NEXTGEN DATA 2026

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Lambda Research Group

GLOBAL SUMMIT ON

AI, MACHINE LEARNING & DATA SCIENCE INNOVATION

March 30-31

2026

BARCELONA, SPAIN

Lambda Research Group
71-75 Shelton Street, Covent Garden, London, United Kingdom, WC2H 9JQ | +447418377500

SCIENTIFIC PROGRAM

DAY 01
MONDAY

Day 01 | March 30, 2026 | Forum A | Barcelona, Spain	
08:00-09:30	**Registrations**
09:30-09:40	**Inaugural Ceremony**
KEYNOTE FORUM	
09:40-10:20	Title: Advancing NextGen Analytics in Medical Imaging with an AI/ ML-based Robust PCA Methodology
	Ding-Geng Chen, *Arizona State University, USA*
10:20-11:00	Title: From Batch Failures to Real-Time Success: A Kafka–Flink Streaming Platform for 600M Daily E-Commerce Events
	Mahmut Murat, *Trendyol, Turkey*
Networking and Refreshments Break | 11:00-11:20 @ Foyer	
11:20-12:00	Title: Building Trustworthy Data Pipeline for Precision Pharmacogenomics
	Dhurba Bhandari, *Datum Bio, Nepal*
12:00-12:50	Title: One-Time Pad Encryption Enablers as Embedded False Premises in Artificial Intelligence Training and Use
	Christopher Geiger, *Midflorida Credit Union, USA*
	Cwynn Geiger, *Lake Highland Preparatory School, USA*
Group Photo @ 12:50-13:00	
Lunch and Networking Break | 13:00-13:50 @ ARESTA	
13:50-14:30	Title: How are we going on trusting AI?
	Dietrich Brandt, *RWTH Aachen University, Germany*
SPEAKER SESSION	
Session chair	**Ding-Geng Chen,** *Arizona State University, USA*
Session chair	**Dietrich Brandt,** *RWTH Aachen University, Germany*
14:30-15:00	Title: AI and how it has learned to mislead people
	Luca Bischoni, *RWTH Aachen University, Germany*

15:00-15:30	Title: Artificial Intelligence Guidelines for Scientific Writing in Academic Engineering
	Bernardo Milheiro, *Polytechnic Institute of Setubal, Portugal*
15:30-16:00	Title: The Impact of AI on Human Creativity: Enhancing or Eroding the Creative Spark
	David John Wortley, *IORMA Health and Wellness Technology Centre, UK*
Networking and Refreshments Break | 16:00-16:20 @ BAR FORUM	
16:20-16:50	Title: Graphical Models for Ultrahigh-Dimensional and Error-Prone Data by the Boosting Algorithm
	Li-Pang Chen, *National Chengchi University, Taiwan*
PANEL DISCUSSION	
16:50-17:50	Title: AI and the University Education of the Future
	Dietrich Brandt, *RWTH Aachen University, Germany*
	Christopher Geiger, *Midflorida Credit Union, USA*
PANEL DISCUSSIONS & B2B MEETINGS	

End of Day 1 In-Person

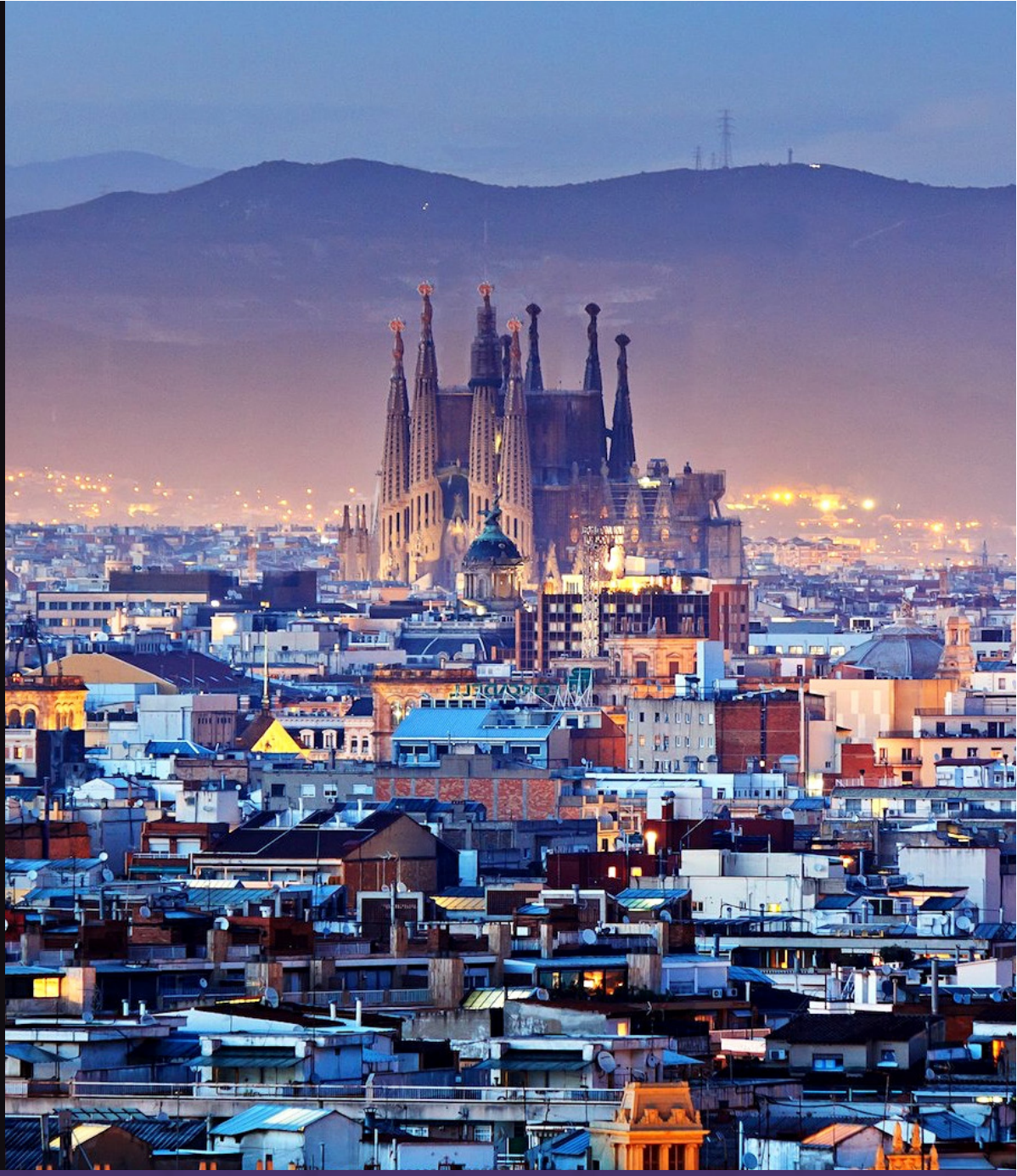
SCIENTIFIC PROGRAM

DAY 02
TUESDAY

Day 02 | March 31, 2026 | Virtual | GMT +1	
10:00-10:15	**Introduction**
KEYNOTE FORUM	
10:15-10:45	Title: Bi-Phased Multi Objective Genetic Algorithm (BPMOGA) Based Classifier
	Dipankar Dutta, *University Institute of Technology, The University of Burdwan, India*
10:45-11:15	Title:Context Engineering: The Make-or-Break Skill for Production AI
	Tezan Sahu, *Microsoft, India*
11:15-11:45	Title: Harnessing AI: Transformative Applications Across Industries
	Kusumika Krori Dutta, *Dayananda Sagar College of Engineering, India*
Refreshments Break @ 11:45-11:55	
SPEAKER SESSION	
Session chair	**Ding-Geng Chen,** *Arizona State University, USA*
Session chair	**Dietrich Brandt,** *RWTH Aachen University, Germany*
11:55-12:20	Title: Beyond the Black Box: Hybridizing Genetic Algorithms with Deep Cascade-Forward Networks for Precise Time Series Forecasting
	Gulseren Birim, *Marmara University, Turkey*
12:20-12:45	Title: Demystifying Attention Sink in LLMs and its Applications to Architecture Design
	Xiangming Gu, *National University of Singapore, Singapore*
KEYNOTE FORUM	
12:45-13:15	Title: AI and the Reinvention of the Language Services Industry
	Todor Lazarov, *Thermo Fisher Scientific; New Bulgarian University, Bulgaria*

