Distinguished Professor Jie Lu
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Short CV:
Distinguished Professor Jie Lu is a scientist in the field of computational intelligence, primarily known for her work in fuzzy transfer learning, concept drift, recommender systems, and decision support systems. She is an IEEE Fellow, IFSA Fellow, and Australian Laureate Fellow. Currently, Prof Lu is the Director of the Australian Artificial Intelligence Institute (AAII) and Associate Dean (Research Excellence) at the Faculty of Engineering and Information Technology, University of Technology Sydney (UTS). She has published over 400 papers in leading journals and conferences; won 10 Australian Research Council (ARC) Discovery Projects and led 15 industry projects; and supervised 50 doctoral students to completion. Prof Lu serves as Editor-In-Chief for *Knowledge-Based Systems* and *International Journal of Computational Intelligence Systems*, and is a recognized keynote speaker, delivering 30 keynote speeches at international conferences. She is the recipient of the IEEE Transactions on Fuzzy Systems Outstanding Paper Award (2019), the Computer Journal Wilkes Award (2018), Australia's Most Innovative Engineer Award (2019), and the UTS Chancellor's Medal for Research Excellence (2019).

Title: Fuzzy Transfer Learning

Abstract
This talk will describe how fuzzy transfer learning can innovatively and effectively learn from data to support data-driven decision-making in uncertain and dynamic situations. The core idea behind fuzzy transfer learning is to leverage previously acquired knowledge to assist in completing a prediction task in a related domain by integrating fuzzy techniques with the transfer learning process. A set of new fuzzy transfer learning theories, methodologies, and algorithms is introduced, which transfers knowledge learned in one or more source domains to target domains. The fuzzy transfer learning set incorporates (1) a fuzzy refinement domain adaptation algorithm by utilizing the fuzzy system and similarity/dissimilarity concepts to modify the target instances' labels for classification; (2) fuzzy rule-based systems with mapping functions by building latent spaces to facilitate knowledge transfer for regression tasks in both homogeneous and heterogeneous scenarios; (3) unsupervised domain adaptation, to recognize newly emerged patterns in target domains that may be unlabelled. Patterns in target domains are recognized by leveraging knowledge from patterns learned from source domains and solutions to heterogeneous unsupervised domain adaptation via e.g., fuzzy equivalence relations. These new developments can enhance data-driven prediction and decision support systems in complex real-world environments. Applications of transfer learning will be discussed at the end.