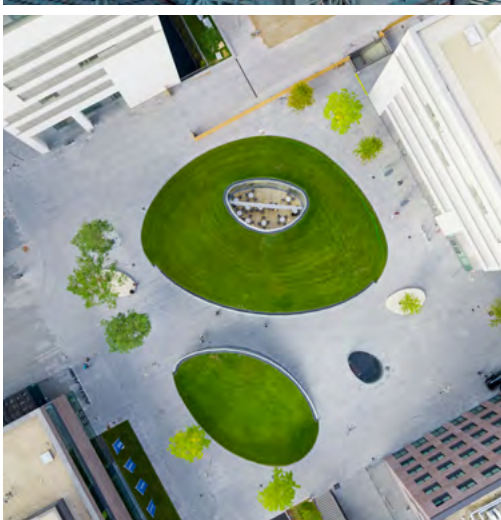
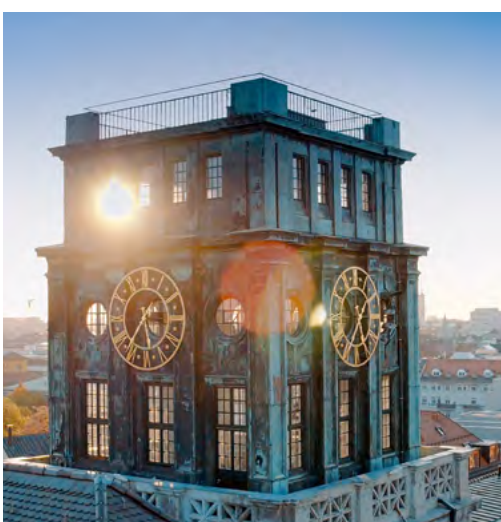


TUM Prelude 2024

New Faculty





Dear professors,

The start at TUM looks somewhat different for each new professor: We recruit worldwide, and many of you have moved to your new location with your partner and family.

In any case, the move to TUM is associated with various changes: New colleagues, new students, new structures. Besides work, you were busy with finding an apartment, organizing childcare and in some cases regulating immigration. To ensure that your relocation does not become a burden, but runs as smoothly as possible, we at the Munich Dual Career Office (MDCO) support all new faculty members in these steps.

One of the greatest challenges is to find a suitable career perspective for your partner at the new location. This is our core competence at the MDCO: Together with our dual career partners, we develop a strategy for the job search and offer individual coaching. Our network with partner organizations from business and science is the door opener to the job market at our TUM locations Munich, Straubing, Freising and Heilbronn. With the launch of IDCN Munich in 2020, we now offer dual career partners a platform to actively develop a professional network and to make their talents and abilities visible.

It is a great pleasure for us at the MDCO to be among the first colleagues you met at TUM. We enjoy working with you and are enthusiastic about you and your partners' diversity, innovative power and openness for change.

We are pleased that you are now part of our big TUM family and wish you all the best for your start.

Your team of MDCO

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Zeynep Akata

**Professorship:**

Interpretable and Reliable Machine Learning

E-Mail:

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School:

TUM School of Computation, Information
and Technology

Bio:

I am a Liesel Beckmann Distinguished Professor of CS at TUM and an institute director at Helmholtz Munich. After completing my PhD in INRIA (2014), I was a postdoc at MPI and UC Berkeley (2014-17), an Assistant Professor at the University of Amsterdam (2017-19), a professor at the University of Tübingen (2019-23). I received a Lise-Meitner Award (2014), an ERC StG (2019), the DAGM Pattern Recognition Award (2021), the ECVA YR Award (2022) and the Alfried Krupp Award (2023). I am an ELLIS fellow.

Research:

My research area is Explainable Machine Learning. I focus on how to best communicate the model's decisions to the user which requires operating with data streams understandable to the user, e.g. natural language, and understandable to any user, e.g. users with cognitive or perceptual weaknesses.

Which scientific problem would you really like to solve?

I aim to build explainable AI systems using minimal supervision, computing resources and energy.

A boring fact about yourself:

I am a mother of a 2.5 year old boy and the second one is on the way (due in December 2024).

Sabine Ardey

**Professorship:**

Test and Simulation for Gas Turbines

E-Mail:

sabine.ardey@tum.de

School:

TUM School of Engineering and Design

Bio:

Sabine Ardey graduated in Aeronautics at TUM. She obtained her PhD at the University of the Bundeswehr Munich working on experimental and numerical studies of cooling in gas turbines. Juggling family and business duties, she continued to deep dive into aerodynamics and thermodynamics at MTU Aero Engines before assuming leadership functions in technology management and engine control systems within the company. Striving to drive engineering to excellence, she joined BSH Home Appliances where she held several leading functions of big technical organizations. Returning to her roots, Sabine was appointed in 2024 to the professorship for Test and Simulation for Gas Turbines at TUM and simultaneously to the directorate of the Institute for Test and Simulation for Gas Turbines of the Deutsches Zentrum für Luft- und Raumfahrt (DLR).

Research:

Together with my colleagues at the DLR institute I work on new gas turbine technologies by coupling numerical and experimental methods to validate innovative solutions. We put a special emphasis on Material Lifetime Evaluation (with unique test facilities), Secondary Air System and Digitalisation.

Which scientific problem would you really like to solve?

Fully understanding and being able to model the various fluid-thermal-mechanical interactions of the Secondary Air System in gas turbines.

A boring fact about yourself:

My fringe never bends down to my forehead.

Alexander Bartelt

**Professorship:**

Translational Nutritional Medicine

Email:

alexander.bartelt@tum.de

School:

TUM School of Life Sciences

Bio:

I am a biochemist by training and received my PhD from the University of Hamburg in 2010. After working from 2013-2018 at Harvard University, Boston, USA, I served as the Professor of Cardiovascular Metabolism at LMU Hospital from 2019-2024. My contributions to the understanding of metabolism have been recognized by national and international awards, fellowships, and honors.

Research:

The Bartelt Lab studies metabolic adaptation as a fundamental process by which cells and organisms respond to environmental challenges. Our goal is to understand the molecular basis of metabolic biology and find new approaches to tackle metabolic disease clusters.

Which scientific problem would you really like to solve?