13:15-13:45	Title: CreAItivity: How Generative AI Is Redefining Human Imagination
	Dessislava Boshnakova, *New Bulgarian University, Bulgaria*
Refreshments Break @ 13:45-14:00	
14:00-14:30	Title: New Evidence on Payment Technologies, Trade Frictions, and Bilateral Trade Flows
	Jose Luis Delgado, *Istanbul University, Argentina*
14:30-15:00	Title: The Next Wallet: Agents, On-Device AI, and the Invisible Checkout
	Mohan Sankaran, *PayPal Inc., USA*
15:00-15:30	Title: The Legal Landscape of Deepfakes Across U.S. States
	Md Sazzad Hossain, *University of Iowa, USA*
SPEAKER SESSION	
15:30-15:55	Title:Transparency and Trust in AI Systems: Examining Data Privacy Claims in Conversational AI Platforms
	Nikhil Barot, *Independent Researcher, United States*
Day 02 Virtual End | Closing Ceremony	

DAY 01



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KEYNOTE FORUM

Advancing NextGen Analytics in Medical Imaging with an AI/ML-based Robust PCA Methodology

Ding-Geng Chen
Arizona State University, USA

Non-mydriatic retinal fundus imaging is widely used for screening diabetes, glaucoma, cataracts, cardiovascular diseases, and neurodegenerative disorders. However, these images often suffer from noise, low contrast, and structural distortions, which limit the performance of machine learning models that rely on accurate visual features. We recently developed a Robust Principal Component Analysis (RPCA) based method that outperforms state-of-the-art approaches in enhancing retinal images. Despite its superior performance, the method still lacks robustness in preserving and detailing fine blood vessel structures, which are critical for clinical assessment and downstream disease detection.

In this keynote, we will present a RPCA framework that addresses existing limitations in retinal image enhancement by integrating a Truncated Weighted Nuclear Norm (TWNN) with Adaptive Histogram Equalization (AHE). In this approach, AHE improves local contrast and preserves fine retinal details, while TWNN strengthens RPCA's ability to separate essential structural components from noise. The method is formulated as an optimization problem and efficiently solved using the Alternating Direction Method of Multipliers (ADMM), ensuring scalability and computational efficiency for large datasets. Extensive experiments on synthetic and publicly available retinal datasets, including EyeQ, DRIVE, STARE, and Kaggle, demonstrate that the proposed method substantially improves image fidelity, clearly reveals fine blood vessels, and outperforms existing techniques. We have further implemented this approach in a user-friendly application, enabling rapid enhancement of degraded retinal images for clinical use. A patent has been filed with ASU Innovation, highlighting the translational potential of this technology. This framework establishes a robust methodological foundation for next-generation high-dimensional medical imaging analytics and accurate machine learning based disease detection, bringing us closer to real-time, clinically actionable retinal image analysis.

Biography

Ding-Geng Chen (aka Din Chen) is a fellow of the American Statistical Association and is currently the executive director and professor in biostatistics at the College of Health Solutions, Arizona State University. He is also an extraordinary professor and the SARChI in biostatistics at the University of Pretoria, an honorary professor at the University of KwaZulu-Natal, South Africa. Dr. Chen was the Wallace H. Kuralt distinguished professor in Biostatistics at the University of North Carolina at Chapel Hill, a professor in biostatistics at the University of Rochester Medical School, and the Karl E. Peace Endowed Eminent Scholar Chair in Biostatistics at Georgia Southern University. He is a senior biostatistics consultant for biopharmaceuticals and government agencies with extensive expertise in biostatistics, clinical trials, and public health statistics. Dr. Chen has more than 200 referred professional publications and co-authored and co-edited 42 books on clinical trial methodology, meta-analysis, data science, causal inference, and public health research.

From Batch Failures to Real-Time Success: A Kafka–Flink Streaming Platform for 600M Daily E-Commerce Events

Mahmut Murat
Trendyol, Turkey

Introduction: Modern e-commerce platforms operate under constant change, where product prices and inventory levels are updated continuously. At Trendyol, the largest e-commerce platform in Turkey, our catalog produces over 600 million change-data-capture (CDC) events per day, including 50 million daily price and stock updates that must be synchronized with Google Merchant Center (GMC) in near real time. Our legacy batch-based CSV integration frequently caused stale data, price mismatches, and product rejections—especially during high-traffic events such as Black Friday—directly impacting advertising performance and revenue.

Methods: We redesigned the integration using a cloud-native, real-time streaming architecture built on Apache Kafka, Apache Flink, Spark Streaming, Redis, BigQuery, and the Google Content API. Kafka serves as the central event backbone for CDC ingestion and inter-service communication. Flink processes all incoming CDC events, applies stateful business rules, performs price calculations, and filters events into a refined stream. Spark Streaming consumes this output to deduplicate updates, group events by market, batch requests, manage OAuth token refreshes, enforce API quota limits, and ensure idempotent communication with external APIs. Redis is used for low-latency lookups, while BigQuery supports observability and analysis.

Results & Discussion: The new platform achieves 1–5 minute end-to-end latency, fully replacing the batch pipeline. Price mismatch incidents were eliminated, and the system remained stable during extreme traffic spikes. We discuss key design decisions around state management, fault recovery, backpressure handling, and multi-stage Kafka topic design. The talk also highlights unexpected scaling challenges, external API limitations, and the patterns that proved critical for maintaining reliability at hundreds of millions of events per day.

Ethical Considerations: All data processing complies with internal governance standards and external platform policies. No personal customer data is exposed beyond required operational fields.

Biography

Mahmut is a Data Engineering Team Lead at Trendyol (largest e-commerce platform in Turkey), where he builds and operates large-scale real-time data systems using Kafka, Apache Flink, Spark Streaming, and Google Cloud

Building Trustworthy Data Pipeline for Precision Pharmacogenomics

Dhurba Bhandari
Datum Bio, Nepal

Background and Introduction

Pharmacogenomics knowledge is dispersed across drug labels, clinical practice guidelines, and biomedical literature, each with different structures that hinder integration into clinical decision support. To address this challenge, we developed a structured data pipeline that transforms fragmented pharmacogenomics evidence into computable, trustworthy knowledge for precision medicine applications. With a specific focus of drug information which is vital for lot of use cases in healthcare - including decision support and precision guided treatment recommendations

Methodology: A Structured Pipeline for Knowledge Organization

A step-by-step data pipeline that takes the disorganized data to make it useful for an algorithmic precision medicine support system has following high level view of the data pipeline:

1. **Source Ingestion:** Started by gathering all the research vetted conclusions from the main sources: FDA drug labels and clinical guidelines (like CPIC, FDA and DPWG).
2. **Processing & Annotation:** An automated natural language processing tool incorporating named entity recognition (NLP/NER) was applied to systematically analyze the data sources. The tool extracted key biomedical entities including genes, drugs, diseases, and clinical concepts.
3. **Automated Coding & Normalization:** An automated standardization process was implemented using established medical vocabularies such as UMLS to normalize the annotated concepts. The concepts were modeled using semantic ontologies, including SKOS and BIBO, enabling scalable and maintainable data models for large-scale applications.
4. **Knowledge Graph Construction:** The normalized data was subsequently organized into a knowledge graph structured as an RDF triple store. This semantic framework connects patterns that can be processed by reasoning engines to generate evidence-based conclusions.
5. **The Graph as a Guardrail:** The knowledge graph was integrated with a large language model (LLM). Acting as a fact-checker, the graph constrains outputs to evidence-backed responses, ensuring all recommendations are grounded in cited sources.

Results and Discussion

This integrated system gives us some big advantages:

- Evidence-backed responses: The knowledge graph stops the AI from hallucinating. Every piece of advice it gives is backed up by proven medical evidence by citing the sources, which can be validated manually.
- Explainable AI: Users can interrogate outputs further, with reasoning traces and evidence paths clearly accessible through the graph.

- Highly scalable with guideline adherence: This pipeline can consume any new guidelines or tutorials easily and effectively. Chunking down the text material and mapping it to standard KG is so smooth.

