



LEHIGH
UNIVERSITY

Institute for Data,
Intelligent Systems, and
Computation (I-DISC)



Robot Learning Workshop

October 14-15, 2019

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Distributed Image Classification using Deep Reinforcement Learning

We propose a planning and perception mechanism for robots (agents), that can only observe the underlying environment partially, in order to solve an image classification problem. We study two different settings: a) using a single agent which is choosing a goal location where we plans to get; b) and multiple agent scenarios where agents learn how to communicate to achieve the classification goal. Our proposed methodology is tested on the MNIST dataset of handwritten digits, which provides us with a level of explainability while interpreting the agent's understanding of the world and actions.

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Papers: <https://arxiv.org/abs/1909.09705> <https://arxiv.org/abs/1905.04835>

Bio: Prof Takác received his B.S. (2008) and M.S. (2010) degrees in Mathematics from Comenius University, Slovakia, and Ph.D. (2014) degree in Mathematics from The University of Edinburgh, United Kingdom. He received several awards during this period, including the Best Ph.D. Dissertation Award by the OR Society (2014), Leslie Fox Prize (2nd Prize; 2013) by the Institute for Mathematics and its Applications, and INFORMS Computing Society Best Student Paper Award (runner up; 2012). Since 2014, he is a Tenure Track Assistant Professor in the Department of Industrial and Systems Engineering at Lehigh University, USA. His current research interests include the design, analysis and application of algorithms for machine learning, optimization, high-performance computing, operations research and energy systems.