Technical University of Munich

TUM Prelude 2023

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

Professors Index 2023

Maribel Acosta

Professorship
Data Engineering

School
TUM School of Computation, Information and Technology

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Bio:
Maribel Acosta is the Professor of Data Engineering at the TUM Campus Heilbronn since August 2023. Maribel Acosta studied Computer Science at Universidad Simon Bolivar, Venezuela. From 2012 to 2017, she was a research assistant at the Karlsruhe Institute of Technology (KIT), where she received her doctorate. She then worked as a postdoc and deputy professor at KIT until 2020. Afterward, she was appointed as the professor for Databases and Information Systems at the Ruhr-University Bochum until July 2023. She is actively involved in the scientific communities on Data Management and Artificial Intelligence. Her work has received several 'Best Paper Awards,' and she serves as chair and reviewer for renowned conferences. Besides research, Maribel Acosta has many years of teaching experience in Databases, Big Data, and Knowledge Graphs and has received two 'Best Teaching Awards'.

Research:
Maribel Acosta investigates techniques for managing knowledge graphs. A knowledge graph is a semantic model used in AI for representing interconnected facts or statements. Her contributions include efficient solutions for querying knowledge graphs while providing high-quality answers.

Which scientific problem would you really like to solve?
I would like to solve the problem of managing heterogeneous forms of data in a single place.

A boring fact about myself:
The meals I cook do not have enough salt.

Amr Alanwar

Professorship
Cyber Physical Systems

School
TUM School of Computation, Information and Technology

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Bio:
Since Sept. 2023, Amr has been at TUM working with the professorship for Cyber-Physical Systems. Prior to that, he was an assistant professor at Jacobs University Bremen. Before that, he was a postdoctoral researcher at KTH Royal Institute of Technology, working with Prof. Karl H. Johansson. He earned his Ph.D. under the supervision of Prof. Dr.-Ing. Matthias Althoff at TUM. Before that, he was a research assistant at the University of California, Los Angeles (UCLA). He also worked as an engineer at Siemens and Morpho, Egypt.

Research:
My research focuses on guaranteeing safety and privacy in cyber-physical systems. I ensure that systems operate within predefined safety boundaries using reachability analysis. Simultaneously, my research preserves the confidentiality of data using homomorphic encryption.

Which scientific problem would you really like to solve?
1) How to guarantee the safety of cyber-physical systems?
2) How to preserve the confidentiality of data while allowing useful computation?
3) How to break encryption schemes using set-based theory?

A boring fact about myself:
I like reading books.

Hussam Amrouch

Professorship
AI Processor Design

School
TUM School of Computation, Information and Technology

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Bio:
Hussam Amrouch earned his Ph.D. degree (Dr.-Ing.) with high distinction from the Karlsruhe Institute of Technology in 2015. Then, he founded and led the 'Dependable Hardware' research group at KIT. In July 2020, he was appointed as a Jun.-Professor at the University of Stuttgart, where he headed the Chair of Semiconductor Test and Reliability (STAR). In 2023, he was appointed to the professorship (W3) for AI Processor Design at TUM. He is also heading the Brain-inspired Computing at the Munich Institute of Robotics and Machine Intelligence (MIRMI).

Research:
Reimagining the future of AI processors by exploring novel computer architectures that transcend the traditional computing paradigm using emerging technologies and brain-inspire computing. Cryogenic-CMOS circuits for large-scale quantum computers.

Which scientific problem would you really like to solve?
Reducing the carbon footprint of AI. Increasing largely the efficiency of AI chips to bring them into every facet of our daily lives, transforming the fabric of our society.

Katharina Anders

Professorship
Remote Sensing Applications

School
TUM School of Engineering and Design

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Bio:
Katharina Anders studied Geography with Computer Science and Environmental Physics at Heidelberg University. She obtained her PhD with distinction in Geoinformatics at the Institute of Geography and the Interdisciplinary Centre for Scientific Computing at Heidelberg University, with a research visit at Delft University of Technology. She was a doctoral fellow at the Zukunftskolleg of the Heidelberg Center for the Environment and postdoctoral fellow of the Center for Advanced Study at Heidelberg University. In 2023, Katharina Anders was appointed to the professorship for Remote Sensing Applications at TUM.

Research:
My research field are methods for the analysis of remote sensing data for gaining new insights about Earth surface processes. The focus is on cross-scale observation of topographic landscape dynamics in the context of natural hazards, climate change consequences, and human-environment interaction.

Which scientific problem would you really like to solve?
Fully understanding and being able to model Earth system processes, to which my research shall contribute a fraction.

A boring fact about myself:
I never run out of Parmesan.

Carina C. Baer de Oliveira Mann

Professorship
Biomolecular Cryo Electron Microscopy

School
TUM School of Natural Sciences

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carina.mann@tum.de

Bio:
I studied biochemistry at TUM. During my PhD at the Gene Center of the LMU (2012-2016), I investigated the functions of members of the nucleotidyltransferase family. After a postdoc at Harvard Medical School/ Dana-Farber Cancer Institute (2016-2019) and a second postdoc at LMU (2019-2021), I headed my Emmy-Noether group at TUM in the Institute of Virology since 2021. In 2023, I was appointed to the professorship of Biomolecular Cryo Electron Microscopy at TUM.

Research:
My research focuses on how our immune system distinguishes between self and non-self, focusing on Nucleotidyltransferases. My group aims to reveal the molecular function of these enzymes and to discover novel nucleotide-based second messengers.

Which scientific problem would you really like to solve?
I want to discover novel nucleotide-based second messengers and their signalling pathways in humans in order to develop novel therapeutic strategies using nucleotide-based second messengers as drugs.

A boring fact about myself:
I have developed an inner sense of boiling eggs to perfection.

Silke Beck

Professorship
Sociology of Science and Technology

School
TUM School of Social Sciences and Technology

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089 289 24340

Bio:
Silke Beck has Magistra Artium in Political Science/ Germanistik (University of Heidelberg) and doctorate (Dr.rer.soc.) from the University of Bielefeld. After an academic year (Harvard University), she worked for 20 years in the field of technology assessment and environmental research.

Research:
Her research focuses on interfaces between science and society in the field of environmental politics. She is a pioneer in analyzing environmental assessments such as the IPCC and IPBES. Current projects deal with evidence-based policymaking as well as the governance of technical transformations.

Which scientific problem would you really like to solve?
Public confidence and trust into science in turbulent times and popularism.

A boring fact about myself:
Working too much.

Dominik Bucher

Professorship
Quantum Sensing

School
TUM School of Natural Sciences

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Bio:
Dominik Bucher studied Chemistry at TUM, where he earned his M.Sc. degree in 2010. He went on to complete his Ph.D. in Biophysics at LMU, where he utilized ultrafast spectroscopy to study UV-induced damage processes in DNA. With a growing interest in potential applications of quantum technology in Chemistry, he moved to Ronald Walsworth's group at Harvard for his postdoctoral work. In the spring of 2019, he started his independent career as a junior research group leader at TUM. In 2022, he was appointed as a Rudolf Mößbauer Professor.