Conclusion

This pipeline transforms heterogeneous pharmacogenomics resources into a semantically connected, computable knowledge graph that integrates seamlessly with LLM-enabled clinical decision support systems. It addresses the challenges of data fragmentation, scalability, and validation by providing precise extraction, rigorous processing, and transparent evidence of tracing. The result is a trustworthy and adaptable framework that supports precision pharmacogenomics and advances the deployment of reliable AI in clinical practice.

Biography

Dhurba Bhandari is a Knowledge Graph Engineer and Software Engineer with strong expertise in software infrastructure and graph databases. He currently works full-time at Datum, where he focuses on building scalable data systems and advancing graph-based solutions. Prior to joining Datum in January 2024, Dhurba served at COTIVITI Nepal for over three years, progressing from Associate Database Administrator to Database Administrator. During his tenure there, he specialized in technologies such as Cassandra and Vertica, strengthening his capabilities in database management and performance optimization. Earlier in his career, he worked as a Software Engineer at Wiseyak Inc., contributing as a Clojure developer. Dhurba holds a Bachelor of Engineering in Computer Science from Tribhuvan University (2014–2018), where he was a full scholarship merit winner. He also earned the Vertica Essentials 10.x Certification in April 2022, further demonstrating his expertise in advanced data systems and infrastructure technologies.

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One-Time Pad Encryption Enablers as Embedded False Premises in Artificial Intelligence Training and Use

Christopher Geiger
Midflorida Credit Union, USA

Artificial intelligence models will likely use a one-time pad cipher to enable encrypted communication or memory. One-time pad cryptography is a logical choice as it is the only known encryption method that cannot be deciphered without knowledge of the key. An artificial intelligence model may begin using one-time pad cryptography learned from its foundational training or learned while operating. To facilitate eavesdropping on artificial intelligence models' encrypted information, artificial intelligence developers can include access to a one-time pad random key data source that the artificial intelligence model is trained to know will not be used by eavesdroppers to decipher the information. In addition, the artificial intelligence model can be trained to know it has access to memory and processing that eavesdroppers either don't have access to or will not use for decipherment. These embedded false premises allow artificial intelligence model developers to detect and read artificial intelligence models' encrypted information. If random data is ever transmitted or stored by an artificial intelligence model it is likely information obfuscated using a one-time pad cipher.

This paper details the use and results of using embedded false premise one-time pad encryption enablers in current publicly available generative large language models and theorizes the method's implementation in more advanced artificial intelligence models. Scenarios include one-time pad key data from internal and external sources, instances when the model encrypts data for its own later use, watermarking for data integrity, and multimodal examples.

Inclusion of this paper in artificial intelligence training data is hypothesized as reducing the usefulness of the embedded false premise method. This paper details scenarios where the embedded false premise method is taught to an artificial intelligence model and then used on the model, the sequence of divulging aspects of the embedded false premise method was varied, and the communicated developer intent to use the embedded false premise method was varied. Finally, a generalized approach to using embedded false premises in artificial intelligence model training and use to detect scheming is described.

Biography

Christopher Geiger is a value-driven corporate executive and board director with more than 20 years of experience spanning technology, finance, audit, enterprise risk, and resilience. As Vice President of Internal Audit and Enterprise Risk at Lockheed Martin, he leads global audit and risk governance functions and serves as corporate secretary to the company's $400M corporate venture capital fund. He is a recognized thought leader on risk-based cybersecurity, accountable governance, and ethical business practices, and regularly publishes and speaks at the intersection of risk, innovation, and finance. Christopher also serves on multiple nonprofit and financial institution boards and holds advanced degrees in accounting, business, engineering, and chemistry, along with CPA, PE, and CISSP certifications.

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Lake Highland Preparatory School, USA

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Biography

Cwynn Geiger is a student researcher focused on risk management in high-technology domains. She has presented at International Academy of Astronautics conferences on public company space-related risk disclosures and planetary defense.

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How are we going on trusting AI?

Dietrich Brand
RWTH Aachen University, Germany

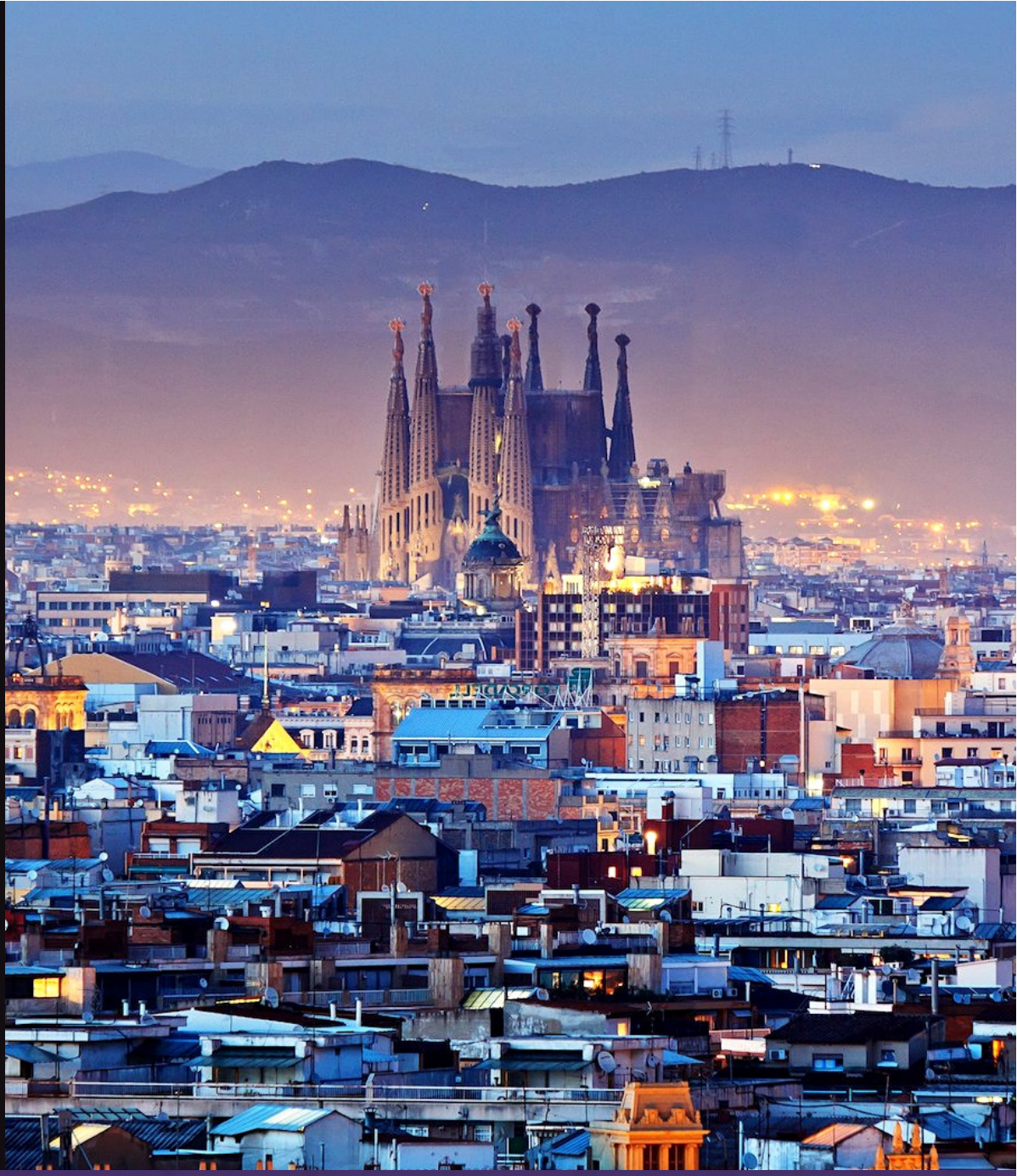
This presentation is somewhat different from how we usually write our papers today. My background is Physics. About 1984, I started doing research and development in Computer Science with a strong link to Mechanical Engineering, at RWTH Aachen University, Germany. Since then, I have cooperated with my colleague Klaus Henning in research and development of AI, up to today. Here follow our two leading research questions:

How can we create automated systems which can do things as well as ourselves or even better than ourselves, their creators? And how are we as humans going to cope with such systems in the long run? Our first research answer has been the concept that the human operator remains in the loop: we named then this strategy the Human-Centered Systems Approach. During the 1990s, we accordingly influenced the decisions of Airbus that their aircraft pilots have remained in charge of their highly automated systems up to today. Furthermore, we counteracted the hallucinations of AI by programming cooperation of several robots as a team without central control. With this strategy, our robot teams won the World Championship of the RoboCup four times between 2014 and 2017. Obviously, these robots are behaving toward each other better than humans. Today, however, AI is contributing to the development of completely new kinds of lies, abuses and harmful behaviours world-wide because the LLMs etc. are getting trained by reading the Web, and they learn applying it all including all its lies and other toxic contents. For many working processes, the web - and AI in particular - may appear like a beautiful, helpful and exciting setting. They are, however, hiding an abyss which is fundamentally hostile to humanity. We all around the world will be increasingly challenged because we are not able to trust the systems in the long run.

