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 n-dimensional fuzzy geometry and fuzzy equivalence relations. These new developments can enhance data-driven prediction and decision support systems in complex real-world environments.