-	1,759
Wolftech Boradcast Solutions AS	448	241
Bergens Tidende AS	378	570
Highsoft AS	127	311
Amedia AS	491	1,003
NORCE Norwegian Research Centre AS	1,167	1,141
Faktisk.no AS	-	167
SUM		50,212

FUNDING SOURCES (IN NOK 1,000)	2022	2023
Own contribution	10,381	13,064
Public funding	2,866	-
Privat funding	7,282	15,384
Research Council of Norway	13,620	21,764
SUM	34,149	50,212

" The financial figures also match well with the budget figures in 2023. Therefore, MediaFutures continues to stay on track with the plan."

Håkon Mollestad, Financial Officer

	IN MNOK
Total budget of MediaFutures	**275**
Funding from Research Council of Norway	96
Industry funding	88,4
Research partners' in-kind contribution	90,6



More information at

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Research Centre for Responsible Media Technology & Innovation

Annual Report 2023

RCN project number 309339