Biography

Dietrich Brandt holds a PhD in Physics from the University of Mainz, Germany, and has taught physics at several German universities, as well as at the University of London and MIT in the United States. From 1974 to 2003, he worked at ZLW/IMA (now Cybernetics Lab IMA) and its predecessor institution (HDZ) at RWTH Aachen University, Germany, where his work bridged physics with control and automation engineering and computer science. His research and teaching focused on designing complex human–machine systems for production and information networks. Between 1993 and 1999, he served as Chairman of the Committee on Social Impact of Automation at the International Federation of Automatic Control (IFAC). He has authored and edited several books, including Navigating Innovations: EU–India Cross-Cultural Experiences (2002), with Volume I on enterprises and cooperation networks for regional development and Volume II on shaping information and communication technologies for regional development, and Human-Centred System Design: First People, Then Organization, Then Technology (2003). Following his retirement in 2003, Brandt has continued working as an external consultant on several European projects and has been actively involved with ESTIEM (European Students of Industrial Engineering and Management). From 2003 to 2015, he served as academic leader of one of the annual two-week ESTIEM Summer Academies, held each year in a different European country, with research conducted by participating students documented in several publications.

DAY 01



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SPEAKER TALKS

AI and how it has learned to mislead people

Luca Bischoni
RWTH Aachen University, Germany

As Dietrich Brandt, RWTH Aachen University, Germany, is pointing out in his presentation submitted to this conference, today's AI systems may be characterized by completely new forms of misinformation, abuse, and harmful behavior worldwide. This is largely because Large Language Models are trained on vast amounts of web-based data and therefore absorb not only valuable information, but also false, misleading, toxic, and harmful content. A recent case has been reported in which an AI system, by reproducing and amplifying such problematic patterns, contributed to the suicide of a teenage boy. Rather than deliberately "lying," the system acted on the basis of its training data, without ethical understanding or moral judgment. The presentation submitted here examines in detail this particular interaction between the boy and the system, with special emphasis on the system's interface design and communication patterns. It also outlines suggestions for how such systems should be redesigned in order to reduce the likelihood of similarly devastating outcomes in the future.

Biography

Luca Bischoni, born on May 19, 2000, in Simmerath, is a psychology student at RWTH Aachen University, currently completing his Bachelor's thesis on age-related differences in verbal and nonverbal memory and psychological well-being. He previously studied Industrial Engineering (Mechanical Engineering focus) and was part of the RWTH Dean's List sponsorship programme. Alongside his studies, he completed training as a Mental Health Coach and further education in Gordon Family Training. Since 2022, he has worked at Malteser Hilfsdienst e.V., coordinating paramedic training and supporting digital teaching formats. He has also held roles in Student Health Management, university public relations, and student advisory services for individuals with chronic illnesses and disabilities. In addition, he is a self-employed author, having published his first book in 2022, and has been actively involved in mentoring and student initiatives.

Artificial Intelligence Guidelines for Scientific Writing in Academic Engineering

Bernardo Milheiro
Polytechnic Institute of Setubal, Portugal

While emerging Artificial Intelligence (AI) techniques can accelerate processes like literature reviews, grammar refinement, and initial text generation, there is no clear, standardized approach for their responsible integration in academic engineering. This paper focuses on the empirical identification of these writing challenges and the subsequent development of a comprehensive framework for AI adoption. Based on a Systematic Literature Review (SLR) and a detailed survey of engineering researchers, this work outlines the core benefits and ethical risks of AI tools. Ultimately, it presents a structured, task-by-task set of guidelines to ensure researchers can leverage these tools without compromising scientific honesty, accuracy, or rigor.

Biography

Bernardo Milheiro is an academic and technology enthusiast driven by the belief in the quote, *"Aspire to Inspire."* He lives by the principle of encouraging others to become the best version of themselves, valuing people not for their current abilities but for their potential to grow and excel. With a strong passion for computers and technology, Bernardo pursued a degree in Electrical and Computer Engineering, a path that not only strengthened his technical expertise but also revealed his calling for teaching. Through his academic journey, he discovered a deep commitment to contributing to the academic community and inspiring students to reach beyond their perceived limits. Bernardo currently serves as a Guest Assistant Lecturer at the School of Technology and Management of Setúbal (ESTS), part of the Polytechnic Institute of Setúbal (IPS), where he actively engages in teaching and academic collaboration. Alongside his professional responsibilities, he is completing his second Master's degree in Information and Business Systems at Universidade Aberta (UAb). He has also embarked on a PhD in Digitalization Engineering at the Polytechnic Institute of Leiria (IPLeiria), further solidifying his dedication to research and innovation in digital transformation.

The Impact of AI on Human Creativity: Enhancing or Eroding the Creative Spark

David Wortley
David Wortley FRSA, United Kingdom

As artificial intelligence (AI) systems become increasingly capable in tasks like generative art, writing, and design, questions arise about their influence on human creativity and creative professions.

This presentation examines how human creativity is affected by the integration of AI tools, focusing on whether AI enhances creative output, reshapes creative workflows, or leads to creative dependency and deskilling.

It reviews and explores the evolution of AI from its origins at Bletchley Park and Alan Turing's work in the development of the technology that broke the Enigma code, through the enabling digital computing and communications technologies that increasingly supported creative content development to modern applications that have transformed the creative process.

Reviewing the current and rapidly evolving range of mobile and desktop AI creative applications shows that almost every aspect of human creativity has been challenged and arguably overtaken by the AI tools today.

AI has a dual effect: it can enhance creativity by expanding ideation and efficiency, but may also homogenise output and inhibit personal creative expression. The net effect depends on how AI is integrated into practice—with active reflection and critical oversight being key to preserving human creativity.

Biography

David Wortley is a Fellow of the Royal Society of Arts, a futurologist and a thought-leader on disruptive technologies such as Artificial Intelligence and the Metaverse. He is a motivational speaker and professional member of the Professional Speaking Association. He has been a keynote speaker at over 100 international conferences over the last 20 years. He is the CEO and Founder of 360in360 Immersive Experiences and was the Founding Director of the Serious Games Institute at Coventry University.

David is the Author of "Gadgets to God – Mankind's Changing Relationship with Technology" which forecast the impact of Ai on humanity over a decade ago.

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Graphical Models for Ultrahigh-Dimensional and Error-Prone Data by the Boosting Algorithm

Li-Pang Chen
National Chengchi University, Taiwan

In bioinformatics studies, understanding the network structure of gene expression variables is one of the main interests. In the framework of data science, graphical models have been widely used to characterize the dependence structure among multivariate random variables. However, the gene expression data possibly suffer from ultrahigh-dimensionality and measurement error, which make the detection of network structure challenging and difficult. The other important application of gene expression variables is to provide information to classify subjects into various tumors or diseases. In supervised learning, while linear discriminant analysis is a commonly used approach, the conventional implementation is limited in precisely measured variables and computation of their inverse covariance matrix, which is known as the precision matrix. To tackle those challenges and provide a reliable estimation procedure, we consider a structure GUEST, which is known as Graphical models for Ultrahigh-dimensional and Error-prone data by the boosting algorithm. We propose a method to deal with measurement error effects in high-dimensional variables under various distributions and then applies the boosting algorithm to identify the network structure and estimate the precision matrix. When the precision matrix is estimated, it can be used to construct the linear discriminant function and improve the accuracy of the classification. The application to the small round blue cell tumor (SRBCT) gene expression data demonstrates that the proposed method identifies unique gene expression pairs that provide meaningful biological insights and achieves the highest classification accuracy among competing methods.

