



**Brij Disa Centre for
Data Science and
Artificial Intelligence**

INDIAN INSTITUTE of MANAGEMENT AHMEDABAD

विद्याविनियोगाद्विकारः

COMMUNIQUE

MARCH 2024

COMMUNIQUE
MARCH 2024

WORKSHOP ON DATA SCIENCE AND ARTIFICIAL INTELLIGENCE

APRIL 9TH TO 15TH, 2024



UPCOMING EVENT

Introduction

The first edition of the workshop on Data Science and Artificial Intelligence will be held from April 9th to 15th, 2024, at Indian Institute of Management, Ahmedabad. This summer school will focus on upskilling the participants with knowledge about cutting-edge techniques in modern applied Statistics, Data Science, and Artificial Intelligence, and their role in solving problems in business and management. Sessions will cover essential concepts in Regression analysis, Bayesian analysis, Deep Learning, Graphical models, Causal inference, Optimization, Supervised and Unsupervised machine learning methods. In-class learnings will be supplemented with sessions on paper discussions and experience sharing with the hope that a holistic understanding of the role of modern statistics in business research is developed among the enrollees.



Sessions will be taught by faculty from IIM Ahmedabad and invited experts from academia and industry.

Target Audience

Masters/PhD Students/Postdocs/Faculty Members working in Statistics/Data Science/Management Science and desirous of upskilling themselves with current age techniques of modern Statistics and Data Science. Industry professionals working in the aforementioned areas and interested in learning and applying modern Statistical and Data Science techniques in obtaining data-based insights on problems arising in their respective fields.

Workshop Chairpersons



Prof. Dhiman Bhadra
IIM Ahmedabad



Prof. Karthik Sriram
IIM Ahmedabad

Objectives

The workshop aims to introduce various methods from machine learning and optimization that will be useful in making business decisions when faced with large amounts of data. The objectives of the course are as follows:

- Train the participants on handling large amounts of data and perform classification and predictive modelling tasks. The training will help automate business operations decisions using data.
- Train the participants on using essential data analysis and optimization libraries available off the shelf.
- Give the participants insight into how data-driven ideas are used to develop artificial intelligence technologies to enhance human potential and solve challenging problems using machines.



Deep-dives of industry usecases in Insurance fraud detection, Stress testing in Banking, Ecommerce platform analytics, Retail omnichannel personalization using AI and so on!

Course Content

The following concepts will be covered during the programme:

- Regression Analysis
- Bayesian analysis
- Supervised and Unsupervised Learning
- Causal inference
- Optimization
- Deep learning
- Text analytics

Pedagogy

The following methods will be used during the programme:

- Case studies
- Lectures
- Computer Labs and Exercises

FAIRNESS IN ARTIFICIAL INTELLIGENCE

A BALANCING ACT



DEBJIT GHATAK

Centre Head - Brij Disa centre for Data Science and Artificial Intelligence

PGPX-IIMA | B.E. BITS PILANI



As Artificial intelligence (AI) drives everything from loan approvals to facial recognition software, there is a need to bring responsibility in an attempt to ensure fairness. Fairness, in its most general sense, refers to the absence of prejudice or favoritism. Translating this concept to AI in the real-world is easier said than done. Fairness in AI would mean ensuring that algorithms are unbiased, are not discriminatory against specific groups, and would yield outcomes that are just and equitable [1].

Fairness in AI holds particular significance for the Global South. These regions often lack the extensive resources and robust data sets available to their developed counterparts. This can exacerbate existing biases in AI systems, potentially leading to discriminatory outcomes in cases such as loan approvals, healthcare access, and even social welfare programs. Furthermore, rapid digital adoption in India, for instance, makes it crucial to ensure AI is inclusive and caters to the diverse needs of its population. As governments and enterprises begin to explore AI based use cases for either better social or business outcomes, minimizing or eliminating harm could go a long way in building trust in these systems. By prioritizing fairness, these regions can ensure AI empowers their citizens and bridges the digital divide, fostering inclusive economic growth and social progress.



This article delves into the complexities of fairness in AI, exploring its various facets, the challenges it presents, and potential solutions.

