
Special Issue – Fuzzy Large Models: Bridging Uncertainty and Creativity

Aim and Scope:

The rapid development of large models has demonstrated exceptional capabilities and made significant progress in research, industry, and public use. Through large-scale pretraining, these models have exhibited surprising emergent abilities that do not exist in smaller models, and they have gradually become mainstream models, particularly in fields such as machine learning, natural language processing, image processing, recommender systems and intelligent robotics. Despite their many achievements, foundational large models (such as large language models, vision models, and multimodal models) still face challenges related to safety, ambiguity, diversity, and the complexity of human reasoning. Fuzzy techniques including fuzzy logic, sets and systems, with its ability to handle imprecise information and facilitate approximate reasoning, is particularly well-suited to address these issues. The probabilistic and adaptive characteristics of fuzzy logic naturally align with large models, providing a solid theoretical framework to enhance the effectiveness of AI systems in reasoning under uncertain conditions.

The integration of fuzzy techniques with large models represents a pioneering advancement in AI. By combining the strength of fuzzy techniques in uncertainty management with the creative and generative capabilities of large models, this synergy has the potential to revolutionize how machines approach complex, ambiguous, and real-world problems. This fusion of human-like reasoning with the ability of AI to generate novel solutions opens the door to more sophisticated and reliable AI systems, which can tackle increasingly intricate tasks.

This special issue aims to serve as a platform for gathering cutting-edge research on the integration of fuzzy techniques and large models. Dedicated to exploring the convergence of these two fields, it invites groundbreaking contributions that push their boundaries. We welcome submissions that showcase how this integration enhances AI's ability to manage uncertainty, improve prediction and decision-making processes, and address creative problem-solving across diverse domains. By bridging the gap between uncertainty management and innovative problem-solving, this special issue seeks to generate new insights and drive advancements in the rapidly evolving field of AI.

Topics of Interest:

We welcome submissions on the following topics, including but not limited to:

- Fuzzy large models for machine learning (e.g., transfer learning, reinforcement learning)
- Fuzzy large models for computer vision and image processing
- Fuzzy large models for robotics
- Fuzzy large models for human-machine interaction and collaboration
- Fuzzy large models for natural language processing
- Large models for computer vision with uncertainty
- Large models for robots in uncertain and dynamic environments
- Large models for science using fuzzy techniques
- Large models for generation with uncertainties
- Large models for big data with uncertainties
- Large models for fuzzy recommender systems
- Advanced mechanisms for integrating fuzzy methods and large language models
- Advanced fuzzy machine learning methods (e.g., fuzzy machine learning, fuzzy reinforcement learning)
- Explainability of fuzzy large models in all its forms

- Uncertainty, trust, and interpretability in large models
- Applications of fuzzy large models in transportation, health, agriculture, Industry 4.0, and other domains

Submission guidelines:

All authors should read [Information for Authors](#) before submitting a manuscript. Submissions should be through the IEEE TFS journal website <http://mc.manuscriptcentral.com/tfs-ieee>. It is essential that your manuscript is identified as a Special Issue contribution. Ensure you choose 'Special Issue' when submitting. A cover letter must be included which includes the title "Fuzzy Large Models: Bridging Uncertainty and Creativity".

Important Dates:

- Manuscript submission deadline: May 1, 2025
- First-round review decisions: Aug 1, 2025
- Second-round review decisions: Nov 1, 2025
- Acceptance Notification: Dec 31, 2025

Guest Editors:

- Prof. Hang Yu, Shanghai University, China, yuhang@shu.edu.cn
- Dr. Qian Liu, University of Auckland, New Zealand, liu.qian@auckland.ac.nz
- Prof. Witold Pedrycz, University of Alberta, Canada, wpedrycz@ualberta.ca
- Prof. Jie Lu, University of Technology Sydney, Australia, jie.lu@uts.edu.au

Brief Bio of Guest Editors:

Prof. Hang Yu

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Biography: Hang Yu is a Professor at the School of Computer Engineering and Science, Shanghai University, China. He received his Ph.D. degree in Software Engineering from the University of Technology Sydney, Australia, in 2020. He was awarded the Outstanding Overseas Academic Young Leader of Shanghai. His research interests include large model, knowledge graph, data streams, and graph neural network. He has authored or co-authored more than 60 publications and his publications have appeared in the ACL, AAAI, CVPR, IEEE TKDE, IEEE TNNLS, IEEE TCYB, and IEEE TFS. He is Associate Editor of Knowledge-Based Systems, and regularly serves as a program committee member for numerous national and international conferences such as ACL, AAAI, EMNLP, NAACL, and IJCNN.

Dr. Qian Liu

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Biography: Qian Liu is Lecturer at University of Auckland (UoA), New Zealand. Prior to joining UoA, she worked as postdoctoral research fellow at Nanyang Technological University, Singapore. She earned her PhD in Software Engineering in 2022 from the University of Technology Sydney, Australia, and her PhD in Computer Science in 2020 from Beijing Institute of Technology, China. Her research focuses on natural language processing, especially on commonsense reasoning, question answering systems, and language models. She has published several high-quality papers in top-tier conferences and journals, such as ACL, WWW, AAAI, TFS, TKDE, and TNNLS. In addition to her research contributions, she has actively participated in the academic community by serving as an Area Chair for COLING 2022 and as a reviewer for prestigious venues such as ACL, KBS, TAC, TOIS, and TNNLS.

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Biography: Witold Pedrycz (IEEE Life Fellow) is Professor in the Department of Electrical and Computer Engineering, University of Alberta, Edmonton, Canada. He is also with the Systems Research Institute of the Polish Academy of Sciences, Warsaw, Poland. Dr. Pedrycz is a foreign member of the Polish Academy of Sciences and a Fellow of the Royal Society of Canada. He is a recipient of several awards including Norbert Wiener award from the IEEE Systems, Man, and Cybernetics Society, IEEE Canada Computer Engineering Medal, a Cajastur Prize for Soft Computing from the European Centre for Soft Computing, a Killam Prize, a Fuzzy Pioneer Award from the IEEE Computational Intelligence Society, and 2019 Meritorious Service Award from the IEEE Systems Man and Cybernetics Society. His main research directions involve Computational Intelligence, Granular Computing, and Machine Learning, among others. Professor Pedrycz serves as an Editor-in-Chief of Information Sciences, Editor-in-Chief of WIREs Data Mining and Knowledge Discovery (Wiley), and Co-editor-in-Chief of Int. J. of Granular Computing (Springer) and J. of Data Information and Management (Springer).

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Biography: Distinguished Professor Jie Lu AO (An IEEE Fellow, IFSA Fellow, Australian Computer Society Fellow, and Australian Laureate Fellow in AI) is an internationally renowned scientist in the area of computational intelligence, who has made fundamental and influential contributions, particularly in fuzzy transfer learning, concept drift, data-driven decision support systems, and recommender systems. Her research has huge positive implications and significant impact on her research community and for society and economics. Jie has published six research books and about 500 papers in leading journals and conferences, has won 10 ARC Discovery projects and ARC Laureate fellow project, and also led 15 ARC Linkage and industry projects. She has supervised 50 PhD students to completion. As the Director of the Australian Artificial Intelligence Institute (AAIL) at UTS, the largest AI centre in Australia with 35 researchers and 230 PhD students, Jie works at the frontier of the information age. Her research is helping shape the way organizations use data to make decisions in complex and uncertain situations. Jie, who is also Associate Dean (Research Excellence) in the Faculty of Engineering and Information Technology at UTS, has driven the faculty's culture of research excellence and impact.