Research:
Dominik Bucher uses defects in diamond, known as NV centers, as atomic sized quantum sensors for NMR signals. His research group works at the unique intersection of quantum sensing and chemistry, utilizing interdisciplinary methods from applied quantum physics, materials science, and biophysics.

Which scientific problem would you really like to solve?
The goal of the research is to apply NMR spectroscopy at the smallest length scales, from nanoscience and surfaces to microfluidics and single-cell biology.

Livia Cabernard

Professorship
Sustainability Assessment of Food and Agricultural Systems

School
TUM School of Life Sciences & TUM School of Management

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Bio:
Livia Cabernard, born in Switzerland in 1991, has studied environmental sciences at ETH Zurich from 2011 to 2017. She completed her PhD studies in sustainability assessment of global supply chains at the interdisciplinary interface of the Institute of Environmental Engineering and the Institute of Science, Technology, and Policy at ETH Zurich from 2017 to 2021. After continuing her research as a postdoct at ETH Zürich, she was appointed to the newly created chair in Sustainability Assessment of Food and Agricultural Systems at TUM in 2023.

Research:
Livia Cabernard's research is dedicated to advancing sustainability in global food and agricultural supply chains. Her work combines supply chain analysis, life-cycle assessment, earth observation data, and scenario modeling to provide sustainable decision support for society, industry and policy.

Which scientific problem would you really like to solve?
Stop climate change and conserve ecosystems... but this can not be solved by science alone.

A boring fact about myself:
I like playing football.

Stefania Centrone

Professorship
Philosophy of Science

School
TUM School of Social Sciences and Technology

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Bio:
Stefania Centrone is Professor of Philosophy and Philosophy of Science at TUM since April 2023. She studied Philosophy and Logic at the University of Florence before obtaining her PhD in Philosophy from the Scuola Normale Superiore in Pisa with a dissertation on Husserl's Logic and Philosophy of Mathematics. She obtained in 2012 the German Habilitation in Philosophy from the University of Hamburg, and in 2018 the Italian Habilitation for a full professorship in Logic, Philosophy of Science and History of Science. After holding a three-year postdoc position at the Scuola Normale Superiore in Pisa she obtained in 2008 a two-year Humboldt research fellowship for postdoctoral research and moved to the University of Hamburg. In 2013 she was awarded a three-year DFG Eigene Stelle grant, and in 2017/2021 a 3+2-year DFG Heisenberg Stelle position. Since 2009 she has been working and teaching in German.

Research:
My research interests are broad and encompass formal logic, history and philosophy of logic, philosophy of science and technology, and philosophy of mind (theories of intentionality in particular).

Which scientific problem would you really like to solve?
I am interested in the role of thought experiments in philosophy and theory of science.

A boring fact about myself:
I'm right handed.

Corinna Dawid

Professorship
Food Chemistry and Molecular Sensory Science

School
TUM School of Life Sciences

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Bio:
After my studies of food chemistry at the University of Münster, I started my doctoral studies with Prof. Dr. Thomas F. Hofmann in Münster. In 2007 I followed my doctoral supervisor to the Weihenstephan Science Centre of the TUM where I completed my doctorate and did a postdoctoral research. During a research stay at the Chulalongkorn University in Bangkok, I was instrumental in establishing the Institute for Molecular Sensor Technology. Back in Munich I began my habilitation with studies on stress resistance in plants. After the appointment of Hofmann as President of the TUM, I took over the provisional leadership of the Chair of Food Chemistry and Molecular Sensor Technology. Since 2020 I am also deputy director of the Bavarian Centre for Biomolecular Mass Spectrometry (BayBioMS). Only recently I received my own professorship, called 'Functional Phytometabolomics' at TUM.

Research:
My team and I focus on the screening, identification and quantification of bioactive, sensory active and technofunctional natural compounds in food and crops as well as their human metabolism. I have a special focus on metabolites that are influenced by (a)biotic stress factors in crops.

Which scientific problem would you really like to solve?
I would be happy to understand how climatic changes impact on the concentrations of quality causing crop ingredients.

A boring fact about myself:
I still like writing with a pen.

Gisela Detrell

Professorship
Human Spaceflight Technology

School
TUM School of Engineering and Design

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Bio:
Gisela Detrell studied Aerospace Engineering at the Polytechnic University of Catalonia (UPC) and completed her doctorate in Life Support Systems reliability analysis for long duration space missions at the University of Stuttgart (Germany) and the Polytechnic University of Catalonia in 2015. She continued her research at the Institute of Space Systems in Stuttgart, leading the research group since 2018. In 2023 Gisela Detrell was appointed to the professorship for Human Spaceflight Technology at TUM.

Research:
Gisela Detrell's field of research is the development of technologies to enable human spaceflight, with special focus on Life Support Systems Technologies (specially on the use of microalgae photobioreactors for oxygen and food production for long duration missions), human spaceflight simulation (for example with conceptual design studies of future human spaceflight missions to the Moon or Mars) and human spaceflight performance (for example with the development of Virtual Reality tools, to develop and improve training strategies).

Which scientific problem would you really like to solve?
I want to contribute to making it possible for humans to live one day on Mars (and for that provide the oxygen, water and food required for survival).

A boring fact about myself:
I can't start the day without a coffee.

Antonella Di Pizio

Professorship
Chemoinformatics and Protein Modelling

School
TUM School of Life Sciences

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Bio:
I have an MSc degree in Pharmaceutical Chemistry and a PhD Degree in Drug Sciences. My PhD research focused on the computational design of matrix metalloproteinase inhibitors with potential anti-cancer activity and was recognized with the prestigious Bernardo Nobile award. During my PhD time, I also acquired structural biology competencies and determined X-ray structures at high resolutions. My postdoctoral research at the The Hebrew University of Jerusalem focused on bitter taste G protein-coupled receptors and trained me as an expert membrane protein modeler. Since 2018, I have led the Molecular Modelling group at the Leibniz Institute for Food Systems Biology at TUM. In 2019, I received the Platinum edition of the Manfred Rothe Excellence Award in Flavor Research sponsored by Nestlé which recognizes the excellence and creativity of scientists in aroma and taste research.

Research:
Through innovative computational tools, my research group develops predictive models to define structure-activity relationships of chemicals, investigate biomolecular interactions, and screen and rationally design new bioactive compounds that can be used for food reformulation or therapeutics.

Which scientific problem would you really like to solve?
My main interest lies in taste and olfactory receptors. I would like to disclose the mechanisms that govern chemosensory perception and develop strategies to modulate their ectopic functions.

A boring fact about myself:
I like to watch my AI cleaning robot in action :)

Annette Diefenthaler

Professorship
Design and Transdisciplinarity

School
TUM School of Engineering and Design

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Bio:
Designer and professor Annette Diefenthaler is focused on the question of what design can accomplish to improve our society. Her work aims to create both hopeful and practical visions that let us try on a future worth living in. To do so, she uses sophisticated, human-centered methods and processes, focuses on participatory approaches, and creates spaces where wild ideas can emerge. Prior to joining TUM, Annette Diefenthaler spent 15 years at global design firms IDEO and IDEO.org, designing systemic solutions that are both practical and transformative, such as a high-quality school network in Latin America or a collaboration with families impacted by the US child welfare system to create a future-oriented vision for family wellbeing. Her work has won several design awards. She has been a board member of the iF Design Foundation since June 2021.