The Crucial Role of Context

Context plays a vital role in defining fairness. Let us take the case of implementing AI to identify fraudulent behavior in a Public Distribution System. Undoubtedly such a model could also wrongly tag certain individuals as fraudulent, inconveniencing and possibly depriving the person from much needed resources. Now, it isn't worth all the effort, costs and potential harm at a 50% implementation accuracy. However, above a certain level, say 80%+ initial accuracy, one might implement such an AI-driven program with the greater objective of achieving significantly higher accuracy levels at the earliest. Even at such accuracy levels and with swift remediation, this could cause significant harm for those who are completely dependent on this income.

Now consider the same for using AI to diagnose illness, what would be an acceptable level of accuracy? Perhaps a human doctor's accuracy benchmark may serve as a guide, but would that be sufficient? But then, one would tend to be much more forgiving when an AI based recommendation system gives sub-par product or movie recommendation for a while. The legal landscape surrounding AI fairness is still evolving, but multiple litigations highlight the complexities involved, the diverse ways AI fairness issues can manifest and the need for context-specific solutions.



EU vs. HireVue (2022): The investigation by the European Union's data protection agency found that HireVue, a company offering AI-powered video interviewing software, violated GDPR (General Data Protection Regulation) by failing to be transparent about how it collected and analysed candidate data. This case highlights the growing scrutiny on AI systems for potential privacy violations and lack of transparency in their decision-making processes.

Jia v. Fisher (2023): In the United States, this lawsuit involved a woman denied parole based in part on an AI risk assessment tool. This case highlights the potential for bias in AI-powered criminal justice tools, particularly when it can lead to harsher sentences or limited opportunities for rehabilitation.

Error in Illinois Unemployment System (2021): It was a significant error demonstrating the potential for mistakes in AI systems. A glitch in Illinois' AI-powered unemployment system flagged hundreds of thousands of legitimate claims as fraudulent, causing delays and financial hardship for many individuals. This case underscores the importance of testing and oversight when dealing with critical applications impacting people's livelihoods.



Defining a universal degree of fairness across all AI applications is challenging. Critical applications, such as those related to healthcare or criminal justice, might demand stricter fairness standards compared to recommender systems.

Ethics and Regulation: Striking a Balance

The question arises: Is AI fairness primarily an ethical concern, or should it be addressed through regulations? While a robust AI moral code could be a valuable step, relying solely on ethics might not be sufficient. Regulations can provide a necessary framework to ensure accountability and enforce fairness standards. For instance, datasets and models used by organizations are evolving continuously. It would be difficult to ensure an evaluation of individuals claims of unfair outcomes or bias if the versions of the datasets, model and outcomes that were used at the time are unavailable. Perhaps, some checks and balances are necessary. Certain regulations, on similar lines as banking practices, that would allow storage of all necessary information that would allow a fair evaluation of such systems.



In conclusion, achieving fairness in AI requires a multi-pronged approach. By prioritizing diverse datasets, advocating for transparency, and establishing clear ethical guidelines, we can harness the power of AI for a more equitable and inclusive future.

IDENTIFYING OR PREDICTING AN UNUSUAL BEHAVIOR IN THE SYSTEM:

ANOMALY DETECTION



DHAVAL PUJARA

POST-DOCTORAL RESEARCH ASSOCIATE
PH.D. IISC-BANGALORE

Dhaval is a post-doctoral research associate at IIM Ahmedabad. His research interests are scheduling, bi-level optimization, mathematical modelling, development of heuristic and meta-heuristic algorithms, and application of AI/ML-based solution methods in operations research and management.



Any system (finance, engineering, biological, etc.) is expected to function in a specific manner to perform the defined task. To ensure the proper functionality of the system all the time, values of the system parameters are recorded continuously over a time period. Values of the system-parameters in a specified range ensure the healthy functioning of the system. However, fluctuation in the system-parameters values beyond a specified range signals a change in the system's behaviour, which may cause undesired output such as lower efficiency, system failure, and sometimes even a serious hazardous condition. In literature, the process of predicting or identifying the occurrence of undesired events based on the analysis of values of system-parameters is called "anomaly detection". The AI/ML field provides efficient algorithms for anomaly detection in complex systems.



In literature, the process of predicting or identifying the occurrence of undesired events based on the analysis of values of system-parameters is called "anomaly detection".