Cells and organisms are used to adapt to nutrient scarcity, but in our modern society we live in energy excess, which causes stress in our bodies.

A boring fact about yourself:

I watch The Big Lebowski movie every day.

Berthold Bäuml

**Professorship:**

Learning AI for Dextrous Robots

E-Mail:

berthold.baeuml@tum.de

School:

TUM School of Computation, Information
and Technology

Bio:

Berthold Bäuml holds the professorship “Learning AI for Dextrous Robots” at TUM and he is also head and founder (in 2014) of the joint research lab “Autonomous Learning Robots” with the Institute of Robotics & Mechatronics at the German Aerospace Center (DLR). His research led to the development of one of the worldwide most advanced mobile humanoid robots DLR Agile Justin and he received numerous awards at main international robotic conferences, e.g., the ICRA 2016 Best Cognitive Robotics Finalist, as well as ample attention in the media.

Research:

The goal of his research in “autonomously learning AI”, i.e., deep (reinforcement) learning based on first principles and simulation models, is to create intelligent humanoid robots that come close to human capabilities, esp. regarding dextrous manipulation with multi-fingered hands.

Which scientific problem would you really like to solve?

Understanding the principles for autonomous, highly efficient and flexible learning — like human children learn complex manipulation tasks from astonishingly little trials and all on their own.

A boring fact about yourself:

Playing music by Bach helps to concentrate.

Markus Becherer

**Professorship:**

Chip-based Magnetic Sensor Technology

Email:

markus.becherer@tum.de

School:

TUM School of Computation, Information and Technology

Bio:

After completing vocational training at the Sick AG, Markus Becherer studied electrical engineering and information technology at TUM. He graduated as Dr.-Ing. 2011 at TUM and habilitated in 2017. From 2017 to 2020, he was provisional head of the Chair of Nano-electronics. During this time, he took over the management and technical lead of ZEITlab, the Central Electronics and Information Technology Laboratory of the SoCIT.

Research:

I am researching magnetic components for spin-based signal processing and sensing. One focus is on ferro and ferrimagnetic materials, their nanoscale patterning, and electrical and optical characterization. The methods developed can precisely adjust the material properties.

Which scientific problem would you really like to solve?

Can we engineer matter on the nanoscale for unconventional computing and memory functions?

A boring fact about yourself:

I was very emotional when I recently had to switch off the Micrion 9500. shutdown -h now!

Chunyang Chen

**Professorship:**

Software Engineering & AI

Email:

chun-yang.chen@tum.de

School:

TUM School of Computation, Information and Technology

Bio:

Chunyang Chen studied software engineering during his PhD at Nanyang Technological University. After working as a faculty member at Monash University for six years, he moved to CIT TUM at Heilbronn Campus. His main research interest lies in automated software engineering, especially data-driven mobile app development. Besides, he is also interested in Human-Computer Interaction and software security. His research has won awards including ACM SIGSOFT Early Career Researcher Award, Facebook Research Award, four ACM SIGSOFT Distinguished Paper Awards, and multiple best paper/demo awards.

Research:

His research is mainly two-fold including AI4SE, i.e., AI-driven automated software development processes such as code generation and software testing. The other direction is SE4AI i.e., facilitating AI deployment into real-world software, and ensuring its accessibility, robustness, safety, etc.

Which scientific problem would you really like to solve?

How can we make humans and AI collaborate effectively and reliably?

A boring fact about yourself:

Hiking refreshes me.

Jana Diesner

**Professorship:**

Human Centered Computing

E-Mail:

jana.diesner@tum.de

School:

TUM School of Social Sciences and
Technology

Bio:

Before joining TUM, I was a tenured professor at the University of Illinois Urbana Champaign. I earned my PhD at Carnegie Mellon, School of Computer Science. I work on methods from network analysis, natural language processing, machine learning, and AI, and integrate them with theories from the social sciences to advance our understanding of complex societal systems. I am passionate about empowering traditionally underrepresented groups, especially women, to pursue careers in computing and advance their representation in tech.

Research:

I conduct research in computational social science, a field that leverages large-scale data to discover theories and patterns of social behavior, and human-centered data science, a field that considers social contexts and ethical concerns for data analysis.

Which scientific problem would you really like to solve?

How can we make computing and AI more responsible?

A boring fact about yourself:

outdoors > indoors

Felix Dietrich

**Professorship:**

Physics-Enhanced Machine Learning

E-Mail:

felix.dietrich@tum.de

School:

TUM School of Computation, Information and Technology

Bio:

I studied Scientific Computing (B.Sc.) at UAS Munich and KTH in Stockholm and obtained my Masters (2014) and PhD (2017) in Mathematics (TopMath) from TUM. From 2017 to 2019, I worked as a postdoc at JHU and at Princeton University, together with Prof. Kevrekidis. In 2019, I joined TUM to work at the chair of Scientific Computing, and starting 2022, I became leader of a DFG Emmy Noether Junior Research Group. In 2024, I was appointed to the professorship for Physics-Enhanced Machine Learning.

Research:

My group and I conduct research in the analysis and development of numerical algorithms for machine learning. We focus on random features, kernel methods and data-driven approximations of Koopman and Laplace operators.

Which scientific problem would you really like to solve?

I would like to know how to train neural networks without backpropagation.

A boring fact about yourself:

I am quite optimistic about the future.

Can Dincer

**Professorship:**

Sensors and Wearables for Healthcare

E-Mail:

can.dincer@tum.de

School:

TUM School of Computation, Information
and Technology

Bio:

I am the Professor of Sensors and Wearables for Healthcare at TUM Campus Garching. Having completed my studies in microsystems engineering, I graduated and in 2016 received my PhD with summa cum laude from the University of Freiburg, Germany. Between June 2017 and June 2019, I also worked as a visiting researcher at the Department of Bioengineering at Imperial College London, UK. Since September 2019, I am an associate editor of the journal "Biosensors and Bioelectronics" (Elsevier). I am also an editorial board member of the journals "Advanced Sensor Research" (Wiley) and "The Innovation Materials" (Cell Press).

Research:

My research interest is the development of bioanalytical materials/sensors/microsystems, and their combination with data science and artificial intelligence for One-Health: human & animal health, and environment. Our focus is on disposable sensing devices for point-of-need and wearable applications.

