

SenSIP Student Seminar Series

Improving Task and Domain Generalization using Structured Meta Learning

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Abstract

Deep Learning models have enjoyed tremendous success to generalize to novel unseen tasks using conventional transfer learning methods or recently proposed model-agnostic meta learning approaches. However, the underlying basis for their success is an assumption of knowing the semantic relationships between the observed tasks a priori and then efficiently learning to exploit redundancies across these tasks. In this work, we consider the problem of task generalization, where there are no known semantic relationships between tasks and propose INVENIO, a structured meta-learning algorithm which is able to infer semantic similarities between the observed tasks and utilize this semantic structure to generalize well to novel unobserved tasks in a few shot setting. Our method shows significant improvement compared to the existing state-of-the-art approaches (transfer learning, multi-task learning, meta-learning) in terms of unseen task generalization while inferring a structure informing about the relatedness of the observed tasks.

Biography:



Sameeksha Katoch is a Ph.D. student in electrical engineering at Arizona State University (ASU). She received her Masters in electrical engineering from ASU in 2018 and a Bachelors in electronics and communication engineering from the National Institute of Technology, Srinagar, India, in 2015. She has interned with Lawrence Livermore National Laboratory and Prime Solutions Group, Inc. over the past summers. Her research interests include developing privacy conscious deep learning models for applications in healthcare and utilizing task/domain semantics for understanding and improving deep learning model performance on a wide variety of tasks.

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