Case (i)- Anomaly Detection in Engineering:

Consider the example of a hydraulic power generation system, which produces electricity from the water flow through the generator. The sensors installed in the system continuously record the values of several water flow parameters such as temperature, pressure, velocity, etc. The values of water-flow parameters in the specific range ensure the high performance of the power generation system. However, fluctuation in the values of these parameters beyond the particular limits creates turbulence in the flow of the water, which may cause a drop in the power output and sometimes may lead to permanent damage to the generator blades. Hence, by continuously analyzing the signals received in terms of the values of water-flow parameters, one can prevent the occurrence of an undesired event by predicting it before it happens or identifying and recovering quickly upon the occurrence before it causes severe damage in the system.

Case (ii)- Anomaly Detection in Banking:

To protect customers against cyber fraud, the banks continuously record multiple details related to each customer account. These details can be data on transaction history, transaction amount, time and location of purchases, list of payment sites, etc. For any customer, when data related to any parameter changes beyond the normal (usual) range, the bank sends an alert to the customer on the transaction. For example, consider a

customer whose average payment for an online order is 2000 Rs. and if the latest order is in the amount of 2,00,000 Rs., then the bank would consider this as an unusual (anomaly) case and confirm with the customer about the authenticity of the order. Similarly, the bank may freeze a customer's bank account upon recording several large transactions in a very short period due to doubt about the customer being a victim of cyber fraud.

Case (iii)- Anomaly Detection in Stock Market Trading:

'Pump-and-Dump' is a scam where scammers spread misleading information (suggestions) through online channels, which encourages investors to buy shares in a suggested company and boost the price of stock. Once the stock price increases, the scammers sell large quantities of their shares (purchased at a very low price) at a high rate, which causes a drastic drop in stock price and new investors to lose their money. To identify such scams, the Indian stock market regulator (SEBI) continuously records the data related to each company's stock. SEBI records volume at each stock price, seller and buyer information, the average quantity of shares traded on different events, etc. for each stock. In any stock, when data points related to several parameters are observed falling out of the normal ranges, it signals the possibility of unethical practices involved in the stock trading activity.



Such practice had come to light a few days back. As per the reported news*, SEBI observed a high volume of shares traded by specific investors in some stocks. The quantity of stocks traded during the specific short period was extremely high compared to the average amount of stocks traded during the entire market hours. Repetition of this pattern in some stocks gave a signal to SEBI. SEBI found ten individuals involved in the Pump-and-Dump scam based on the investigation. The identified ten individuals were part of the expert panel, giving calls on buying specific company stock in their show telecasted by a renowned news channel. The scammers would list the stocks they will recommend during the show and buy the same stocks at the beginning of market hours before their recorded show goes on air. As soon as the news channel telecasts its program, the stock price increases due to retail investor's participation. That is when scammers will square off their positions in the stock by selling large quantities of stocks they bought earlier, which causes a drastic drop in the stock price. This caused a loss to retailers. After identifying such unethical practices, SEBI banned scammers from the securities market.

*<https://economictimes.indiatimes.com/markets/stocks/news/sebi-bars-ten-entities-market-experts-from-securities-market-for-indulging-in-fraudulent-activities/articleshow/107539482.cms?from=mdr>

TIME-SERIES FORECASTING



ARZOO NARANG

POST-DOCTORAL RESEARCH ASSOCIATE
PH.D. IIT ROPAR

Arzoo is a post-doctoral research associate at the Brij Data Centre of Data Science and AI. Her research interests include nonlinear dynamics, mathematical modeling, application of statistical techniques and employing time-series analysis in network science and complex systems.



Throughout history, humans have grappled with uncertainty, a constant force shaping our lives. From ancient civilizations to today's research efforts, the quest to understand and navigate uncertainty has persisted. Predicting future events has driven strategies across disciplines, aiming to minimize risks and optimize outcomes. Time series data lies at the heart of this endeavour, providing insights into economic trends, weather patterns, and more. Its importance in finance, healthcare, and meteorology highlights the need to analyze temporal patterns for informed decision-making. In various domains, including retail and natural sciences, time-series forecasting emerges as a vital tool, using data insights to anticipate future trends and values amidst uncertain conditions.

Forecasting encompasses the prediction of future values using historical data, particularly time series data, wherein each data point is linked with a timestamp. Common statistical techniques such as ARIMA, ETS, MSTL, Theta, and CES have seen widespread use in this regard. Nonetheless, recent advancements in deep learning, such as Recurrent Neural Networks (RNNs), Convolutional Neural Networks (CNNs), and Transformer-based models, have exhibited significant promise. These deep learning models handle complex, multi-dimensional time series data, often surpassing classical statistical approaches.