Which scientific problem would you really like to solve?

Continuous and real-time monitoring of biomarkers using affordable and easy-to-use sensors and wearables

A boring fact about yourself:

I like collecting postage stamps.

Michaela Eder

**Professorship:**

Wood Science and Functionalization

E-Mail:

michaela.eder@tum.de

School:

TUM School of Life Sciences

Bio:

Michaela studied Wood Science at the BOKU in Vienna and moved for the final two years of her doctorate to the MPI of Colloids and Interfaces, Potsdam, to explore the mechanics of single wood cells. Two years at the MPI multiplied by 10 and since 2011 she has led a research group focusing on the mechanics of plant tissues. She is a PI at the Cluster “Matters of Activity”, co-deputy director of the Max Planck Queensland Center and a senior adjunct researcher at the University of Western Australia.

Research:

We want to understand wood and other plant material properties and how they control functionality for the organism and for applications after harvest. A main focus is on the arrangement of polymers in the cell wall and how cell wall properties change with environmental conditions.

Which scientific problem would you really like to solve?

To appreciate and understand the diversity of plant material properties in order to be able to valorize this diversity for a more sustainable material use.

A boring fact about yourself:

I am fascinated by plants.

Florian Egli

**Professorship:**

Public Policy for the Green Transition

E-Mail:

florian.egli@tum.de

School:

TUM School of Social Sciences and Technology

Bio:

Florian Egli is a Tenure Track Assistant Professor at TUM. He is the head of the research group Public Policy for the Green Transition and the head of the Transformation Finance Lab at the TUM Think Tank. He completed his PhD at the Energy and Technology Policy Group at ETH Zurich and worked there as a senior researcher and lecturer. He was also an honorary research fellow with Prof. Mariana Mazzucato at the Institute for Innovation and Public Purpose (IIPP) at UCL.

Research:

We investigate how public policies can be designed to advance the sustainability transition. We focus on ensuring that the required investment for such transitions is available and that policies are politically feasible while providing opportunities to places and people.

Which scientific problem would you really like to solve?

How do we build a society that uses energy and natural resources wisely, ensuring a livable planet for future generations?

A boring fact about yourself:

I am a foodie, but I love airplane meals.

Johanna Eichhorn

**Professorship:**

Nanoscale Microscopy and Spectroscopy
of Energy Materials

Email:

johanna.eichhorn@tum.de

School:

TUM School of Natural Sciences

Bio:

Johanna Eichhorn earned a PhD in physics from TUM in 2015. Afterward, she joined the Joint Center for Artificial Photosynthesis of the Lawrence Berkeley National Laboratory (USA) as a postdoctoral fellow. In 2020, she started her independent career as a junior research group leader at the Walter Schottky Institute (WSI) of TUM. In 2024, she was appointed as Rudolf Mößbauer Professor for Nanoscale Microscopy and Spectroscopy of Energy Materials at TUM.

Research:

Her research group aims to understand conversion processes at surfaces and interfaces of energy materials under operation conditions and at the nanoscale. To this end, they utilize scanning probe microscopy to locally monitor chemical transformations, material degradation, and charge transport.

Which scientific problem would you really like to solve?

The goal of her research is to resolve how nanoscale material properties can dominate the performance and stability of the macroscale system.

A boring fact about yourself:

I can't start the day without a coffee.

Wenwen Fang

**Professorship:**

Particle and Fiber Technology for Bio-based Materials

Email:

wenwen.fang@tum.de

School:

TUM Campus Straubing

Bio:

I studied Chemical Engineering at Åbo Akademi in Finland. I completed my doctorate in Material Science at Aalto University, Finland in 2018 with research visits at the Czech Academy of Sciences and Kiel University. Following a post-doctoral stay at Freiburg University, I returned to Aalto University in 2020 to support the transition of Ioncell® fiber spinning technology from lab to pilot scale. In 2022, I was appointed as a staff scientist at Aalto University, and in 2024, I joined TUM as an Assistant Professor.

Research:

My research is centered around the use of cellulose and protein as bio-based polymers and particles for various value-added products. I aim to develop high-performance fibers and composites from renewable resources that can effectively compete with petroleum-based products.

Which scientific problem would you really like to solve?

I want to develop a robust process that can enhance the production efficiency and stability of bio-based polymers, allowing them to be utilized as volume materials.

A boring fact about yourself:

I have a pet bunny called Mr. Blueberry.

Alexander Fraser

**Professorship:**

Data Analytics & Statistics

E-Mail:

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School:

TUM School of Computation, Information
and Technology

Bio:

Alexander Fraser acquired his doctoral degree in 2007 at the University of Southern California in computer science. From 2007 to 2013 he was at the University of Stuttgart. From 2013 to 2024 he was at LMU Munich, first as a tenured lecturer and then from 2017 as the Professor of Information and Language Processing. He received the ERC Starting Grant in 2014, and an ERC Proof of Concept Grant in 2022. He has been Chair for Data Analytics & Statistics at TUM since 2024 and is also a PI of the Munich Center for Machine Learning.

Research:

Research on machine learning approaches to machine translation, language modeling, and multilingual natural language processing. Focus on addressing data sparsity and integrating linguistic and world knowledge in AI systems.

Which scientific problem would you really like to solve?

I'd really like to solve the problem of having large language models for all the world's languages and enabling everyone to communicate in their native language.

A boring fact about yourself:

I'm American but do speak German.

Julia Frede

**Professorship:**

Systems Immune Oncology

E-Mail:

julia.frede@tum.de

School:

TUM School of Medicine and Health

Bio:

After studying Molecular Cell Biology at the University of Heidelberg, I obtained my PhD in oncology from the University of Cambridge, UK. My doctoral research provided new insights into cell dynamics and cell fate decisions in esophageal squamous cancer. Subsequently, I continued my postdoctoral training at Dana-Farber Cancer Institute/Harvard Medical School, where I used single cell sequencing to explore mechanisms of treatment resistance in multiple myeloma. In 2024, I moved to Munich where I have been leading a junior research group in Cancer Systems Biology at the German Cancer Consortium (DKTK/DKFZ) and the LMU Munich.