Research:
Annette Diefenthaler's research focuses on metrics to understand the progress and value design creates. Her work aims to expand beyond primarily economic metrics such as stakeholder value and revenue, to develop a sophisticated understanding of the social and regenerative impact of design.

Which scientific problem would you really like to solve?
I want to explore the value of non-linear approaches to problems. This is based on the hypothesis that design has become increasingly formulaic, limiting the space for creative exploration.

A boring fact about myself:
I like Caro Kaffee so much that I used to import it to the US when I lived there.

Jalal Etesami

Professorship
Decision Analytics

School
TUM School of Computation, Information and Technology

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Bio:
I am an Assistant Professor in the Department of Computer Science at TUM. Prior to that, I was a Postdoctoral Fellow in the College of Management of Technology and the School of Computer and Communication Sciences at EPFL. I received my Ph.D. in Industrial and Systems Engineering from University of Illinois at Urbana-Champaign.

Research:
My research interests are in machine learning and statistical decision making: causal inference, multi-agent systems and game theory. It is about understanding how we can teach machines to do their tasks with reasoning, more specifically causal reasoning similar to what humans do.

Which scientific problem would you really like to solve?
I would like to understand how causal relationships among agents in a complex system can be used to understand and predict the behaviour of these agents.

A boring fact about myself:
I like puzzles and music but I cannot play any musical instrument.

Romana Gerner

Professorship
Clinical Microbiome

School
TUM School of Life Sciences

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Bio:
After finishing high school, I moved to Innsbruck and started medical school. Following graduation, I decided to work abroad as a guest scientist at the Karolinska Institute in Sweden for a year. I returned to Innsbruck and enrolled in a Ph.D. program. My research focused on intestinal inflammatory diseases and the interactions between intestinal microbes and mucosal immunity. After three enriching years in the lab, I became a full-time resident physician at the Department of Internal Medicine. This marked the convergence of my academic pursuits and clinical practice. Finally, I pursued a Postdoc at the University of California, San Diego, where I worked on the role of immunization-based strategies to limit pathogen colonization during inflammatory bowel diseases. In 2022, I was recruited to the TUM for the Clinical Microbiome professorship.

Research:
My research aims to elucidate mechanistic and functional insights into the role of the microbiota in health and disease in the short and long term. Specifically, I study the impact of perturbed microbiota on immune imprinting in specific disease contexts, such as inflammatory diseases of the gut.

Which scientific problem would you really like to solve?
I would like to translate the scientific knowledge of the microbiome into clinical applications and everyday medical practice so that it can ultimately benefit patients.

A boring fact about myself:
I am a dog person, and I love cilantro.

Marcello Ienca

Professorship
Ethics of AI and Neuroscience

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School
TUM School of Medicine and Health & TUM School of Social Sciences and Technology

Bio:
I studied philosophy, cognitive science and bioethics at the University of Rome La Sapienza, Humboldt-Universität zu Berlin, New York University and KU Leuven. In 2018, I completed my PhD in biomedical ethics at the University of Basel with summa cum laude honours. I then worked as a postdoc and senior researcher at ETH Zurich. In 2021, I was a visiting scholar at the University of Oxford and founded the Intelligent Systems Ethics Group at EPFL. In 2023, I was appointed to the professorship for Ethics of AI & Neuroscience at TUM. I am serving as Neuroethics Lead at the International Brain Initiative and an expert advisor to the UN, the OECD and the Council of Europe.

Research:
I conduct research on the ethical development of AI systems and neurotechnologies. I use theoretical and empirical methods to study the ethical and social implications of these technologies with special focus on the relationship between AI and human cognition through brain-machine interfaces.

Which scientific problem would you really like to solve?
How to use AI to improve people's brain health and mental wellbeing while ensuring ethical and human-centred design, responsible development, human rights protection and egalitarian access to technology.

A boring fact about myself:
The best ideas come to me while gardening.

Lena Illert

Professorship
Personalized Oncology

School
TUM School of Medicine and Health

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Bio:
After being born in Munich, I grew up in Kiel and studied human medicine in Göttingen, London and Switzerland. Following my doctorate at the Institute of Biochemistry in Göttingen supervised by Prof. Dr. Dr. von Figura, I became a specialist in internal medicine, hematology/oncology and palliative medicine at the University Hospital Freiburg. In 2021, after my habilitation in Hematology and Oncology and subsequent stay at MSKCC in New York, I was appointed Co-Director of the Comprehensive Cancer Center Freiburg as well as Executive Senior Physician of the Department of Internal Medicine 1 in Freiburg. Since 2023, I have been appointed to the Professorship of Personalized Oncology at the Technical University of Munich and a Mildred-Scheel-Professorship, and additionally head the Center for Personalized Medicine (ZPM) of the Klinikum rechts der Isar.

Research:
My team and I aim to elucidate vulnerabilities in cancer. We are conducting translational research on the drugabble 'Targetome' in mouse models as well as directly on the individual patient level in the context of the molecular tumor board with reverse and forward translation concepts.

Which scientific problem would you really like to solve?
I seek to understand the role of cellular immune reactions and overshooting immune responses in neurocognitive diseases and how the immune system can be safe and effectively used for cancer therapy.

A boring fact about myself:
Thyme is my basil!

Stefanie Jegelka

Professorship
Foundations of Deep Neural Networks

School
TUM School of Computation, Information and Technology

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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...

Gjergji Kasneci

Professorship
Responsible Data Science

School
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Bio:
Gjergji Kasneci studied Computer Science and Mathematics, earning a PhD specializing in graph-based mining, information retrieval, and semantic search from the Saarland University. He held significant positions in the financial services industry and at prestigious institutions including Microsoft Research, the Hasso Plattner Institute, and the University of Tübingen, where he is an Honorary Professor. In 2023, he was appointed Professor of Responsible Data Science at TUM and a Core Member of the Munich Data Science Institute.

Research:
His research focuses on transparency, robustness, bias, and fairness in machine learning algorithms and involves ethical, legal, and societal considerations with the goal of using artificial intelligence responsibly for the benefit of individuals and society.

Which scientific problem would you really like to solve?
The responsible and socially aligned AI application to real-world challenges.

Majid Khadiv

Professorship
AI Planing in Dynamic Environments

School
TUM School of Computation, Information and Technology

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Bio:
I received my PhD from K. N. Toosi University of Technology in 2017. During my PhD, I led for three years the dynamics and control team in the Iranian national humanoid robotics project, Surena III, at the University of Tehran. I also visited for one year the Autonomous Motion Department, Max Planck Institute for Intelligent Systems (MPI-IS). From 2018-2022, I was a postdoctoral researcher at the Machines in motion, a joint laboratory between MPI-IS and the New York University. From 2022-2023, I spent one year as a research scientist in the Empirical Inference department, MPI-IS. In September 2023, I was appointed to the professorship for AI Planning in Dynamic Environments at TUM and the Munich Institute of Robotics and Machine Intelligence (MIRMI).

Research:
My research interests include planning, control and learning for robotic locomotion and manipulation. My research goal is to develop theoretical frameworks that enable a humanoid robot to autonomously interact with the environment and continuously learn from these interactions.