Industrial Applications

Time series forecasting is pivotal in various industries, offering invaluable insights for informed decision-making and strategic planning. In finance, accurate predictions of stock prices, currency exchange rates, and economic indicators are crucial for investment strategies and risk management. Retailers forecast sales volumes to optimize inventory management and streamline supply chain operations. Similarly, in healthcare, forecasting patient admissions, disease outbreaks, and resource utilization facilitates proactive planning and resource allocation. These applications extend to other sectors such as energy, transportation, and weather forecasting, where anticipating trends and mitigating risks are paramount. Deep learning forecasting models have attracted considerable interest in research communities owing to their remarkable performance in recent prominent competitions, such as those organized by (Makridakis et al, 2020, 2022). Their success has emphasized their potential for addressing large-scale tasks across various industries. Benidis et al.(2022) have contributed to this field through the examination and classification of neural forecasting models, shedding light on their diverse applications and methodologies.

Challenges

Time series forecasting, despite its immense potential, comes with its share of challenges. These include handling seasonality and trend patterns, managing noisy data and outliers, addressing missing values, and choosing the right modeling techniques. Additionally, many time series datasets' dynamic and evolving nature adds complexity to the task. There's skepticism about neural forecasting methods in the field, attributed to several factors. These include misaligned or poorly defined evaluation settings and limited datasets, which make it hard for them to perform well. Moreover, the absence of standardized large-scale datasets tailored for deep learning methods might hinder progress in this field. Other fields have advanced because of benchmark datasets and clear evaluation standards. Therefore, creating such resources is vital for driving innovation and testing new techniques in time series forecasting.



Advancements in Time-Series Forecasting

Time series forecasting, despite its immense potential, comes with its share of challenges. These include handling seasonality and trend patterns, managing noisy data and outliers, addressing missing values, and choosing the right modeling techniques. Additionally, many time series datasets' dynamic and evolving nature adds complexity to the task. There's skepticism about neural forecasting methods in the field, attributed to several factors. These include misaligned or poorly defined evaluation settings and limited datasets, which make it hard for them to perform well. Furthermore, the lack of standardized large-scale datasets specifically designed for deep learning techniques could be impeding advancements in this domain. Therefore, creating such resources is vital for driving innovation and testing new techniques in time series forecasting.

Therefore, creating such resources is vital for driving innovation and testing new techniques in time series forecasting. In recent years, Natural Language Processing (NLP) has seen significant advancements, largely driven by the emergence of Large Language Models (LLMs). These models, trained on vast datasets, exhibit a deep understanding of human language patterns and excel in tasks such as text generation, translation, and question answering, often without task-specific training. Concurrently, developments in deep learning have led to the creation of sophisticated models like TimeGPT by Nixtla (Garza and Mergenthaler-Canseco, 2023) and TimesFM by Google (Das et al, 2023), revolutionizing time series forecasting. TimeGPT, a Transformer-based time series model developed by Nixtla, incorporates self-attention mechanisms. Utilizing historical data, it generates forecasts by implementing methods such as local positional encoding. Additionally, it adopts an

encoder-decoder architecture with multiple layers, residual connections, and layer normalization. TimeGPT is specialized for handling time-series data, focusing on minimizing forecasting errors. Challenges The creation of sophisticated models like TimeGPT by Nixtla (Garza and Mergenthaler Canseco, 2023) and TimesFM by Google (Das et al, 2023), is revolutionizing time series forecasting.

Conclusion

In conclusion, time-series forecasting is pivotal in shaping decision-making processes across industries. While challenges persist, these advancements mark a significant leap forward in time series forecasting, promising greater accuracy and efficiency in predicting future trends and patterns.



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SEMINARS AND WEBINARS

IIMA Brij Disa Centre for Data Science and Artificial Intelligence
INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD

HYBRID SEMINAR

THE CHANGING REGULATION OF AI: A VIEW FROM THE UK

SPEAKER

PROF. PAUL NIGHTINGALE

Professor Of Strategy (SPRU - University of Sussex Business School),
Associate Dean of Research (University of Sussex Business School)

📅 19th October 2023 📍 SR-11, AB-2

🕒 11 am to 12 noon

📄 Scan to register for this webinar

🌐 Brij Disa Centre for Data Science and AI 🌐 www.iima.ac.in

Title: The Changing Regulation of AI: A view from the UK

Bio: Professor Paul Nightingale, an esteemed academic, boasts a career that spans various facets of the field of strategy. He serves as a Professor of Strategy within the Science Policy Research Unit (SPRU) and in the domain of Business and Management. In addition to these prestigious positions, he serves as Associate Dean of Research at the University of Sussex Business School.