Research:

I apply novel single-cell sequencing technologies to explore altered cell states in cancer and immune cells that underlie therapy resistance. My goal is to develop innovative experimental and computational strategies to better predict and monitor responses to (immuno-)therapies.

Which scientific problem would you really like to solve?

I aim to understand the complex interplay between cancer cells and the immune system. Solving this would enable the development of more effective therapeutic strategies and improve patient outcomes.

A boring fact about yourself:

My inbox is currently home to 44,325 unread emails, and I have made peace with that.

Samuel Greiff

**Professorship:**

Educational Monitoring & Effectiveness

Email:

samuel.greiff@tum.de

School:

TUM School of Social Sciences and Technology

Bio:

I studied psychology at Philipps-University Marburg and Heidelberg University spending some additional time at University of Bergen, Norway. After receiving a PhD in cognitive and experimental psychology from Heidelberg University in 2010, I moved on to University of Luxembourg, where I stayed for over 10 years, for the last 6 years as Full Professor of Educational Assessment & Psychology. After a brief period as Full Professor of Educational Psychology & Artificial Intelligence at Goethe University Frankfurt, I was appointed in fall 2024 as Endowed Chair of Educational Monitoring & Effectiveness at TUM.

Research:

I get excited about international large-scale assessments such as PISA and PIAAC and the role of AI in education. My research is located at the intersection of educational psychology, artificial intelligence, educational technology, cognitive science, and international large-scale assessments.

Which scientific problem would you really like to solve?

How best to use national and international monitoring studies to improve education for everybody and to provide policy makers in education with strong information to make evidence-based decisions.

A boring fact about yourself:

Despite notorious low attendance, I attend the matches of 3rd league team SV Wehen Wiesbaden.

Max J. Hülsey

**Professorship:**

Catalytic Interfaces for Sustainable Chemical Energy Carriers

E-Mail:

m.huelsey@tum.de

School:

TUM School of Natural Sciences

Bio:

I grew up in Berlin and developed an early interest in the chemistry of biological systems. After high school I moved to Heidelberg University to study Biochemistry and Chemistry. I then obtained a PhD degree in Chemical Engineering from the National University of Singapore. After a short postdoctoral stint in the Chemistry and Chemical Engineering departments at the Massachusetts Institute of Technology, I am excited to join TUM as Tenure Track Assistant Professor in 2024.

Research:

I am interested in everything catalysis but specifically in the interrelation of heterogenous thermochemical and electrochemical catalysis. More broadly, I want to develop new methods to produce and interconvert chemical feed-stock and materials with a drastically reduced environmental footprint.

Which scientific problem would you really like to solve?

Understanding how electric fields form spontaneously during catalysis and what impact they have on nominally non electrochemical transformations.

A boring fact about yourself:

I relax best when cooking while listening to a good podcast.

Stefanie Jegelka



Professorship

Foundations of Deep Neural Networks

e-Mail

stefanie.jegelka@tum.de

School

TUM School of Computation, Information and Technology

Bio:

Stefanie Jegelka has been an Associate Professor (with tenure) in the Department of EECS at MIT. Before joining MIT, she was a postdoctoral researcher at UC Berkeley, and obtained her PhD from ETH Zurich and the Max Planck Institute for Intelligent Systems. She has received a Humboldt professorship, a Sloan Research Fellowship, an NSF CAREER Award, a DARPA Young Faculty Award, the German Pattern Recognition Award, a Best Paper Award at ICML and an invitation as sectional lecturer at the International Congress of Mathematicians. She has co-organized multiple workshops on (discrete) optimization in machine learning and graph representation learning, and has served as an Action Editor at JMLR and a program chair of the International Conference on Machine Learning (ICML) 2022. Her research interests are in machine learning, its theory and applications.

Research:

I aim to make machine learning more robust, expressive and widely applicable by utilizing mathematical structure and by trying to understand and steer what machine learning models actually learn.

Which scientific problem would you really like to solve?

Many! E.g., build and understand machine learning models that can make really new (scientific) discoveries.

A boring fact about myself:

I still haven't read Harry Potter in Hindi...

Nadia Kamal

**Professorship:**

Computational Plant Biology

E-Mail:

n.kamal@tum.de

School:

TUM School of Life Sciences

Bio:

I completed my studies in biology at the Free University of Berlin and molecular cell biology at the University of Bielefeld, where I also earned a doctorate in Computational Genomics. My doctoral research focused on investigating the genetic regulation of flowering time in grapevines. From 2018 to 2024, I worked as a postdoctoral researcher at Helmholtz Munich under Prof. Klaus Mayer, where I further specialized in comparative plant genomics and bioinformatics, contributing to projects of plant genome research such as decoding the oat genome. In 2023, I was awarded an ERC Starting Grant to investigate the genetic foundations of drought stress resistance in oats, leveraging computational tools to contribute to agricultural sustainability. In February 2024, I was appointed as an Assistant Professor for Computational Plant Biology at the TUM School of Life Sciences.

Research:

My research in comparative plant genomics explores genetic diversity to improve crops and understand evolutionary processes. This work supports enhancing climate resilience and stress tolerance by identifying genes underlying key traits and using omics approaches for agricultural sustainability.

Which scientific problem would you really like to solve?

Unlock and utilize the extensive genetic diversity in crops, developed over millennia, to improve their resilience and support global food security amid climate change and a growing global population.

A boring fact about yourself:

I sleep better in a tent than in my own bed.

Stephen Kobourov

**Professorship:**

Efficient Algorithms

E-Mail:

stephen.kobourov@tum.de

School:

TUM School of Computation, Information and Technology

Bio:

Stephen Kobourov received BS degrees in Computer Science and Mathematics from Dartmouth College in 1995 and a PhD in Computer Science from Johns Hopkins University in 2000. He was at the University of Arizona as Assistant Professor (2000-06), as Associate Professor (2006-12) and as Full Professor (2012-2024), where he also served as Associate Director of the Data Science Institute. He was Fulbright Scholar in 2006-07 at the University of Botswana, to put together a graduate program in Computer Science. In 2008-09, he worked as a Research Scientist at AT&T Research Labs. In 2013-14 he was a Humboldt Fellow at the University of Tübingen. In 2015-16, he worked as Fulbright Distinguished Chair at the Faculty of Mathematics and Physics at Charles University in Prague. He is now Chair for Efficient Algorithms at the School of Computation, Information and Technology, TUM Campus Heilbronn.