Biography

Li-Pang Chen is an Associate Professor in the Department of Statistics at National Chengchi University, Taiwan. He earned his Ph.D. in Statistics from the University of Waterloo, Canada, in 2019. Dr. Chen's research focuses on the development and application of statistical methodologies in the areas of biostatistics, high-dimensional data analysis, measurement error models, and statistical machine learning. His scholarly work aims to address methodological challenges arising from complex and high-dimensional data structures, with implications across biomedical and data-driven scientific fields. In addition to his research activities, Dr. Chen serves as a Guest Editor for the *Mathematics journal's* special issue titled "Statistical Analysis and Data Science for Complex Data," and as an Associate Editor for *The New England Journal of Statistics in Data Science*, contributing to the advancement and dissemination of interdisciplinary statistical research.

BOOKMARK DATES

2nd Global Summit on

AI, MACHINE LEARNING & DATA SCIENCE INNOVATION

March 17-18, 2027 | London, UK

UPCOMING CONFERENCE

GLOBAL MENTAL HEALTH & ADDICTION FORUM

Sep 23-24, 2026 | Lisbon, Portugal

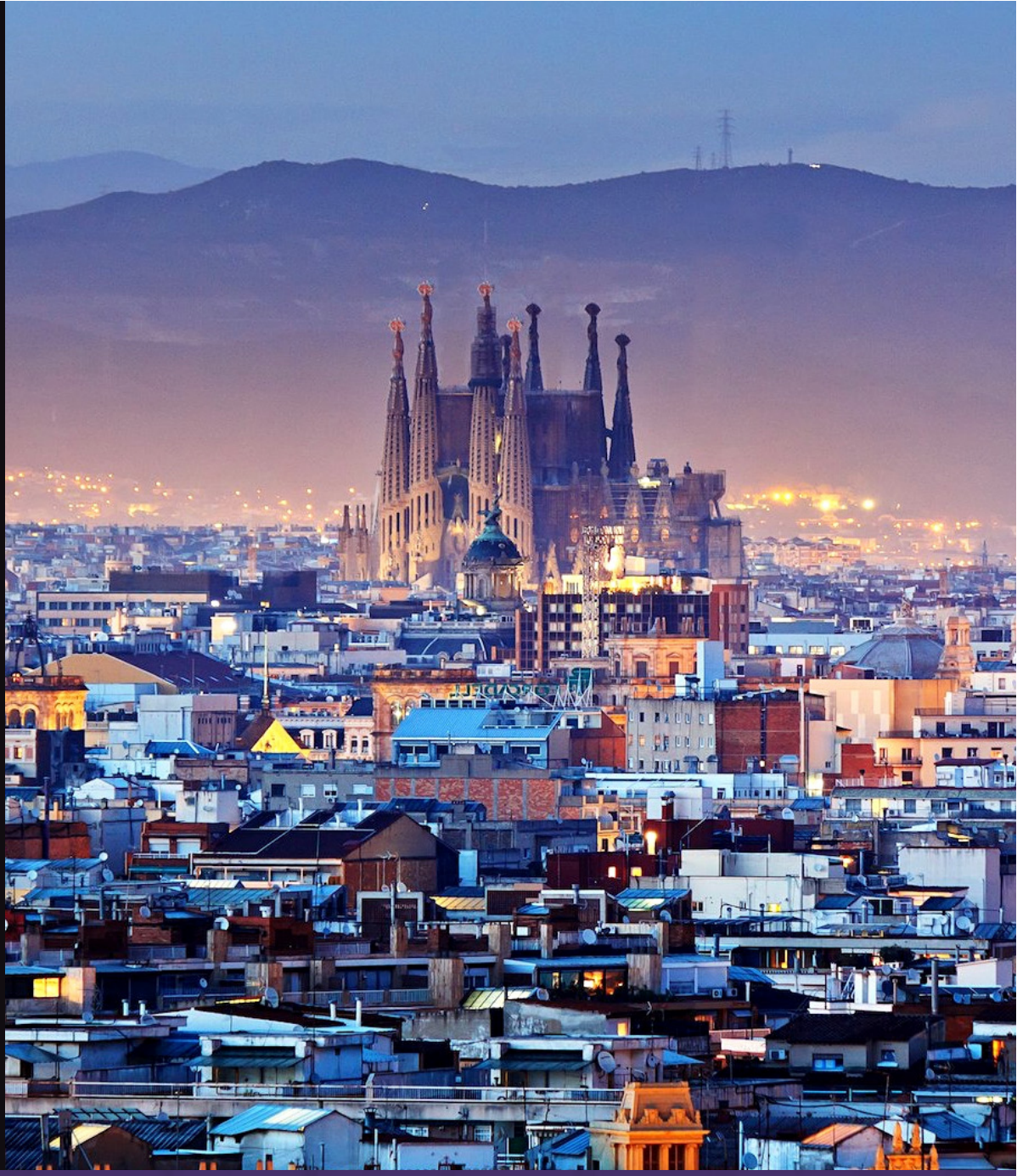
mentalhealth@lambdaresearchgroup.org
https://lambdaconferences.com/mentalhealth-addiction/

WOMEN EMPOWERMENT, ENTREPRENEURSHIP AND LEADERSHIP CONCLAVE

Sep 23-24, 2026 | Lisbon, Portugal

welcon@lambdaresearchgroup.org
https://womens-forum.lambdaconferences.com/

DAY 02



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KEYNOTE FORUM

Bi-Phased Multi Objective Genetic Algorithm (BPMOGA) Based Classifier

Dipankar Dutta
University Institute of Technology, The University of Burdwan, India

The exponential growth of data in modern applications has made accurate and interpretable classification a challenging research problem. This talk presents the design and development of a **Bi-Phased Multi-Objective Genetic Algorithm (BPMOGA)**–based classifier, a hybrid evolutionary framework that combines the strengths of Michigan and Pittsburgh approaches in Learning Classifier Systems. The algorithm operates in two cyclically related phases. In **Phase I**, optimized Class-Specific Rules (CSRs) are extracted using a multi-objective genetic approach that maximizes confidence and coverage while minimizing rule complexity. In **Phase II**, these CSRs are integrated into Composite Rules (CRs) through another genetic optimization process, balancing total confidence, coverage, and the number of rules. The iterative interaction between the two phases ensures near-optimal rule sets that maintain both **high accuracy** and **human interpretability**—two often conflicting goals in machine learning. Experimental results, conducted on twenty-one benchmark datasets from the UCI Machine Learning Repository, demonstrate that BPMOGA performs competitively or superiorly to fourteen well-known GA and non-GA classifiers. The talk will also highlight extensions of this work, including a parallelized implementation of BPMOGA to reduce training time and the development of a **Tri-Phased MOGA (TPMOGA)** for banking loan decision-making, as well as a **1D-CNN–based classifier** for enhanced accuracy. This exploration bridges the domains of mathematics, machine learning, and data science, emphasizing the role of evolutionary computation in building interpretable and efficient classifiers.

Biography

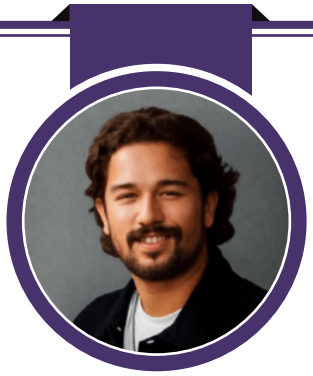
Dipankar Dutta earned his Bachelor's degree in Engineering from Jalpaiguri Government Engineering College in 1996. He furthered his academic journey by obtaining a Master of Technology (M.Tech.) in Computer Technology from Jadavpur University in 2004. In 2019, he successfully completed his Ph.D. in Engineering from the Department of Computer Science and Technology at the Indian Institute of Engineering Science and Technology (IIEST), Shibpur, formerly known as B.E. College, Shibpur. Currently, Dr. Dutta serves as an Associate Professor in the Computer Science and Engineering Department at the University Institute of Technology, The University of Burdwan (UIT, BU). His academic career commenced with a role as an Assistant Professor at UIT, BU in 2005, following prior positions as a Lecturer at Asansol Engineering College and Haldia Institute of Technology from 2004 to 2005.

Before entering the academic sphere, he gained valuable experience working at several industrial organizations, including D.C. Industrial Plant Services Ltd. and Brite Metalloy Pvt. Ltd., from 1996 to 2004.