Which scientific problem would you really like to solve?
My dream is to develop a theoretical framework that enables a humanoid robot to replace/ assist humans in dangerous environments and repetitive tasks.

A boring fact about myself:
I like informal clothes better than formal ones.

Christoph Knochenhauer

Professorship
Computational Finance and Stochastic Control

School
TUM School of Computation, Information and Technology

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Bio:
After receiving my Diploma in Mathematics from TU Kaiserslautern in 2011, I worked as a doctoral student in a joint PhD program between Dublin City University and TU Kaiserslautern until 2015, followed by a PostDoc position at University of Trier. In 2019, I took on a position as a Junior Professor in the field of Stochastics and Quantitative Mathematical Finance at TU Berlin. At TUM, I represent the fields of Computational Finance and Stochastic Control as an Assistant Professor. I am looking forward to exploring all the opportunities TUM has to offer!

Research:
I am an applied mathematician using the tools of probability theory to address diverse questions in the fields of optimal investment, machine learning in finance, and financial aspects of climate change and the energy transition.

Which scientific problem would you really like to solve?
Many interesting problems come to mind, but ultimately I will be more than happy if my research contributes to a better understanding of our world, maybe even making it a better place.

A boring fact about myself:
Despite being a mathematician, I am surprisingly bad with numbers.

Markus Krane

Professorship
Cardiac Surgery

School
TUM School of Medicine and Health

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Bio:
Markus Krane has been Chair of the Department for Cardiovascular Surgery since September 2023. He studied at the Heinrich-Heine-University Düsseldorf and the Ludwig-Maximilians-University Munich. He completed his clinical training in cardiac surgery at the German Heart Center Munich (DHM). In 2009/2010 he received his basic science training as a research fellow at the Cardiovascular Research Center, Harvard Medical School in Boston. After board certification in cardiac surgery in 2015, he worked as an attending physician in the Department of Cardiovascular Surgery. In 2016, he became the deputy chair of the Department of Cardiovascular Surgery at the DHM. He was also head of the Institute for Translational Cardiac Surgery (INSURE) at the DHM. From 2021 to 2023, Markus Krane served as Attending and Associate Professor at the Department of Surgery, Division of Cardiac Surgery, Yale University.

Research:
Focus of clinical-scientific work: structural heart disease with a particular focus on minimally invasive, robotic surgical techniques, heart valve reconstruction and the use of catheter-based procedures. Focus of basic science work: molecular mapping, cardiac regeneration, cardiovascular biobanking.

Which scientific problem would you really like to solve?
The production of cement causes many climate-damaging CO2 emissions. It causes about 8% of the world's CO2 emissions. Solving the high emissions in cement production would be a desirable research goal.

A boring fact about myself:
I do not like to wear ties.

Barbara Kraus

Professorship
Quantum algorithms and applications

School
TUM School of Natural Sciences

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Bio:
Barbara Kraus studied physics and mathematics at the University of Innsbruck. After post-doctoral stays at the MPI for Quantum Optics, Garching and at the University of Geneva, she returned to the University of Innsbruck. Her research has been honored by the START Prize and the Ignaz L. Lieben Prize, among others. In 2010, she founded her research group. In 2013 she became associate professor and in 2020 professor at the University of Innsbruck. In 2023, she was appointed to the professorship of Quantum Algorithms and Applications at TUM.

Research:
A central problem in quantum physics is to understand which relevant tasks can be efficiently solved by a quantum computer. Among other things, my research group is working on identifying new, feasible applications within quantum information processing and on the verification of quantum processors.

Which scientific problem would you really like to solve?
I would like to understand how we can make use of the intriguing correlations within a multipartite quantum system.

A boring fact about myself:
I like sports.

Viktor Leis

Professorship
Decentralized Information Systems and Data Management

School
TUM School of Computation, Information and Technology

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Bio:
Viktor Leis completed a degree in Information Systems in Regensburg before obtaining his Master's in Computer Science at TUM and subsequently earning his doctorate there. After serving as a professor at the universities of Jena and Erlangen, he returned to TUM as a professor in 2022.

Research:
I develop methods for efficiently storing and processing large amounts of data by utilizing modern hardware. Another area of my research is optimizing software systems for the cloud, with a particular emphasis on minimizing operational costs.

Which scientific problem would you really like to solve?
Can we make data analytics in the cloud a commodity, i.e., cheap, easy, and interchangeable?

A boring fact about myself:
I read very long history books.

Allister Loder

Professorship
Mobility Policy

School
TUM School of Social Sciences and Technology

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Bio:
Allister Loder joined the TUM faculty as a Professor of Mobility Policy in October 2023. Before that, he was a postdoctoral researcher at the Chair of Traffic Engineering and Control at TUM. Before joining TUM in 2021, he was a mobility data and simulation consultant at the Swiss Federal Railways (SBB), where he, among other things, worked on the impact of COVID-19 on travel behavior. He received his Ph.D. with distinction in transportation from ETH Zurich in 2019 and holds a master's degree in Energy Science and Technology from the same institution. From October 2022 to September 2023, he has been a fellow of the bidt Graduate Center, an Institute of the Bavarian Academy of Sciences and Humanities. Additionally, the DFG recently approved his proposal for establishing an Emmy Noether research group.

Research:
Mobility policy research is characterized by understanding and modeling interactions of physics, regulation, and human behavior. Hence, research on mobility policies comprises collecting and analyzing empirical data as well as its integration in large-scale mobility simulators.

Which scientific problem would you really like to solve?
Identifying, measuring, and optimizing all compromises that we need to address for rapid decarbonization.

A boring fact about myself:
My doormat shows an ICE train.

Dirk Lowke

Professorship
Binder Jetting Technology

e-Mail
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School
TUM School of Engineering and Design

Bio:
2013 Dissertation at TUM (Rheology and colloidal interactions in cement-based suspensions)
2013-2017 Head of Working Group Concrete Technology at TUM
2016 Visiting Researcher, 3D Printing in Construction, University of California Berkeley (USA)
2017-2023, Professor Technische Universität Braunschweig, Institute of Building Materials, Concrete Construction and Fire Safety
since 2017 Board Member of the Materials Testing Institute for Construction, Braunschweig
since 2019 Founder and Partner Lowke Schießl Ingenieure GmbH, Braunschweig, Expert Assessments, Maintenance Planning, Sustainable Construction
since 2020 Board Member DFG Collaborative Research Centre TRR 277 Additive Manufacturing in Construction

Research:
What will digital and sustainable construction of tomorrow look like? My research is dedicated to this question. The focus is on digital methods in manufacturing as well as during the use and maintenance of buildings combined with sustainable materials.

Which scientific problem would you really like to solve?
Net-zero construction.

A boring fact about myself:
My favourite ice cream flavour is Nocciola.