Research:

Stephen works on theoretical and practical problems: from the design, analysis & implementation of efficient algorithms, to applications in information visualization, computational geometry and graph drawing. While in theory there is no difference between theory and practice, in practice there is.

Which scientific problem would you really like to solve?

Simultaneous Geometric Embedding: Given two planar graphs with N vertices, is there a set of N points that allows each graph to be drawn with straight-line edges and without any edge crossings?

A boring fact about yourself:

I work on graph drawing algorithms, but (or maybe because) I cannot draw to save my life.

Stephan Krusche

**Professorship:**

Applied Education Technologies

E-Mail:

krusche@tum.de

School:

TUM School of Computation, Information and Technology

Bio:

Born in Nuremberg, I developed an early passion for math and taught myself programming from a book. After completing my Abitur, I moved to Munich to study computer science. In my dissertation, I focused on applied software engineering and agile methods, always dedicated to enhancing education. In 2020, I received the Ars Legendi Prize for excellence in teaching. After helping establish the CIT school at the TUM Heilbronn campus, I now assume the role of professor in Garching.

Research:

I improve education with technology, automation, and AI. I develop innovative teaching methods like Interactive Learning and platforms like Artemis to enhance student engagement, reduce instructor workload, and foster personalized learning. I am also committed to promoting women in STEM.

Which scientific problem would you really like to solve?

I want to solve the challenge of scaling personalized education, making high-quality, individualized learning experiences accessible to everyone through advanced educational technologies and AI.

A boring fact about yourself:

I regularly play soccer and enjoy hiking, but I always prefer skiing over snowboarding.

Sabina Leonelli

**Professorship:**

Philosophy and History of Science and Technology

School:

TUM School of Social Sciences and Technology

E-Mail:

sabina.leonelli@tum.de

Bio:

After completing my studies in History, Philosophy and Social Studies of Science in London and Amsterdam, I worked at the LSE and subsequently took up a permanent post at the University of Exeter, where I became Full Professor in 2017 and directed the Centre for the Study of the Life Sciences (Egenis) from 2013 to 2024. I held visiting positions at the MPI of History of Science in Berlin, the Universities of Ghent, Minnesota and Adelaide, the Konrad Lorenz Institute for Evolution and Cognition Research, Stazione Zoologica Anton Dohrn, and lately the Library of Congress.

Research:

My research investigates: (1) the role of technology and data in knowledge production; (2) the history of openness in scientific inquiry and democratic societies; (3) how humans understand the biological world, and how this informs interactions with nature.

Which scientific problem would you really like to solve?

How do we produce reliable knowledge to address the climate crisis, while also promoting research that actively fosters justice and democratic engagement?

A boring fact about yourself:

I can't live without swimming and music.

Markus List

**Professorship:**

Data Science in Systems Biology

E-Mail:

markus.list@tum.de

School:

TUM School of Life Sciences

Bio:

Markus List's (*1984) field of research is Data Science in Systems Biology. He studied bioinformatics at the Eberhard Karls University Tübingen, including a DAAD-funded stay at the University of Auckland (New Zealand). He completed his doctorate at the University of Southern Denmark in the field of cancer research, followed by a postdoc in the field of epigenetics at the Max Planck Institute for Informatics. From 2018, Markus conducted research with his Big Data in Biomedicine group at the School of Life Sciences at TUM. In 2023 Markus was appointed to the professorship for Data Science in Systems Biology.

Research:

Systems biology connects biology, medicine and (bio)informatics with data science. We aim to understand gene regulatory mechanisms in the cellular system across different molecular levels (especially the genome, transcriptome and epigenome) using machine learning and data integration approaches.

Which scientific problem would you really like to solve?

As cells do not exist in isolation, systems biology needs to consider a cell's environment, including immune system, microbiome, food and drug interactions.

A boring fact about yourself:

Bicycles are my favorite means of transportation (most days, I cycle more than 10 km to work).

Lorenzo Masia

**Professorship:**

Intelligent Bio-Robotic Systems

E-Mail:

lorenzo.masia@tum.de

School:

TUM School of Computation, Information and Technology

Bio:

Lorenzo Masia is Professor of Intelligent BioRobotic Systems and Deputy Director of the TUM Robotics Institute MIRMI.

He is a mechanical engineer whose career spans across three continents. He was researcher at MIT and team leader at the Italian Institute of Technology, Assistant Professor at Nanyang Technological University, Associate Professor at University of Twente and Full Professor at University of Heidelberg.

He is a recipient of five IEEE Best Paper Awards and served as General Chair for the IEEE RAS BIOROB 2024 conference.

Research:

His research focuses on soft wearable robotics (exosuits) using textiles enabling comfortable devices that adapt to body movement ensuring seamless integration. Used in rehabilitation and sports, they assist muscle movement and improve human performance.

Which scientific problem would you really like to solve?

The key challenge is achieving optimal force control and assistance, augment human motion while maintaining comfort, flexibility, and natural movement, ensuring lightweight, durable materials.

A boring fact about yourself:

My life fully resets every five years.

Christoph Meier

**Professorship:**

Simulation of Additive Manufacturing Processes

School:

TUM School of Engineering and Design

E-Mail:

christoph.anton.meier@tum.de

Bio:

After my studies in mechanical engineering, I conducted my PhD in computational mechanics with Wolfgang A. Wall at TUM (2010-2016). Afterwards, I stayed as a postdoctoral researcher at the group of John Hart at MIT, focusing on the modeling and simulation of additive manufacturing (2016-2018). In 2018, I came back to TUM, starting as lecturer and deputy head of the Institute for Computational Mechanics, and leading the research group of the ERC Starting Grant ExcelAM since January 2024. In October 2024, I was appointed to the professorship for Simulation of Additive Manufacturing Processes at TUM.

Research:

My research focuses on the simulation of additive manufacturing (AM) processes, fostering understanding of the underlying physics. Ultimately, novel models will be developed to explore new AM technologies, e.g., to push the limits of AM from pure high value applications towards mass production.

Which scientific problem would you really like to solve?

My work boils down to a question that sounds simple but is very challenging: How to model complex physics with high fidelity while efficiently exploiting computational resources and experimental data?