Professor Paul Nightingale, an esteemed academic and scholar, has cultivated a diverse career marked by a deep commitment to understanding innovation, strategy, and the complex relationships among technology, finance, and public policy. Grounded in a background in chemistry, he holds a Master of Science (MSc) in Innovation Management and a Doctor of Philosophy (DPhil) from the University of Sussex. After completing his PhD, Professor Paul spent a decade at the Complex Product Systems Innovation Centre, jointly run between SPRU and CENTRIM. During this tenure, he made significant contributions, focusing on bioinformatics systems and risk management technology within investment banks. His work consistently sheds light on the intricacies of technical change and the evolving role of innovation in the ever-changing economic landscape. Professor Paul Nightingale remains a prominent figure in academia, renowned for his influential work in these vital areas.



IIMA Brij Disa Centre for Data Science and Artificial Intelligence
INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD

WEBINAR

GENERATIVE AI AND PERSONALIZED VIDEO ADS

30th October 2023 2 p.m. IST

SPEAKER
PROF. ANUJ KAPOOR
Assistant Professor of Marketing

Scan to register for this webinar

[in](#) Brij Disa Centre for Data Science and AI www.iima.ac.in

Title: Generative AI and Personalized Video Ads.

Bio: Prof. Anuj Kapoor is an Assistant Professor of Quantitative Marketing at IIM Ahmedabad. His research interests are in the economics of digitization, artificial intelligence, privacy, and digital platforms. His research focuses on understanding how big data and artificial intelligence shape consumer welfare and digital markets. He uses a quasi- and actual experimental variation to explore how different types of human behaviour in varying contexts affect algorithms. He works closely with firms to suggest more ways to become data-driven. He has ongoing collaborations with various tech start-ups in India in the digital media and health tech space. Anuj received his Ph.D. in Business Administration (Quantitative Marketing and Economics) from the David Eccles School of Business at the University of Utah. After his doctoral studies, he worked in the data science space in San Diego, USA. At IIMA, he teaches electives on Artificial Intelligence and Marketing and Privacy Paradox: Data, Artificial Intelligence, and Digital Platforms.

Abstract: We study the effectiveness of personalized video advertisements created using Generative AI (GenAI). We run a mobile ad targeting field experiment on WhatsApp in partnership with a leading B2C e-commerce brand that sells eco-friendly sustainable products. We randomize users into receiving ads from one of three targeting conditions – 1) Generative AI-enabled personalized video ads, 2) personalised image ads, and 3) generic non-personalized video ads. The first group is our main treatment, and the latter serves as a baseline. Our results show that Generative AI-enabled personalized video ads increase engagement by 6–9 percentage points over the baselines. We explore response heterogeneity across important user segments and find that GenAI-enabled ads increase engagement among potential “high-value” users and historically “non-engaged” users.



IIMA Brij Disa Centre for Data Science and Artificial Intelligence
INDIAN INSTITUTE OF MANAGEMENT AMERINDRAG

HYBRID SEMINAR

PAYMENTS DATA AND MACHINE LEARNING: OPPORTUNITIES AND CHALLENGES

SPEAKER

DR. AJIT DESAI
Principal Data Scientist | Bank of Canada

22nd November 2023
11 am to 12 noon

Scan to register for the webinar

in Brij Disa Centre for Data Science and AI www.iima.ac.in

Title: Payments Data and Machine Learning: Opportunities and Challenges

Bio: Ajit Desai is currently working as a principal data scientist in the research division of the Bank of Canada (Canada's reserve bank). His work leverages cutting-edge techniques such as artificial intelligence (AI), machine learning (ML), and quantum computing (QC) to study payments data, including cryptocurrency data, with the primary objective of making digital payments infrastructure safe and efficient. Dr. Desai received his Ph.D. from Carleton University in 2018 in Computational Science and Engineering and his M.S. from the Indian Institute of Technology Madras in 2011.