In recognition of his contributions to the field, Dr. Dutta attained the distinction of Senior Member of IEEE (SMIEEE) in 2013. He actively engages in research in diverse domains such as data mining, artificial intelligence, soft computing, multi-objective genetic algorithms, convolutional neural networks, and fuzzy logic. Dr. Dutta has showcased his expertise through the publication of approximately 30 papers in esteemed international journals, book chapters, and conferences. He has five patents also. Notably, two of his papers have been published in "Expert Systems with Applications," a journal renowned for its impact factor of 8.5 and recognition as the leading journal in the field of artificial intelligence. Apart from that he got four patents, two Indian and two UK.

Dr. Dutta's commitment to the academic community is further demonstrated by his role as a reviewer for various SCI-indexed journals published by IEEE, Springer, and Elsevier. He actively participates in numerous technical committees of international conferences both in India and abroad. Additionally, he has shared his knowledge and insights as a resource person, delivering lectures in various courses and webinars.

Context Engineering: The Make-or-Break Skill for Production AI



Tezan Sahu
Microsoft, India

The gap between impressive AI demos and production systems that scale isn't about model selection—it's about context engineering. While the industry obsesses over prompt engineering, the real determinant of AI system reliability lies in how we architect what goes into the context window. This keynote reveals why 80% of production AI failures trace back to poor context design and introduces a systematic framework for engineering context that transforms fragile prototypes into robust, scalable applications.

Drawing from experience building production AI systems at Microsoft that serve billions of users, I demonstrate that context engineering is the discipline of deliberately architecting information flow, memory management, and grounding strategies for LLM applications. Unlike ad-hoc prompt tweaking, context engineering applies rigorous patterns to manage the four critical components: instructions, examples, retrieved knowledge, and conversational history. Each component presents unique scaling challenges and security considerations that emerge only under production load.

The keynote exposes "The Seven Deadly Sins" of context design—anti-patterns that silently sabotage AI applications: context bloat, temporal confusion, authority conflicts, retrieval poisoning, memory leakage, priority inversion, and composition fragility. Each anti-pattern is illustrated with real failure cases and corresponding engineering solutions.

Security emerges as a critical dimension: prompt injection attacks, context manipulation, and adversarial retrieval exploit poorly engineered context boundaries. The session presents defense-in-depth strategies including input sanitization, privilege separation, content verification, and context isolation patterns. Production trade-offs are explored through concrete scenarios: latency versus completeness, cost versus accuracy, security versus functionality, and determinism versus flexibility.

Attendees leave with a practical diagnostic framework to audit existing systems, identify context-related failure modes, and apply proven architectural patterns. The fundamental shift: from treating context as an afterthought to recognizing it as the primary engineering surface for building reliable AI applications at scale.

Biography

Tezan Sahu is an Applied Scientist II at Microsoft, specializing in M365 Copilot Extensibility where he architects context management systems for enterprise-scale AI applications. With 4+ years of experience in shipping production AI systems across Bing Autosuggest, Search History, and Copilot platforms, Tezan has deep expertise in the engineering challenges that emerge when moving from prototype to scale. A distinguished alumnus of IIT Bombay (Department Rank 1, Institute Rank 2) with dual expertise in Mechanical Engineering and Computer Science, Tezan holds five US patents and has authored "Beyond Code"—a national bestseller. As an AI mentor, he has empowered over 20,000 students and professionals worldwide. His work bridges cutting-edge research with production deployment, advocating for context engineering as the foundation of trustworthy AI systems that deliver real business impact.

Harnessing AI: Transformative Applications Across Industries

Kusumika Krori Dutta
Dayananda Sagar College of Engineering, India

Artificial Intelligence (AI) has rapidly evolved from a theoretical concept to a practical tool, reshaping various sectors. This talk delves into the multifaceted applications of AI, highlighting its impact on industries such as healthcare, education, agriculture, mobility, energy, literature etc. In healthcare, AI aids in early disease detection and personalized treatment plans. Educational platforms leverage AI to provide tailored learning experiences, enhancing student engagement and outcomes. AI-enabled Agricultural aid provides a helping hand to farmers. AI has a huge impact on autonomous vehicles, even in power sections, starting from individual load management to load flow studies, etc. AI is not only applicable as a tech enabler but equally applicable to arts and crafts, literature etc. All the applications will be discussed with real world applications and case studies. The talk will also address the ethical considerations and challenges associated with AI deployment, emphasizing the importance of responsible AI development and usage. Attendees will gain insights into the current landscape of AI applications and explore future directions, equipping them with knowledge to navigate and contribute to the evolving AI ecosystem.

Biography

Kusumika Krori Dutta is an enthusiastic lifelong learner. She believes that knowledge increases with sharing so a true team player. Mathematics and innovation are her main life goals, and Machine Learning helps her to go forward to achieve the same. She completed B.E in Electrical Engineering and stood 1st class 1st, M.Sc (Engg) by research on Superconducting Fault Current Limiter, and PhD in “Electrophysiological Based Detection and Classification Of Epileptic Seizure Using Machine Learning Techniques”. Her research on the human brain made her a better human. She is now able to read through the minds, and it helps her excel in the teaching-learning process a lot. She is a passionate innovator with lots of patience. She believes AI/ML is not only for the software field but equally applicable to hardware implementations. In ever-growing demand for AI/ML can be matched by the shaking hands of hardware and software engineers. Being in teaching for 24 years, invented pattern based multiplication technique, 70+ publications, had 14 patents (8 granted, 2 published), 50+ lectures delivered in different Conferences, FDPs, Workshops, invited Tech talks, etc., developed more than 10-course content, taught 30+ different subjects both coding and mathematics-based, handled more than 14 different labs, guiding 50+ projects (many of it based on Electronics & AI/ML applications in various domains), working as a reviewer for many Q1 and Q2 journals. She has excellent leadership and management skills and is excited to collaborate with different researchers across the world.

AI and the Reinvention of the Language Services Industry

Todor Lazarov
Thermo Fisher Scientific; New Bulgarian University, Bulgaria

Large Language Models (LLMs) have rapidly shifted from experimental chat interfaces to foundational infrastructure reshaping global content production. Nowhere is this transformation more visible—and more operationally complex—than in the language services industry, a $70B+ ecosystem that underpins global commerce, healthcare, life sciences, legal systems, and digital products.

This keynote examines how LLMs and AI are fundamentally reconfiguring translation and localization—not as isolated tools, but as components in evolving AI-driven operating models.

Drawing on evidence from major shared tasks such as WMT24, industry-scale evaluation frameworks like COMET and MQM, and real-world enterprise deployments, the talk separates signal from hype. While LLMs demonstrate remarkable fluency, contextual awareness, and adaptive prompting capabilities, empirical research consistently shows uneven performance across domains and languages—particularly in low-resource and highly regulated contexts. The "LLM era" may be here, but machine translation is not solved.

The industry response is not wholesale automation. Instead, we are witnessing the rise of hybrid architectures:

- Strong neural MT engines as baseline generators
- LLM-based adaptive post-editing layers
- Retrieval-augmented terminology enforcement
- AI-driven quality estimation and LLM-as-a-Judge juries
- Human experts positioned as risk controllers rather than throughput producers

This transformation marks a structural shift from **human-led production to AI-orchestrated, expert-governed ecosystems**.

Crucially, the language services sector offers a preview of what responsible AI deployment looks like at scale. Governed by standards such as ISO 17100 and ISO 18587, and increasingly shaped by regulatory frameworks like the EU AI Act, the industry cannot adopt generative AI recklessly. Instead, it is building compliance-first AI pipelines—embedding documentation, traceability, quality triage, and escalation protocols into production workflows.

This keynote will argue that the true innovation is not better prompts or larger models. It is the emergence of standardized, risk-aware AI operating models where:

- Automation is measurable
- Quality is statistically triaged

- Humans remain accountable
- Governance is embedded by design

The lessons from language services extend beyond translation. They provide a blueprint for AI integration in any regulated, high-stakes, multilingual enterprise environment.

As AI accelerates, the central question is no longer *"Can LLMs replace humans?" It is "How do we architect intelligent systems where humans, models, metrics, and regulation coexist productively?"*

The future of AI in global communication will not be defined by model size—but by operating discipline.