Chiara Manfletti

Professorship
Space Mobility and Propulsion

School
TUM School of Engineering and Design

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chiara.manfletti@tum.de

phone number
0152 523 342 44

Bio:
Chiara Manfletti holds a degree in aeronautical engineering from Imperial College London (2001), a masters degree in space studies from the International Space University (2002) and a PhD from RWTH Aachen (2010). She worked for the German Aerospace Center in liquid rocket propulsion. She later joined the European Space Agency in 2016, as Programme Advisor to the Director General and then as the Head of Policy and Programmes Coordination. She guided the preparation of ESA Ministerial Meetings programmatically and financially.
In March 2019 she was nominated the first President of the then just founded Portuguese national space agency and setup the space agency from scratch as a modern space agency and established a new space implementation strategy for Portugal. Today she is Professor of Space Mobility and Propulsion at the TUM and Director and Chief Operating Officer of Neuraspace.

Research:
Our research has three focus areas: (1) Innovative propulsion systems for the democratisation of access to space, (2) In-space propulsion and operations concepts for autonomy and sustainability, (3) Intelligent propulsion systems with health mobitoring and innovative AI and data-based control systems.

Which scientific problem would you really like to solve?
Understanding dark matter and its role in the universe.

A boring fact about myself:
I have been vaccinated against yellow fever.

Henrike Niederholtmeyer

Professorship
Synthetic Biology

School
TUM Campus Straubing

e-Mail
henrike.niederholtmeyer@tum.de

Bio:
Henrike Niederholtmeyer studied biotechnology at the University of Münster, with a research stay abroad at Harvard Medical School. She then completed her PhD at the École Polytechnique Fédérale de Lausanne and conducted postdoctoral research at the University of California, San Diego from 2015 to 2020. From 2020 to 2022, she led the Emmy Noether Research Group 'Cell-Free Synthetic Biology' at the Max Planck Institute for Terrestrial Microbiology in Marburg before joining TUM as an Assistant Professor in December 2022.

Research:
Our research in cell-free synthetic biology aims to build life-like systems from scratch, from (bio)chemical components, and to speed up the time needed for engineering biology. As tools we develop cell-free transcription and translation systems and microfluidic technology.

Which scientific problem would you really like to solve?
How can we engineer and take advantage of self-organization and self-assembly processes in biology to control spatial organization on different scales?

A boring fact about myself:
I don't like bananas.

Jörg Niewöhner

Professorship
Anthropology of Science and Technology

School
TUM School of Social Sciences and Technology

e-Mail
joerg.niewoehner@tum.de

Bio:
I am an environmental scientist and anthropologist of science and technology trained in the UK. I have spent nearly 20 years at HU Berlin developing teaching and research at the interface of anthropology, science and technology studies, and sustainbility science.

Research:
Using ethnographic methods, I am trying to understand how the way people live together is shaped by scientific knowledge and technology - and vice versa.

Which scientific problem would you really like to solve?
How can a society transform itself towards more sustainable ways of living and working?

A boring fact about myself:
I like knives.

Orkan Okan

Professorship
Health Literacy

School
TUM School of Medicine and Health

e-Mail
orkan.okan@tum.de

Bio:
Orkan Okan is Professor of Health Literacy at the School of Medicine and Health at TUM. Orkan is affiliated with the TUM Center for Health and Medicine in Society and the Center for Health Promotion in Childhood and Adolescence. He was project manager and coordinator of the Health Literacy in Childhood and Adolescence Research Consortium (HLCA) and is currently involved in various national, EU and Erasmus+ projects on (digital) health literacy. Together with his colleagues, he coordinates the international HLS-COVID-19 study and the Global Health Literacy Research Network (GLOBHL). He has advised and worked with governmental organizations and NGOs on health literacy, including WHO. Orkan is vice president of the International Health Literacy Association, president of the EUPHA Health Literacy Section, and Deputy Chair of the IUHPE GWG Health Literacy.

Research:
My research on health literacy explores how people and health systems manage health information, a particular focus is on children, adolescents, and schools - both locally and globally. In this context I am conducting population-based studies as well as intervention studies, while using a mixed methods approach.

Which scientific problem would you really like to solve?
Illuminating factors that significantly vary and therefore explain why or why not people act upon information and knowledge. Hard evidence on the matter would allow for developing effective interventions and prevention measures to improve health outcomes and reduce health inequalities.

A boring fact about myself:
I like the world better when it is calming and peaceful.

Boris Paal

Professorship
Law and Regulation of the Digital Transformation

School
TUM School of Social Sciences and Technology

e-Mail
boris.paal@tum.de

Bio:
2021-23 University of Leipzig: Full Professor of Civil and Information Law, Media and Data Law, Director of the Institute for Media and Data Law, Law of the Digitalization
2009-21 University of Freiburg: Full Professor of Civil and Business Law, Media and Information Law, Director of the Institute for Media and Information Law
2018-21 Digitalization Officer, Faculty of Law
2016-18 Dean of the Faculty of Law
2012-14 Dean of Studies of the Faculty of Law
Postdoc and Faculty Lecturer at the University of Heidelberg, Faculty of law (habilitation, 2009).

Legal Clerkship at the Higher Regional Court of Duesseldorf (second state examination in law, 2003).

Law Studies in Tubingen, Constance (first state examination in law, 1999; Dr. iur. 2001), New York (Dissertation, 2000), Oxford/GB (Magdalen College, M.Jur., 2001).

Born, raised and went to school in Stuttgart.

Research:
I do research in all areas of private law with a focus on the digital transformation and AI as well as on governance and compliance, i.e. data and information law, competition law, and media law.

Which scientific problem would you really like to solve?
Who or what ignited the big bang? Is time travel possible? What is the appropriate legal framework for human-centred use of digital technologies and AI?

A boring fact about myself:
My sense of smell is hardly developed - which comes with both advantages and disadvantages :-).

Lorenz Panny

Professorship
Cryptography

School
TUM School of Computation, Information and Technology

e-Mail
lorenz.panny@tum.de

Bio:
I grew up about a hundred kilometers from Munich. After high school, I wanted to learn more about math and computers, so I enrolled at TUM to study all that. During those undergraduate years, I also started participating in a style of hacking competitions known as CTF with my team hxp, which played a key role in deepening my interests in computer security and cryptography. Having graduated from TUM with a master's degree in mathematics, I moved to TU Eindhoven, Netherlands, to pursue (and eventually acquire) a doctorate in cryptography under the guidance of Tanja Lange and Daniel J. Bernstein. This was followed by a two-year postdoc at Academia Sinica in Taipei, Taiwan, under the supervision of Bo-Yin Yang. Finally, now, I am delighted to be returning to TUM!

Research:
All things cryptography, with a focus on number theory and algebraic geometry, public-key cryptanalysis, and fast algorithms. More generally, anything related to computer (in)security.

Which scientific problem would you really like to solve?
In cryptography, of course, breaking the fundamental hard problems.

Luise Pufahl

Professorship
Information Systems

School
TUM School of Computation, Information and Technology

e-Mail
luise.pufahl@tum.de

Bio:
Born at Charité in Berlin, I started my academic journey as Bachelor in Information Systems through a dual program at the Berlin School of Economics and Law, partnering with Bayer Pharmaceuticals. This included a practical term at a Bayer's subsidiary in New Jersey, US. I pursued a Master's at Humboldt Universität zu Berlin, followed by a doctorate at Hasso Plattner Institute, with research stays in the Netherlands and Austria. As a postdoc at HPI, I led a logistics research project and taught in the digital health master's program. Later, as postdoc at Technische Universität Berlin, I aquired a DFG project. In 2022, I headed as interim professor the software and business engineering research group. Since 2023, I've joined TUM at Campus Heilbronn.

