

SenSIP Student Seminar Series

Bayesian Optimization in High Dimensional Spaces

Presenter: Mohit Malu, PhD Student in ECEE

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Abstract

Bayesian optimization (BO) has been widely applied to several modern science and engineering applications such as machine learning, neural networks, robotics, aerospace engineering, experimental design. BO has emerged as the sample efficient framework for global optimization of an arbitrary expensive to evaluate black box function f . Although BO has been very successful in low dimensions scaling it to high dimensional spaces has been significantly challenging due to its exponentially increasing statistical and computational complexity with increasing dimensions. Also, the objective function is often assumed to be stationary but in many real-world applications this assumption does not hold or holds locally. There has been a lot of work in recent years to scale BO to higher dimensions, in many of these methods some underlying structure on the objective function is exploited. In this seminar, we will review BO, look at recent efforts to scale BO to high dimensions, and will have a glance at some methods to model the heterogenous behavior of objective functions.

Biography:



Mohit Malu is currently a Ph.D. student in electrical engineering at Arizona State University (ASU). He received his Master's degree in electrical engineering from ASU in 2021 and a Bachelor's degree in electrical engineering from Indian Institute of Technology, Gandhinagar, in 2013. His research interests include Bayesian optimization, Bandit algorithms. He is currently working on modelling and optimization of heterogeneous functions using treed Gaussian process. He has interned with ON Semiconductor during the summers of 2019 and 2020 where he worked on building an exploration model for optimal circuit design and neural network based model to improve the efficiency of power converters.

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