

Amazon: A Playground for Machine Learning

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Within Amazon, a company with over 200 millions of active consumers, over 2 million active seller accounts and over 180.000 employees, there are hundreds of problems which can be tackled with Machine Learning. In the first part of this talk, I will give an overview of a number of Machine Learning applications. I will explain how they fit within the Amazon ecosystem, the challenges we are facing and how they help us scale. While Machine Learning is routinely used in recommendation, fraud detection and ad allocation, it plays a key role in devices such as the Kindle or the Echo, as well as the automation of Kiva enabled fulfilment centres, statistical machine translation and automated Fresh produce inspection. In the second part, I will discuss how we democratize machine learning within the company. Applying complex predictive systems, such as machine learning-based systems, in the wild requires to manually tune and adjust knobs, broadly referred to as system parameters or hyperparameters. Black-box optimisation and in particular Bayesian optimisation provides a natural framework for addressing this problem by taking the human expert out of the fine tuning loop. I will introduce Bayesian optimization and discuss open problems in this area.

Biography. Cedric Archambeau is a Senior Machine Learning Scientist with Amazon, Berlin. He manages the algorithms team and served as a technical advisor to Sebastian Gunningham, Amazon Senior Vice President Seller Services. Recently, his team delivered the learning algorithms offered in Amazon Machine Learning. He is interested in large scale probabilistic inference and Bayesian optimization. He holds a visiting position in the Centre for Computational Statistics and Machine Learning at University College London. Prior to joining Amazon, he was leading the Machine Learning and Mechanism Design area at Xerox Research Centre Europe, Grenoble.