Research:
I focus in my research on business process management and explore the automation of resource- and knowledge-intensive process using operations research, process mining, simulation, and machine learning. Additionally, I investigate data-aware methods for regulatory compliance and sustainability.

Which scientific problem would you really like to solve?
I want to help businesses that they can easily simulate their business processes and find new alternative scenarios and also involve their sustainability aspects.

A boring fact about myself:
I really enjoy to take a warm bath. I do not enjoy going to grocery stores.

Peter Rabl

Professorship
Applied Quantum Theory

School
TUM School of Natural Sciences

e-Mail
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phone number
089 289 14205

Bio:
I was born in Austria and studied Physics at the University of Innsbruck with a focus on theoretical quantum physics and quantum technologies. After completing my PhD in 2006, I received an ITAMP postdoctoral fellowship, which allowed me to move to Boston and continue my research at the Harvard-Smithsonian Center for Astrophysics and the Harvard Physics department. After returning to the Institute of Quantum Optics and Quantum Information in Innsbruck in 2010, I was awarded the START prize of the Austrian Ministry of Science and Education in 2011 and shortly after moved to the TU Wien as an Assistant Professor. There I became tenured in 2018 and was appointed University Professor in 2021. Finally, in February of 2023 I moved to Munich and became Professor for Applied Quantum Theory at the Physics Department of the TUM School of Natural Sciences.

Research:
I am a theoretical physicist with a research focus on quantum physics and quantum technologies. A central goal of my research is to develop new protocols and control schemes that can be used for applications in the fields of quantum computing, quantum simulation and quantum communication.

Which scientific problem would you really like to solve?
Identify a real-world application for a near-term quantum computer with less than 1000 qubits.

A boring fact about myself:
I hate filling out yearbooks ;)

Daniel Roth

Professorship
Machine Intelligence in Orthopedics

School
TUM School of Medicine and Health

e-Mail
daniel.roth@tum.de

Bio:
Before joining TUM, Daniel Roth was junior professor for Human-Centered Computing and Extended Reality at the Friedrich Alexander University Erlangen-Nürnberg. After receiving his doctoral degree (summa cum laude) in Computer Science in 2019 from the University of Würzburg (HCI Group), he performed a post-doc year at the Chair for Computer Aided Medical Procedures and Augmented Reality (Prof. Navab) at TUM. He received his Engineering Master's degree in Media- and Imaging Technology from the University of Applied Sciences Cologne (TH Köln). During his academic career, he performed research visits to Johns Hopkins University, Michigan State University, and Nanyang Technological University. He is a frequent committee member of leading conferences in the field of extended reality and his works in the intersection of computer science, medicine, and health received multiple awards.

Research:
His research is centered around the intelligent systems that improve the way we work with, and communicate through machines. More specifically, he focuses on machine intelligence and extended reality technologies in the context of medicine and health. Examples are assistive technologies for surgical procedures or systems that support assessment and treatment.

Which scientific problem would you really like to solve?
We want to create solutions that address the patient care continuum. To do so, a new digital patient twin is needed. Methods to create it are not existing/yet unknown. A perfect challenge for us.

A boring fact about myself:
I usually wear different combinations of blue.

Mariana Rufino

Professorship
Livestock Systems

School
TUM School of Life Sciences

e-Mail
mariana.rufino@tum.de

Bio:
Mariana Rufino studied Agronomy in Argentina, obtaining MSc and PhD degrees at Wageningen University. Work and life experience in Africa and South East Asia provided her with a broad vision and deep understanding of the challenges agriculture poses to the physical environment. Seven years working at Lancaster University (UK) were instrumental to shape her understanding of the research, education and policy questions relevant to European agriculture. Rufino trained on system analysis and modelling at the C T de Wit School of Wageningen University, conducted research, led and mentored several research teams, published high quality research, wrote and obtained competitive grants and interacted with policy makers at multiple levels. She was appointed as Livestock Systems chair at TUM in 2023.

Research:
My research group investigates production and environmental outcomes associated with the demand for livestock products, land use, and local and regional environmental impacts such land degradation, GHG emissions, and changes in water flows and its quality.

Which scientific problem would you really like to solve?
I wish to support the agricultural sector to mitigate and adapt to climate change with our scientific evidence. My goal is help naviagte the dilemma of how to produce food and protect biodiversity.

A boring fact about myself:
I struggle to distinguish left and right (not politically though)!

Melanie Schirmer

Professorship
Translational Microbiome Data Integration

School
TUM School of Life Sciences

e-Mail
melanie.schirmer@tum.de

Bio:
After studying mathematics at the University of Bonn (Germany), I obtained my PhD in computational biology from the University of Glasgow (Scotland) looking at fine-scale variation in next-generation sequencing data to distinguish natural variation (i.e. single-nucleotide polymorphisms) from errors and biases in the sequencing data. In 2016 I started as a postdoctoral research associate at the Broad Institute of MIT and Harvard & Harvard T.H. Chan School of Public Health (USA). My research there focused on the human microbiome and the identification of microbial factors involved in the pathogenesis of inflammatory bowel disease and immune responses in healthy individuals. I continued my work at the Broad Institute as a Computational Scientist until the start of 2020 when I returned to Germany to establish an Emmy Noether group at TUM.

Research:
My research focuses on the human microbiome, the large collection of microorganisms that live in and on our body. In many diseases an imbalance of these microbial communities has been observed. My lab uses bioinformatics and microbiology to investigate host-microbial interaction in disease.

Which scientific problem would you really like to solve?
I aim to identify disease mechanisms involving the microbiome that will enable us to improve and develop new diagnostic and therapeutic approaches for these disease.

A boring fact about myself:
I dance tango.

Michael Schloter

Professorship
Environmental Microbiology

School
TUM School of Life Sciences

e-Mail
schloter@tum.de

phone number:
089 3187 2304

Bio:
I studied biology at the LMU from 1984 - 1989 and received my PhD from the University of Bayreuth in 1994. After several postdoctoral positions, I became head of the WG Microbial Ecology at the Institute of Soil Ecology of the GSF Res. Center in 2003. In 2009, the TUM appointed me honorary professor for Soil Microbiology. In 2011, I became head of the Institute of Comparative Microbiome Analysis at Helmholtz Munich. In 2023, I was appointed to the professorship of Environmental Microbiology at TUM. Thanks to my great team and to my fantastic coworkers I have been included in the list of Highly Cited Researchers since 2019.

Research:
I have focused my research activities on the field of microbiome research. In particular, I am interested in the interaction of environmental microbiota with different host microbiomes, including the interaction with the human microbiome.

Which scientific problem would you really like to solve?
The biodiversity crises affects not only our nature but also our health. I would to contribute to find solutions to stop the loss of biodiversity using the functions power of microorganisms.

A boring fact about myself:
If you want to contact me in my free time, you find me best on skiing slopes across the globe.

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.