A boring fact about yourself:

I really like playing and listening to music, but I'm only good at one of the two ;-)

Orestis Papakyriakopoulos

**Professorship:**

Societal Computing

E-Mail:

orestis.p@tum.de

School:

TUM School of Social Sciences and Technology

Bio:

Orestis studied civil engineering (Dipl. Ing.) at the National Technical University of Athens and Philosophy of Science and Technology (M.A.) at TUM, the institution where he also obtained his PhD in Computer Science. He was visiting scholar at the MIT Media Lab and conducted his postdoc at Princeton University. He also worked as an AI Research Scientist at Sony. Since 2024 Orestis is Professor of Societal Computing at the School of Social Science and Technology at TUM

Research:

Orestis Papakyriakopoulos' research provides ideas, frameworks, and practical solutions towards just, inclusive and participatory socio-algorithmic ecosystems. He builds tools and performs foundational research on platforms and artificial intelligence.

Which scientific problem would you really like to solve?

I try to reduce social asymmetries imposed by new technologies.

A boring fact about yourself:

I find nothing more relaxing than a day at the beach.

Richard Louis Peters

**Professorship:**

Tree Growth and Wood Physiology

E-Mail:

richard.peters@tum.de

School:

TUM School of Life Sciences

Bio:

In Sept. 2024, I was appointed Professor of Tree Growth and Wood Physiology at TUM. Prior to that, I performed research in Basel as the scientific coordinator of the Swiss Canopy Crane II site, together with Prof. Ansgar Kahmen. I studied biology at the University of Utrecht and was a visiting scientist at Wageningen University. I earned my PhD from the University of Basel in collaboration with the Swiss WSL in 2018. After being a Postdoc at the WSL, I secured a prestigious SNSF grant for a Postdoc at Ghent University, working on mechanistic modelling of tree growth.

Research:

As a tree physiologist and dendrochronologist, I am fascinated by the intricate relationships between forests and the Earth's climate system. Although trees may seem like static elements within a forest, their daily movements reveal novel insights into growth mechanisms and drought stress.

Which scientific problem would you really like to solve?

I would like to develop novel technologies that provide near real-time data on tree health and growth potential, helping foresters in making decisions for sustainable management and conservation.

A boring fact about yourself:

I enjoy coding in R, but I never use ggplot for visualizing my data!

Peng Yu

**Professorship:**

Plant Genetics

E-Mail:

peng.yu@tum.de

School:

TUM School of Life Sciences

Bio:

After finishing high school, I decided to invest myself into agricultural science with strong influence by my parents who are farmers. Following the completion of master and PhD studies at China Agricultural University, I found an opportunity to come to Germany for postdoctoral research. I have been fully engaged in science and technology in the last ten years. In 2021, I became the Emmy Noether Research Group Leader at the Agricultural Faculty of the University of Bonn. In October 2024, I have been appointed to be a W3-associate Plant Genetics professor at TUM School of Life Science.

Research:

My research aims to elucidate the genetic basis and functional insights of beneficial plant-microbe interactions, especially in cereal crops and grasses. In particular, I intend to fully understand how the microbiome could enhance crop productivity and system health under global climate change.

Which scientific problem would you really like to solve?

I would like to translate the theoretical knowledge of the crop microbiome into agricultural application in fighting against future environmental harsh.

A boring fact about yourself:

I like reading literature together with my lovely cats, since I know they understand more.

Anne Rademacher

**Professorship:**

Sustainable Urban Environments

E-Mail:

anne.rademacher@tum.de

School:

TUM School of Social Sciences and Technology

Bio:

I studied Cultural Anthropology and Environmental Science at Yale University. In 2005 I joined the faculty in Environmental Studies at New York University and served there as Professor of Environmental Studies until 2024. In June 2024 I joined TUM School of Social Sciences and Technology.

Research:

I am an urban ecologist who focuses on the cultural and political dimensions of environmental change. My research has focused primarily on cities in South Asia, addressing topics that include urban river restoration, housing rights, sustainable design, and urban biodiversity conservation.

Which scientific problem would you really like to solve?

I'd like to sharpen the tools we have for understanding how to promote environmental and social vitality in cities.

A boring fact about yourself:

I'm always happier in the mountains.

Patrick Rinke

**Professorship:**

AI-based Materials Science

E-Mail:

patrick.rinke@tum.de

School:

TUM School of Natural Sciences

Bio:

Patrick Rinke received his PhD from the University of York in 2003. Subsequently, he was a post-doctoral scholar at the Fritz Haber Institute (FHI) of the Max Planck Society in Berlin, and at the University of California Santa Barbara (UCSB) before becoming a group leader at the FHI in 2009. In 2014, he became professor for Computational Electronic Structure Theory at Aalto University in Helsinki. Since 2024, he leads the AI-Based Materials Science chair at TUM.

Research:

Patrick uses computational materials science, machine learning and AI to develop sustainable materials for the green transition. He and his team are implementing data science solutions to digitize materials science and facilitate the digital transition.

Which scientific problem would you really like to solve?

To find materials for affordable solar energy production for all.

A boring fact about yourself:

I have machine-learned heavy metal.

Gabriele Schrag

**Professorship:**

Microsensors and Actuators

Email:

schrag@tum.de

School:

TUM School of Computation, Information and Technology

Bio:

Gabriele Schrag studied physics at the University of Stuttgart and completed her doctorate with distinction in the field of “Modeling of coupled effects in microsystems at continuous field level and system level”. Subsequently she took over the microsystems working group at the Chair of Physics of Electrotechnology at TUM. She completed her habilitation in 2018 in the field of sensor systems technology and subsequently became acting head of the chair. In December 2023 she was appointed to the professorship of Microsensors and Actuators

Research:

We do research on modelling approaches for the virtual prototyping of complex sensor and actuator systems and novel component concepts. Applications are in the field of acoustics and ultrasound, microfluidics, classical mechanical sensor systems and bioengineering.

Which scientific problem would you really like to solve?

How can we create and maintain intergenerational fairness in different areas? How can we as scientist support this?

A boring fact about yourself:

I love the dough crust of pizzas.

