

Preface

We introduce the proceedings of advanced talks presented at the 3rd International Conference on Predictive Applications and APIs (**PAPIs '16**), in Boston, United States on October 11-12, 2016.

The conference featured 27 talks discussing various aspects of the integration of Machine Learning in real-world applications, processes and businesses. Speakers presented techniques, tools, and lessons learnt, to an audience of researchers and industry practitioners with a wide range of experience levels. These proceedings contain papers from two of the talks that presented the most advanced and novel content.

The first paper addresses the problem, in causal uplift modeling, of estimating the expected causal effect of an active treatment vis-a-vis a control treatment, when the difference between the treatments cannot be directly observed. The authors provide a clear comparison of the various approaches in uplift modeling, using a unified econometric framework. They show that evaluation of uplift models is dominated by visual comparison methods and that the absence of an evaluation metric limits objective comparison of uplift models based on different machine learning approaches. The authors then provide a generalization of one of these visual methods to a parametric model, and derive a metric which enables direct comparison of uplift models independent of the choice of machine learning model. The new metric is shown to substitute for the unobservable true treatment effect in a loss function, making the new evaluation method available to a cross validation scheme.

The second paper is a review of Uber's challenges and solutions in building a scalable ML-as-a-Service system for the UberEATS platform. MLaaS systems abstract away the complexity of building and testing machine learning models. Uber's system makes it simpler for developers to test and deploy machine learning models for a hierarchy of consumer markets from the city to country scale, with diverse machine learning use-cases. The authors focus on a discussion of the architecture requirements of such a system, and their motivation for selecting particular frameworks to manage real-time serving, batch model training and deployment, and feature computation and storage.

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