Christopher J. Stein

Professorship
Theoretical Chemistry

School
TUM School of Natural Sciences

e-Mail
christopher.stein@tum.de

Bio:
Christopher J. Stein (*1989) studied chemistry at the Georg August University in Göttingen. In 2015, he started his PhD studies in theoretical chemistry on the topic of multi-configurational approaches for electronic structure and molecular vibrations under Markus Reiher at ETH Zürich. The thesis was completed in 2017 and awarded with the ETH medal. After a postdoctoral stay in the group of Martin Head-Gordon at UC Berkeley where he worked on solvation models and grand-canonical electronic-structure approaches, he led a research group on 'Computational Science of Interfaces' in theoretical physics at the University of Duisburg-Essen from 2021. In 2022, Christopher Stein was appointed to the Associate Professorship for Theoretical Chemistry at TUM.

Research:
Christopher Stein develops and applies computational models to understand (electro-) catalytic processes. A special focus is put on the modelling of a realistic chemical environment and the structural diversity of the catalyst materials under operating conditions.

Which scientific problem would you really like to solve?
I want to develop highly efficient, selective and stable new catalyst materials directly from first principles simulations.

A boring fact about myself:
I think it is ok to drink Cappuccino in the afternoon.

Helge Sören Stein

Professorship
Digital Catalysis

School
TUM School of Natural Sciences

e-Mail
helge.stein@tum.de

phone number:
089 289 13620

Bio:
Helge Stein studied physics at the Georg-August University of Göttingen from 2008 to 2013. He received his doctorate in high-throughput methods in mechanical engineering from the Ruhr University Bochum in 2017 with summa cum laude. From 2017 to 2020, he conducted research at the California Institute of Technology (Caltech) and was appointed to a tenure-track professorship in applied electrochemistry at the Karlsruhe Institute of Technology (KIT).

Research:
Helge Stein conducts research at the intersection of chemistry, data science and robotics to accelerate the discovery and proliferation of new materials and processes in catalysis and batteries. Unique is the focus on automated experiments that span the entire materials research life cycle.

Which scientific problem would you really like to solve?
Renewable energy harvesting (solar, wind, hydro) and electrochemical storage on the multi-TWh scale by the end of 2030.

A boring fact about myself:
I always shower ice cold and my only breakfast is coffee.

Andrea Stocco

Professorship
Software Engineering for data-intensive Applications

School
TUM School of Computation, Information and Technology

e-Mail
andrea.stocco@tum.de

phone number:
0175 116 45 63

Bio:
Andrea Stocco is an Assistant Professor at TUM at the Chair of Software Engineering for Data-intensive Applications of the School of Computation, Information and Technology. He is also the head of the Automated Software Testing unit at fortiss. His research interests include software testing and empirical software engineering, with particular emphasis on misbehavior prediction for machine learning-based systems, and automated repair, robustness and maintainability of test suites for web applications. He is the recipient of the Paper Award at the 16th International Conference on the Quality of Information and Communications Technology (QUATIC 2023) and the Best Student Paper Award at the 16th International Conference on Web Engineering (ICWE 2016). He serves on the program committees of top-tier software engineering conferences.

Research:
My research focuses on the interface between software engineering and deep learning with the goals of improving the robustness, reliability, and dependability of data-intensive software systems.

Which scientific problem would you really like to solve?
My work aims to make software testers being more productive and efficient as well as to increase the awareness towards the adoption of test automation and software engineering practices in industry.

A boring fact about myself:
I usually wear two watches as I like symmetry

Jennifer Strunk

Professorship
Industrial Chemistry and Heterogeneous Catalysis

School
TUM School of Natural Sciences

e-Mail
jennifer.strunk@tum.de

phone number:
089 289 13543

Bio:
Born and raised in the 'Ruhrgebiet' in Germany, I received my diploma (2004) and PhD degree (2008) in Industrial Chemistry from the Ruhr-University Bochum with Martin Muhler as my PhD supervisor. After a postdoctoral stay (2008-2010) in Chemical Engineering at UC Berkeley with Alexis T. Bell, I successfully applied for the funds to become BMBF junior research group leader at Ruhr-University (2010-2014). Afterwards, I was independent research group leader at the MPI for Chemical Energy Conversion in Mülheim/Ruhr (2014-2016), and W2 professor at Leibniz Institute for Catalysis at the University of Rostock (2017-2023). In 2023, I was appointed to the W3 professorship 'Industrial Chemistry and Heterogeneous Catalysis' at TUM.

Research:
In my group, we perform research in the fields of heterogeneous catalysis and photocatalysis. The goal is the activation of small stable molecules, such as the recycling of the greenhouse gas carbon dioxide into chemical production and the activation of nitrogen for the synthesis of basic chemicals.

Which scientific problem would you really like to solve?
My dream is to find a feasible and sustainable solution to recycle carbon dioxide into useful fuels and chemicals, so we no longer emit this greenhouse gas into the atmosphere.

A boring fact about myself:
I have memorized many silly quotes from the 1990's video game 'The Secret of Monkey Island'.

Reinaldo Tonkoski

Professorship
Electric Power Transmission & Distribution (T&D)

School
TUM School of Engineering and Design

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reinaldo.tonkoski@tum.de

phone number:
089 289 22002

Bio:
Reinaldo Tonkoski, a 2011 PhD graduate from Concordia University, Montreal, is an expert with 100+ publications in peer-reviewed journals and conferences. Currently, he serves as an Editor for IEEE Systems Journal, IEEE Transactions on Sustainable Energy, and IEEE Access. From 2016-2018, Tonkoski played a pivotal role as a Peer Reviewer for the U.S. Department of Energy's Office of Electricity Energy Storage Program, influencing the direction of $50M in annual research. In 2014, he received the prestigious Software Engineering Innovation Foundation award from Microsoft for his work in designing reliable and resilient microgrids for data centers. Tonkoski's career includes positions at CanmetENERGY (2009-2010) and a Visiting Professorship at Sandia National Laboratories (2019-2020), focusing on projects related to grid integration of renewable energy sources and energy storage systems.

Research:
Reinaldo Tonkoski's research expertise lies in modeling, control, and operation of converter-dominated power systems, with a focus on grid integration of renewable energy and electric power grid dynamics.

Which scientific problem would you really like to solve?
To develop solutions for the evolving electric power grid, focusing on efficient and accurate modeling and control for converter-dominated power systems while integrating renewable energy sources.

A boring fact about myself:
I'm a rare specimen who finds watermelon and sushi utterly unappetizing - a taste bud anomaly!

Anne Tryba

Professorship
Entrepreneurial Education

School
TUM School of Management

e-Mail
anne.tryba@tum.de

Bio:
Anne Tryba studied business administration at the TU Freiberg. She worked as a strategy consultant at Capgemini Invent, as a senior manager in corporate marketing and strategy at Telefónica Germany and co-founded a start-up. In 2018, she received her PhD in Entrepreneurship from the University of Luxembourg and subsequently worked as a postdoc at TUM. From 2019, she was a professor of entrepreneurship and innovation at Munich Business School. In 2023, she was appointed Professor of Entrepreneurial Education at TUM.

Research:
In her research, Anne studies how decision-makers, entrepreneurial education design, and organizational factors influence sustainable entrepreneurship and innovation endeavors, practices and outcomes.