Cornelius Senf

**Professorship:**

Earth Observation for Ecosystem Management

E-Mail:

cornelius.senf@tum.de

School:

TUM School of Life Sciences

Bio:

Cornelius Senf studied geography and physics at Humboldt-University of Berlin and obtained a doctorate in geography with specialization in remote sensing in 2016. After two postdocs at Vienna's University of Life Sciences and Natural Resources (BOKU) and the Integrative Research Institute on Transformations of Human-Environment Systems (IRI THESys) in Berlin he joined TUM in 2020 as a senior researcher, where he completed his habilitation in the field of Earth observation in 2023. In 2024, Cornelius was appointed as Rudolf Mößbauer Professor at the School of Life Sciences in Freising.

Research:

My research sits at the interface of Earth observation and ecosystem management. I try to unravel how climate and land use change impact ecosystems, utilizing the unique bird's eye perspective of remote sensing, and providing scientific insights improving ecosystem management globally.

Which scientific problem would you really like to solve?

Mapping and understanding the fate of every tree globally.

A boring fact about yourself:

I am very bad at mental calculations.

Suvrit Sra



Professorship

Resource aware Machine Learning

e-Mail

suvrit.sra@tum.de

School

TUM School of Computation, Information
and Technology

Bio:

Suvrit Sra is a Professor (Humboldt AI Professorship) in TU Mathematics, and also an Associate Professor in the EECS Department at MIT where he's a core faculty member at the Institute for Data, Systems, and Society (IDSS) and a PI in the Laboratory for Information and Decision Systems (LIDS). He obtained his PhD in Computer Science from the University of Texas at Austin (2007). Before moving to MIT, he was a Senior Research Scientist at the Max Planck Institute for Intelligent Systems in Tübingen. He has held visiting positions at UC Berkeley (EECS) and Carnegie Mellon University during 2013-2014. He is also a co-founder and chief scientist of Pendulum, a startup for AI-driven supply chains.

Research:

Suvrit's research bridges a number of mathematical areas such as differential geometry, metric geometry, probability, functional analysis, convex analysis, probability theory, and optimization with machine learning and AI.

Which scientific problem would you really like to solve?

Find new paths to AI beyond deep learning; and also, to greatly speed up deep learning. Understand and develop Laplace transform representations for a variety of special functions.

A boring fact about myself:

I am too finicky about coffee.

Bärbel Stecher

**Professorship:**

Chair of Intestinal Microbiome

E-Mail:

baerbel.stecher@tum.de

School:

TUM School of Life Sciences

Bio:

I am a microbiologist fascinated by the enormous complexity and functional flexibility of the mammalian microbiota (Xaccount:@baerboletta). My academic journey started at LMU Munich where I studied microbiology, immunology and genetics. For my PhD, I moved to ETH Zürich, Switzerland, where I focused on Salmonella pathogenesis. My academic career includes positions at ETH Zürich and McMaster University, Canada. Since 2010, I have been leading an independent lab at the Max von Pettenkofer Institute for Hygiene and Medical Microbiology at LMU Munich, where I have held a tenured Associate Professorship since 2016. The central focus of my lab is the gastrointestinal microbiome, with a specific interest in molecular microbiology, microbial ecology, and microbe-host interactions in infectious diseases.

Research:

Using synthetic communities (SynComs), animal models, and molecular and systems biology methods, we decipher the mechanisms of microbe-microbe interactions within complex host communities. This will help us understand how to enhance microbiome functions to improve human health.

Which scientific problem would you really like to solve?

We focus on colonization resistance against enteric pathogens, a central function of the gut microbiome. We want to understand why resistance varies between individuals and how we can strengthen it.

A boring fact about yourself:

I like incense sticks.

Ali Sunyaev

**Professorship:**

Information Infrastructures

E-Mail:

ali.sunyaev@tum.de

School:

TUM School of Computation, Information and Technology

Bio:

Ali Sunyaev has been professor at TUM since October 2024. Before joining TUM he was Director of the Institute of Applied Informatics and Formal Description Methods (AIFB) and professor at the Karlsruhe Institute of Technology (KIT), professor at the University of Kassel and the University of Cologne. Ali received his PhD in Information Systems in 2010 and his master's degree (diploma) in Computer Science in 2005; he received both degrees from TUM. Ali was a visiting faculty member at Harvard University and Keldysh Institute of Applied Mathematics (Russian Academy of Sciences).

Research:

By using theory-driven design, computational methods, and empirical research, his research accounts for the multifaceted use contexts of digital technologies with research on human behavior affecting IT applications and vice versa. Ali devotes himself to the advancement of theory and applications.

Which scientific problem would you really like to solve?

Currently I am really excited about the protection of decentralized information systems against collusion - considering both social (behaviors of users) and technical aspects (system architectures).

A boring fact about yourself:

I play chess every single day

Hristo Svilenov

**Professorship:**

Biopharmaceutical Technology

E-Mail:

hristo.svilenov@tum.de

School:

TUM School of Life Sciences

Bio:

I am a pharmacist. I did my PhD in Pharmaceutical Technology at the LMU Munich with a Marie-Curie Fellowship. Afterwards, I did my postdoc in biotechnology at TUM, supported by a Peter and Traudl Engelhorn Fellowship and a grant from the Else Kröner-Fresenius Foundation. In 2021, I was invited to take over an Associate Professorship in biopharmaceutical production technology at Ghent University, where I built my group. Since September 2024, I have been a professor of biopharmaceutical technology at the TUM School of Life Sciences, supported by an ERC grant.

Research:

My group focuses on the production and development of recombinant proteins for biomedical applications. We are rationalizing the development of therapeutic proteins by developing better processes, methods and molecules.

Which scientific problem would you really like to solve?

Therapeutic proteins are large, complex molecules that are difficult and expensive to manufacture.

A boring fact about yourself:

I love playing tennis but barely find time and sparring partners for this hobby.

Clemens Thielen

**Professorship:**

Optimization and Sustainable Decision Making

E-Mail:

clemens.thielen@tum.de

School:

TUM Campus Straubing

Bio:

Clemens Thielen studied mathematics at the Technical University of Kaiserslautern and the University of Cambridge (UK). After receiving his PhD in mathematical optimization in 2010, he worked at the Department of Mathematics at the Technical University of Kaiserslautern, first as a postdoc and then from 2013 to 2019 as a Junior Professor. In October 2019, he was appointed to the professorship of Complex Networks at Weihenstephan-Triesdorf University of Applied Sciences. Since August 2024, he has held the professorship of Optimization and Sustainable Decision Making at TUM.