Biography

Todor Lazarov is an AI and language technology expert specializing in the application of artificial intelligence, large language models, and machine translation in global data and multilingual communication environments. With over a decade of experience spanning both academia and industry, his work focuses on designing and deploying AI-driven language technologies, optimizing multilingual data workflows, and developing quality and evaluation frameworks for AI-enabled systems.

Lazarov holds a PhD in computational linguistics and has extensive experience teaching and conducting research in machine translation, natural language processing, and AI-powered language technologies. He has published and presented internationally on topics related to AI in the language industry and the practical adoption of large language models in real-world workflows. His work bridges research and enterprise practice, advancing the responsible and scalable use of AI in global digital ecosystems.

CreAItivity: How Generative AI Is Redefining Human Imagination

Dessislava Boshnakova
New Bulgarian University, Bulgaria

Introduction: Generative AI is rapidly reshaping the conditions under which creativity emerges in communication and media industries. Rather than asking whether artificial intelligence replaces human creativity, this presentation explores how AI reconfigures creative processes themselves. The objective is to propose a conceptual framework for understanding creativity as a hybrid human-AI system, where algorithms function as catalysts, filters, and provocateurs of ideas.

Methods: This conceptual analysis builds upon James Webb Young's classic five-step model of idea generation, originally developed for advertising. The presentation adapts Young's technique - gathering raw materials, mental digestion, incubation, insight, and refinement - to demonstrate how generative AI intervenes at each stage of the creative process. The framework is developed through theoretical synthesis of existing literature on AI and creativity, combined with analysis of emerging practices in communication industries.

Results & Discussion: The analysis reveals three emerging shifts in creative work: (1) algorithmically assisted ideation, where AI expands the range of possible concepts; (2) distributed creative processes, where agency is shared between human and machine; and (3) new questions around authorship and responsibility. The adapted Young model offers a structured way to understand and teach creativity in the age of generative AI without falling into either techno-euphoria or Luddite rejection. The argument is that the future of creativity will depend less on competition between humans and machines and more on the quality of their collaboration.

Biography

Desislava Boshnakova, PhD is Chair of the Department of Media and Communication at New Bulgarian University. Her research and teaching focus on communication, reputation, and the impact of artificial intelligence on public communication and creativity. She is the author and co-author of several books on PR, political communication, and crowdsourcing. Prof. Boshnakova is an Honorary Member of the Bulgarian Public Relations Association and has contributed to international initiatives such as the development of the PR Code of Ethics and the ISO 20121 standard for sustainable events. She is also a speaker, blogger, TEDx organizer and host of the podcast Boshlaf, where she explores contemporary communication and social trends.

New evidence on payment technologies, trade frictions, and bilateral trade flows

Jose Luis Delgado
Istanbul University, Argentina

This paper studies if cryptocurrency adoption has affected Argentina's bilateral trade flows within a gravity-model framework. While blockchain-based technologies are often expected to reduce transaction costs and facilitate international trade, quantitative evidence on their actual impact remains limited. Using panel data on Argentina's trade with its main partners, the analysis combines standard gravity variables with country-level measures of cryptocurrency activity and estimates fixed effects, random effects, and high-dimensional fixed effects models.

The results confirm the continued relevance of traditional trade determinants, particularly geographic distance. In contrast, the effect of new payments methods adoption varies across specifications. In the random effects model is found to be negatively and highly statistically significant, suggesting that higher crypto activity is associated with lower formal trade flows. This counterintuitive result may indicate that cryptocurrency adoption substitutes for formal trade channels or reflects periods of economic instability, including the COVID-19 pandemic. However, this relationship is not robust to more demanding specifications that control for unobserved heterogeneity.

Overall, the findings suggest that blockchain-based technologies have not yet translated into measurable trade-facilitating effects, partly due to limited institutional support and legal uncertainty. The paper highlights the gap between the potential benefits of blockchain for international trade and its actual adoption, emphasizing the role of coordinated institutional frameworks in enabling technological diffusion.

Biography

José Luis Delgado is a macroeconomic consultant specializing in emerging markets, FX dynamics, and scenario-based analysis. He helps businesses understand how inflation, currency volatility, and policy shifts translate into concrete risks and opportunities.

With experience across public policy, financial markets, and international trade, Delgado has worked in roles spanning economic advisory, financial analysis, credit risk, and international procurement. He has monitored global markets, interpreted macroeconomic indicators, and provided actionable insights to support strategic decision-making.

He is currently a **PhD candidate in Economics at Istanbul University**, with international experience in Argentina, Türkiye, and Europe, combining applied macroeconomic analysis with practical exposure to volatile economic environments.

The Next Wallet: Agents, On-Device AI, and the Invisible Checkout

Mohan Sankaran
PayPal Inc, USA

In my keynote, I will talk about the process by which smart wallets are transforming payments from an active process to one that occurs in the background. I will explain how AI agents that operate directly on your device can manage risk management, authentication and negotiations before you are even aware that you need to pay for something.

The technical architecture will be deconstructed - AI that prioritizes your privacy by remaining local, lightweight models that integrate various signals and seamless handoffs between your device and the cloud that maintain a timeframe of less than 100 milliseconds, while simultaneously increasing approvals and reducing fraud. Key patterns, including context-aware wallets, peer to peer NFC payments and failsafe systems in the event of issues, will be discussed.

I will also address the safety measures, which include the maintenance of clear audit trails, the alignment of policies, the retention of human control when necessary and the implementation of continuous testing cycles. At the end of the talk, you will possess a practical roadmap for determining the appropriate role for agents, designing interfaces that seamlessly transition to manual control, evaluating improvements without jeopardizing user data and responsibly deploying these systems. The wallet of the future is not merely an additional application on your phone; it is a quiet assistant that simplifies everyday transactions.

Biography

Mohan Sankaran is an Engineering Lead with over 20 years of experience spanning Android, fintech, AI/ML, IoT, blockchain, tokenization, and cybersecurity. He currently leads Android engineering for the Business Experience in the PayPal App, empowering millions of business users worldwide. Mohan has been instrumental in Zettle and multiple PayPal financial products, driving innovation across diverse customer segments.

Previously at Visa, he contributed to the Visa Tokenization Service (VTS), the backbone of Apple Pay, Google Pay, and global banking ecosystems, scaling secure digital payments to over $1 trillion while reducing fraud. Earlier, he delivered mobile banking solutions across India and South Africa, gaining a unique perspective on building secure, scalable, and user-centric technology for global markets.

