

Bayesian Optimization and Embedded Learning Systems

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ABSTRACT

An important property of embedded learning systems is the ever-changing environment they create for all algorithms operating in the system. Optimizing the performance of those algorithms becomes a perpetual on-line activity rather than a one-off task. I will review some of these challenges in autonomous vehicles. I will discuss Bayesian optimization methods and their application in robotics and scientific applications, focusing on scaling up the dimensionality and managing multi-fidelity evaluations. I will finish with lessons learned and thoughts on future directions as these methods move into embedded systems.

Keywords

Bayesian Systems; Autonomous Vehicles; Robotics

Bio

Dr. Jeff Schneider is the engineering lead for machine learning at Uber's Advanced Technologies Center. He is currently on leave from Carnegie Mellon University where he is a research professor in the school of computer science. He has 20 years experience developing, publishing, and applying machine learning algorithms in government, science, and industry.. He has over 100 publications and regularly gives talks and tutorials on the subject.

Previously, Jeff was the co-founder and CEO of Schenley Park Research, a company dedicated to bringing machine learning to industry. Later, he developed a machine learning based CNS drug discovery system and commercialized it during two years as Psychogenics' Chief Informatics Officer. Through his research, commercial, and consulting efforts, he has worked with dozens of companies and government agencies around the world.

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