Research:

My field of research is discrete optimization with a specific focus on approximation algorithms. Practical applications of my research include optimization problems in hospitals, such as staff scheduling for physicians, or optimization methods for municipal flood mitigation.

Which scientific problem would you really like to solve?

Solving the P versus NP problem would be quite nice :-)

A boring fact about yourself:

I love running (particularly marathoning).

Stefan Wagner

**Professorship:**

Software Engineering

E-Mail:

stefan.wagner@tum.de

School:

TUM School of Computation, Information
and Technology

Bio:

I am a Full Professor of software engineering at TUM, where I earned my PhD in computer science. With a background in computer science and psychology, I have published over 130 peer-reviewed scientific articles and authored the book “Software Product Quality Control.” I serve as a Section Editor of PeerJ Computer Science and on the editorial boards of IEEE Software and Empirical Software Engineering. I have received multiple best paper awards and was recently recognized as a 2022 Class of IEEE Computer Society Distinguished Contributor. I am a member of the German GI and a senior member of ACM and IEEE.

Research:

My research is on finding and evaluating techniques, methods, and tools to better engineer high-quality software. My research interests span several areas, including software quality, human factors, AI-based software engineering, automotive software, AI-based systems, and empirical studies.

Which scientific problem would you really like to solve?

A fundamental problem in software engineering is identifying and quantifying the factors that impact the quality of software and the productivity of software engineers.

A boring fact about yourself:

I have far more LEGO sets than room to store them.

Stefanie Walter

**Professorship:**

Science and Crisis Communication

E-Mail:

stefanie.walter@tum.de

School:

TUM School of Social Sciences and Technology

Bio:

I studied Social Science at the University of Düsseldorf and Political Communication at Cardiff University, earning a PhD in Political Science from the University of Mannheim, where I also worked at the Mannheim Center for European Social Research. As a postdoc, I conducted research at the University of Hamburg and the University of Bremen. In 2021, I joined TUM as a Junior Fellow, where I lead an Emmy Noether Research Group, before taking up the professorship in Science and Crisis Communication in 2024.

Research:

I am interested in climate change, crisis and political communication. I mainly study news and social media data using computational (but also qualitative) methods.

Which scientific problem would you really like to solve?

How news and social media can contribute to empathy and solidarity with minoritized groups, especially during times of crisis.

A boring fact about yourself:

I can't draw to save my life; any kindergarten kid could outshine my best efforts.

Violetta Weger

**Professorship:**

Applied Algebra

E-Mail:

violetta.weger@tum.de

School:

TUM School of Computation, Information
and Technology

Bio:

I studied mathematics at the University of Zurich and obtained my PhD in 2020 under the supervision of Prof. Rosenthal. From 2021 to 2022, I was a postdoctoral researcher at UCD, Ireland and at TUM with a Swiss National Science Foundation Fellowship. From 2022 to 2024, I was a Marie-Curie Fellow at TUM and at TU Eindhoven, the Netherlands. Since August 2024, I have been appointed as Rudolf Mößbauer Tenure Track Assistant Professor at TUM and Fellow of TUM IAS.

Research:

My research is in code-based cryptography. This intersection of coding theory and cryptography is one of the most important candidates for post-quantum cryptography. I work on the construction and security of such systems and research new mathematical objects that can be used for these purposes.

Which scientific problem would you really like to solve?

I would like to provide secure solutions with my systems, and of course break some other cryptosystems. Right now, we are trying to solve code equivalence and rank-metric decoding.

A boring fact about yourself:

Despite being Swiss, I don't like chocolate.

Benedikt Wiestler

**Professorship:**

AI for Image-Guided Diagnosis and Therapy

Email:

b.wiestler@tum.de

School:

TUM School of Medicine and Health

Bio:

Benedikt Wiestler studied medicine at the Universities of Bonn and Heidelberg. In 2011, he received his doctorate from the University of Heidelberg on molecular mechanisms of glioma invasion and then conducted postdoctoral research at the German Cancer Research Center in Heidelberg. In 2018, he habilitated at TUM and, in 2020, became a senior physician at the Institute for Diagnostic and Interventional Neuroradiology. In 2024, he was appointed to the professorship for AI for Image-Guided Diagnosis and Therapy at TUM.

Research:

Medical imaging generates vast amounts of information, yet only a fraction is used to inform clinical decisions. My research bridges medicine and computer science to develop innovative image analysis methods to advance clinical decision-making from medical (imaging) data.

Which scientific problem would you really like to solve?

Translating research into clinical practice is a key motivation for me. Seeing our work, such as on personalized radiotherapy, being used to benefit patients would be incredibly rewarding.

A boring fact about yourself:

I don't like cheese, except on pizza (of course!)

Roland Wüchner

**Professorship:**

Structural Analysis

E-Mail:

wuechner@tum.de

School:

TUM School of Engineering and Design

Bio:

Roland Wüchner is a civil engineer. In 2006, he obtained his PhD from TUM on the topic “Computational mechanics of form-finding and fluid-structure interaction of membrane structures”. He worked as a lecturer and scientist and completed his habilitation in the field “Statics and Dynamics“. He is member of various advisory panels and committees, e.g. the Scientific Advisory Council of the International Centre for Numerical Methods in Engineering (CIMNE), Barcelona, Spain. From 2021 to 2024, he was Full Professor and Head of the Institute of Structural Analysis at TU Braunschweig. Besides, he is Visiting Research Professor at CIMNE and Affiliate Professor at George Mason University, USA. Today, he is Full Professor for Structural Analysis at TUM.

Research:

The overarching theme is the assessment of structures in interaction with surrounding media in the design phase and in service life. Our focus is on computational methods for the analysis and optimization of structures and coupled systems as well as for the creation of digital twins of structures.

Which scientific problem would you really like to solve?

How to mitigate climate change through sustainable construction and how to reduce the impact of extreme weather events on the built environment.

A boring fact about yourself:

No work without morning coffee.

Impressum

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Office of the President

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