Which scientific problem would you really like to solve?
I would really like to solve the problem that many people are not sufficiently (intrinsically) motivated to focus their actions on solving grand societal challenges.

A boring fact about myself:
I like red gummy bears more than green ones.

Tobias Vogl

Professorship
Quantum Communication Systems Engineering

School
TUM School of Computation, Information and Technology

e-Mail
tobias.vogl@tum.de

phone number:
089 289 26902

Bio:
Tobias Vogl studied physics at LMU Munich. After a PhD at the Australian National University in 2019, he held a joint postdoctoral position at the University of Cambridge and the Friedrich-Schiller-Universität Jena. From 2022 onwards, he was leader of the research group Integrated Quantum Systems, until he was appointed Professor at TUM in 2023. For his research on optical quantum technologies, he has received several prizes, including the INNOspace Masters Award and the Young Scientist Award in Life Science and Physics.

Research:
The research of Tobias Vogl covers several fields in quantum optics, nanotechnology, quantum information, and electrical engineering. The focus is on single photon sources based on fluorescent defects in the 2D materials. These emitters are used in quantum computing and quantum communication.

Which scientific problem would you really like to solve?
I would like to know if the Riemann hypothesis - that the nontrivial zeros of the Riemann zeta function have real part 1/2 - is correct. This would explain the distribution of prime numbers.

A boring fact about myself:
I continue to fail at preventing the noodle water from boiling over.

Norman Weik

Professorship
Design and Operation of Public Rail Transport Systems

School
TUM School of Engineering and Design

e-Mail
norman.weik@tum.de

Bio:
Norman Weik studied mathematics and physics at the Karlsruhe Institute of Technology. From 2014 to 2019 he worked as a research associate at the Institute of Transport Science at RWTH Aachen University, where he received a PhD for his research on the performance of railway systems with uncertain infrastructure availability. He then joined the DLR - Institute of Transportation Systems in Brunswick, where he worked on projects and research topics at the interface between railway system management and operation, until he was appointed Assistant Professor for Design and Operation of Public Rail Transport Systems at TUM.

Research:
I am interested in innovative methods for designing and operating efficient and user-friendly rail transportation systems. A special emphasis is on the interplay between traffic load, supply structure and quality, as well as on the interface between asset management and train operations.

Which scientific problem would you really like to solve?
Is there a feasible way to manage railway systems in such a way that the effects of disruptions can be limited to local influence areas while the attractiveness of the overall supply is maintained?

A boring fact about myself:
My favorite chocolate is quadratic.

Ute Weisz

Professorship
Plant Proteins and Nutrition

School
TUM School of Life Sciences

e-Mail
ute.weisz@tum.de

Bio:
Ute Weisz earned her doctorate in Food Technology from the University of Hohenheim in 2006, specializing in Plant Foodstuff Technology. She then led the Food Process Department at the Fraunhofer Institute for Process Engineering and Packaging (IVV) before transitioning to the University of Bonn. In 2016, she initiated a research group dedicated to plant protein fermentation for dairy alternatives, a now thriving field. From January 2021 to September 2023, Ute Weisz served as a professor of Food Sciences at the University of Bonn. Since October 2023, she has held the professorship 'Plant Proteins and Nutrition' in the Department of Life Science Engineering. Ute Weisz also mentors young scientists at Fraunhofer IVV, complementing her academic role.

Research:
One research focus is on how the processing of plant protein-rich materials affects the nutritional and techno-functional properties of protein ingredients. The interaction of secondary (sometimes anti-nutritive) components with the proteins plays thereby also a crucial role.

Which scientific problem would you really like to solve?
Her research tackles the problem of optimizing processing methods for plant proteins, considering their nutritional impact and interactions with secondary components.

A boring fact about myself:
I often forget where I've placed my car keys and mobile phone.

Andreas Wiese

Professorship
Combinatorial optimization

e-Mail
andreas.wiese@tum.de

School
TUM School of Computation, Information and Technology

Bio:
Andreas Wiese works on combinatorial optimization problems. These are problems in which the best or a very good solution needs to be found among very many possible solutions, as quickly as possible with the help of a computer. The goal is to program the computer with a so-called algorithm in such a way that it finds the desired solution very fast. For example, if you use your smartphone to find the best way to some destination, then such an algoritihm is used, and it typically finds the best way for you in less than a second. Andreas Wiese studied mathematics at the TU Berlin where he also did his PhD in mathematics. He was a postdoc at the 'La Sapienza' University in Rome and at the MPI for Informatics in Saarbrücken. He has also been a professor at the Universidad de Chile in Santiago and at the Vrije Universiteit Amsterdam. Finally, Andreas Wiese joined TUM in 2022.

Research:
My research is about understanding what we can compute quickly with computers and what we cannot.

Which scientific problem would you really like to solve?
Getting a PTAS for Maximum Weight Independent Set of Rectangles.

A boring fact about myself:
I am almost always in the lead in the coffee list of our group.

Wilhelm Wimmer

Professorship
Experimental Audiology

School
TUM School of Medicine and Health & TUM School of Computation, Information and Technology

e-Mail
wilhelm.wimmer@tum.de

phone number:
089 4140 1134

Bio:
I studied Biomedical Engineering at the Graz University of Technology and received my PhD from the University of Bern in 2015. This was followed by a postdoctoral stay at INRIA/ Sophia Antipolis, and the Habilitation in Experimental Audiology at the University of Bern in 2021. In 2023, I started the professorship of Experimental Audiology at TUM.

Research:
I am engaged in improving diagnostic and treatment technology for inner ear disorders (hearing loss, tinnitus, and vertigo), in particular cochlear implants. My approaches combine audiology with radiology, medical imaging, and computational modelling.

Which scientific problem would you really like to solve?
I want to find out if the spiral shape of the human cochlea has physiological advantages for hearing.

A boring fact about myself:
I met my wife at the Oktoberfest in Munich in 2010.

Michael Zavrel

Professorship
Bioprocess Engineering

School
TUM Campus Straubing

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phone number:
09421 187 440

Bio:
Michael Zavrel (*1980) studied Chemical Engineering at TUM with a semester abroad at the University of California in Santa Barbara, USA. After completing his diploma thesis at Roche Diagnostics, he did his doctorate at the Chair of Biochemical Engineering at RWTH Aachen University. From 2008 to 2022, he worked in industrial research and development at Süd-Chemie and Clariant and had various leading positions, including Head of Development & Biomanufacturing and Site Manager. In 2022, Michael Zavrel was appointed as Professor for Bioprocess Engineering at the TUM Campus Straubing for Biotechnology and Sustainability.

Research:
Michael Zavrel's focus is the development of sustainable bioprocesses based on biogenic raw materials that do not compete with their use as food. To achieve this, Michael Zavrel conducts research in the areas of fermentation, downstream processing and process design.

Which scientific problem would you really like to solve?
I would like to develop a process for biopolymers that can compete economically with fossil-based polymers.

A boring fact about myself:
As a balance to working in the office and meeting rooms, I like to work in the garden in the evening.

Impressum
Munich Dual Career Office (MDCO)
Office of the President

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