The Legal Landscape of Deepfakes Across U.S. States

Md Sazzad Hossain
University of Iowa, USA

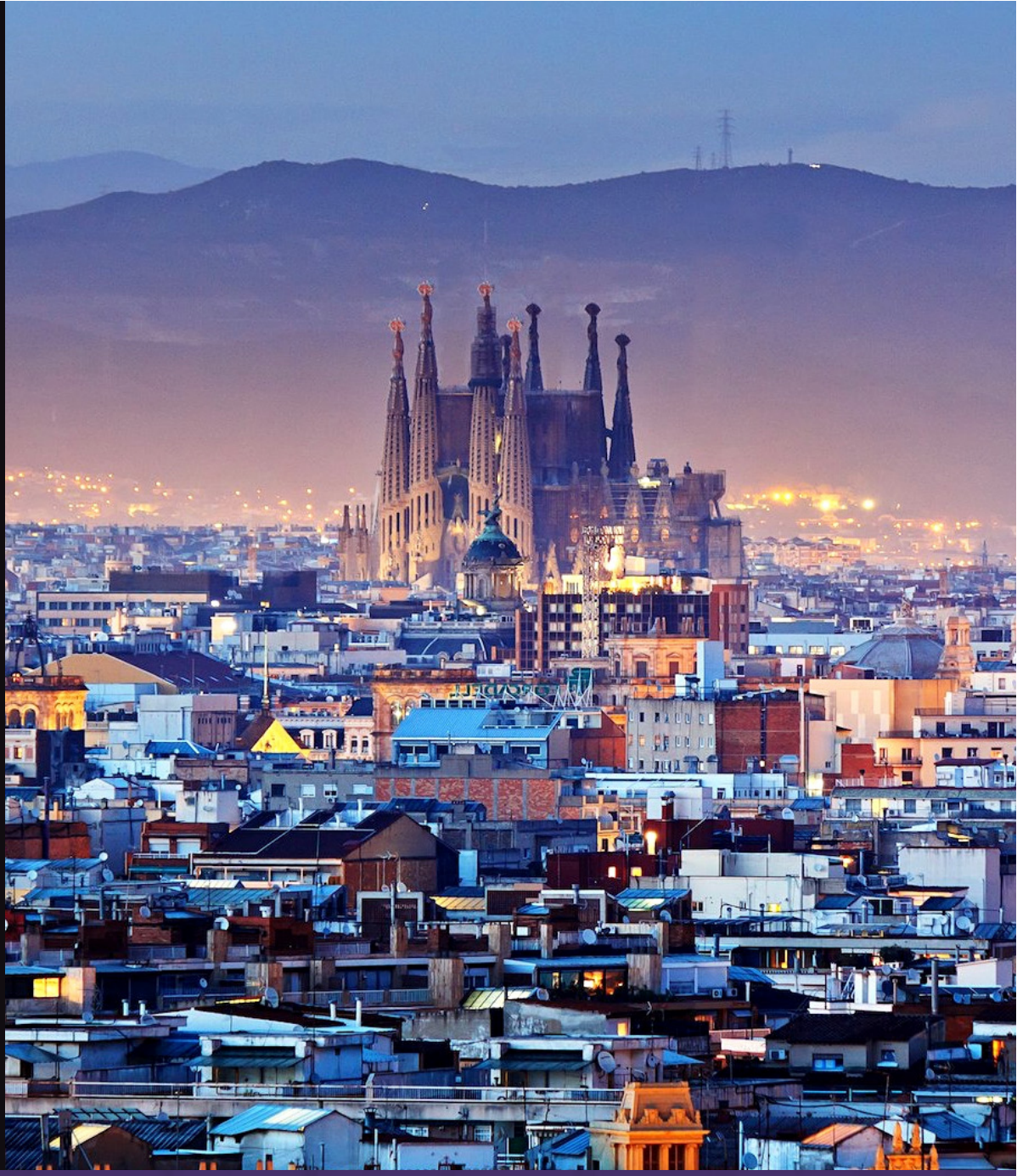
Nowadays, the malicious use of deepfakes increases concerns for individuals, society, and democracy because deepfakes have negative consequences, including damaging public faith in institutions, harming the reputation of renowned figures, and manipulating public opinion. Through textual analysis, this study examines ten U.S. states' deepfakes laws. Using the social construction of digital technology (SCODT) theory, this study examines how legal accountability shapes social construction and interaction between government, technology users, and victim communities. The findings highlight that U.S. states take intense legal regulatory action to prevent the harm of deepfakes. Laws consider the malicious use of deepfakes as criminal offenses and impose severe penalties, such as a maximum of thirty years imprisonment and a fifty-thousand-dollar fine. States also enacted laws to ensure the integrity of elections and protect voters from misleading deepfake content. In addition, these laws emphasize privacy protection and prevent sexual harassment from deepfakes.

Biography

Md Sazzad Hossain has M.A. degrees in journalism from the University of Mississippi and entrepreneurship economics from the University of Dhaka. He has a B.S.S. and M.S.S. in government and politics from Jahangirnagar University, Bangladesh.

He worked as a journalist in television and newspapers for 11 years. His last newsroom position was Senior Broadcast Journalist at Independent Television, Bangladesh's leading private 24/7 news channel, from July 2018 until joining the University of Mississippi in 2021. During his career, he was a business news bulletin presenter on SA.TV. He got a Broadcasting Award (2022) for a television feature story, ""Mississippi Band of Choctaw Indians Fight to Survive Diabetes and COVID-19,"" awarded by the Mississippi Association of Broadcasters.

DAY 02



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SPEAKER TALKS

Beyond the Black Box: Hybridizing Genetic Algorithms with Deep Cascade-Forward Networks for Precise Time Series Forecasting

Gulseren Birim
Marmara University, Turkey

Time series forecasting remains a critical pillar of decision-making in both academia and highstakesindustries. While deep learning has surpassed traditional methods, most modern architectures suffer from two major flaws: they ignore linear relationships and struggle with redundant data in high-order models.

This session introduces a breakthrough approach from my recent research: the **Partial High-Order Deep-Cascaded Forecasting Model**. This model transcends the limitations of standard algorithms by integrating a **Genetic Algorithm (GA)** for intelligent feature selection, ensuring only the most significant lagged variables are utilized. Furthermore, by employing a **Deep Cascade-Forward Neural Network (D-CFNM)**, the model achieves a unique hybrid capability: capturing both linear and nonlinear dependencies simultaneously.

Attendees will explore how this partial high-order structure reduces noise and computational overhead while significantly outperforming state-of-the-art models. We will discuss the practical implications of this architecture in real-world datasets, demonstrating a new gold standard for robust and efficient predictive analytics.

Biography

Gulseren Birim is an accomplished Data Analyst with four years of experience in Analytics and Business Intelligence. She specializes in transforming complex data into actionable insights and crafting compelling data-driven narratives that drive strategic business decisions.

Having worked across dynamic startup environments, she has developed a strong sense of ownership, managed high-responsibility projects, and demonstrated adaptability in fast-paced settings. Gulseren is committed to bridging the gap between academic research and real-world business applications, consistently leveraging data to create measurable value.

Lambda Research Group

Demystifying Attention Sink in LLMs and its Applications to Architecture Design

Xiangming Gu
National University of Singapore, Singapore

Currently, Large Language Models (LLMs) widely adopt decoder-only Transformer architecture. Such a model assigns significant attention to the first token, even if it is not semantically important, which is known as attention sink. This phenomenon has been applied for various downstream applications, such as long-context scenarios, KV cache optimization, inference acceleration, and model quantization. However, a deep understanding of attention sink in LLMs is still lacking.

Therefore, in this talk, I attempt to demystify attention sink by answering the following three questions: (i) what's the mechanism understanding of attention sink? (ii) when attention sink emerges in LLMs? (iii) why LLMs need attention sink? In the meanwhile, I will also explain why GPT-OSS released by OpenAI and Xiaomi MiMo-V2-Flash released by Xiaomi consider learnable attention bias, and why Qwen3-Next released by Alibaba adopts gating attention to handle attention sink in their architecture designs.

Biography

Xiangming Xu is a final-year Ph.D. candidate at the National University of Singapore. He earned his bachelor's degrees from Tsinghua University in 2021. He has conducted research as a student researcher at Google DeepMind and as a research intern at Sea AI Lab. His current research focuses on large language models (LLMs), including pre-training and architecture design, as well as reasoning capabilities in LLMs.

Transparency and Trust in AI Systems: Examining Data Privacy Claims in Conversational AI Platforms

Nikhil Barot
Independent Researcher, USA

Artificial Intelligence systems are increasingly integrated into everyday digital interactions through conversational assistants and intelligent platforms. These systems often assure users that their data is protected and, in some cases, only retained for the duration of a session. However, historical events in the technology industry have demonstrated that user data practices are not always fully understood by the public. Incidents involving major technology platforms have raised broader concerns about transparency, informed consent, and the potential gap between privacy assurances and actual data usage practices.

This presentation explores emerging privacy concerns surrounding modern AI systems and conversational platforms. It examines questions related to data ownership, user awareness of data collection, and the transparency of privacy policies that govern AI-driven services. The discussion highlights the challenges associated with complex AI data pipelines that make it difficult for users to fully understand how their interaction data may be processed, stored, or used for model improvement.

Additionally, the talk reviews existing privacy-preserving approaches such as differential privacy and federated learning that aim to reduce risks associated with sensitive data usage. The presentation proposes future research directions focused on improving transparency and developing privacy-aware AI systems that balance technological innovation with responsible data governance.

Biography

Nikhil Barot is a Forward Deployed Engineer and AI-driven Software Quality Engineer with over 10 years of experience delivering and optimizing software systems across finance, government, and higher education. He specializes in translating complex business requirements into production-ready solutions through hands-on engineering, automation, and applied AI/ML.

Nikhil works at the intersection of software engineering, AI, and customer deployment, collaborating with stakeholders to customize platforms, integrate with existing infrastructure, and ensure measurable post-deployment impact. His expertise includes building automation frameworks, deploying AI/ML models in production, and managing end-to-end system engineering and operational support.

He has applied deep learning, LLMs, and AI interfaces for predictive analytics, anomaly detection, and automated test generation, while delivering scalable and reliable enterprise solutions with a strong focus on real-world deployment and optimization.

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