Abstract: The world is changing, and so is the way it is measured; we are now living in the age of AI and Big Data. This is particularly evident in the payments ecosystem due to rapid digitization accelerated by the COVID-19 pandemic. This shift is generating an abundance of high-frequency payments data, complemented by the continuous advancements in artificial intelligence, machine learning, and quantum computing. This synergy of payments data and advanced analytics holds promise for addressing various challenges, such as real-time economic monitoring, systemic risk assessment, and efficiency improvements in payments systems. This seminar will provide a comprehensive overview of research in this area, showcasing practical use cases across supervised, unsupervised, and reinforcement learning, along with the evolving field of quantum computing.



IIMA Brij Disa Centre for Data Science and Artificial Intelligence
INSTITUTE OF MANAGEMENT ASSOCIATES

WEBINAR

ANOMALY DETECTION FOR TIME-SERIES DATA

Online data-driven changepoint detection for high-dimensional dynamical systems

5th December 2023 5 p.m. IST

SPEAKER
PROF. ROMIT MAULIK
 Assistant Professor at Penn State University

Register in advance

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Image created using Dall-E

Title: Anomaly detection for time-series data: Online data-driven changepoint detection for high-dimensional dynamical systems

Bio: Prof. Romit Maulik is an assistant professor in the Information Science and Technology Department at Pennsylvania State University and a faculty affiliate at the Mathematics and Computer Science Division at Argonne National Laboratory. He was the Margaret Butler Postdoctoral Fellow at Argonne National Laboratory. He holds a doctoral degree in mechanical and aerospace engineering from Oklahoma State University. Dr. Maulik leads the research team at the Interdisciplinary Scientific Computing Laboratory (ISCL), where he focuses on leveraging the concepts of applied mathematics, physics, and computer and data science to design computational strategies for multidisciplinary engineering applications.

Abstract: Prof. Romit Maulik presents anomaly detection algorithms for detecting intermittent events in dynamical systems proposed in his recently published research article - "Online data-driven changepoint detection for high-dimensional dynamical systems". In this work, data-driven anomaly detection algorithms are devised for high-dimensional dynamical systems that exhibit intermittent events. The proposed algorithm addresses (a) high-dimensionality through deep learning compression via autoencoders and (b) online detection of changepoints via a conjugate Bayesian formulation. The proposed algorithms are tested on prototypical dynamical systems given by the (a) Lorenz-63 system, (b) the Rossler system, and (c) a high-dimensional forced Kolmogorov flow. Further analysis shows that the proposed method can detect transitions associated with visiting new regions of phase space during the evolution of the dynamics.





R&P seminar in collaboration with Brij Disa Centre for Data Science and Artificial Intelligence

Responsible News Dissemination and Echo Chambers: Impact of Personality Type and Ideology on Echo-Chamber Driven Misinformation

December 18, 2023 at 4.00 pm

Ashish Kumar Jha
Associate Professor
Business Analytics,
Trinity College Dublin, Ireland

Title: Responsible News Dissemination and Echo Chambers: Impact of Personality Type and Ideology on Echo-Chamber Driven Misinformation

Bio: Ashish Kumar Jha, Associate Professor at Trinity College Dublin, founding director of M.Sc. in Business Analytics and Director of Trinity Centre for Digital Business and Analytics. Research focus: social media's impact on firm value and spread of information/misinformation. Honorary M.A. from Trinity College Dublin. Visiting lecturer in the USA, Canada, China, UAE, and India. Member of the Association of Information Systems. Associate editor at European Journal of Information Systems and Information & Management. Senior editor at the Journal of Organizational Computing and E-Commerce. Consults for Microsoft Ireland, Novartis, EY Ireland, BNY Mellon. Holds patents in Robotic Process Automation. Well funded by Science Foundation Ireland, funded investigator for SFI-Funded research centre ADAPT.

Abstract: Digital social media platforms are pivotal in disseminating and shaping online discourse. Misinformation proliferation poses a significant threat due to heightened information consumption. Echo chambers, limiting environments where like-minded content reverberates, exacerbate this issue. Our study explores how user-level factors like political ideology and personality intersect with platform dynamics to influence information perception. We investigate how platforms disseminating responsible news can counter echo chambers and curb misinformation. Through a US political context experiment with 464 respondents across two phases, we find that challenging opinions have a greater impact on mitigating fake news dissemination among right-wing individuals. This underscores the need for platforms to foster diverse and responsible digital environments. Theoretical contributions include examining social media users' information consumption from a psychological standpoint and empirically testing existing arguments.

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