

4 Perspectives in Human-Centered Machine Learning

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ABSTRACT

Machine learning (ML) has had a tremendous impact in across the world over the last decade. As we think about ML solving complex tasks, sometimes at super-human levels, it is easy to forget that there is no machine learning without humans in the loop. Humans define tasks and metrics, develop and program algorithms, collect and label data, debug and optimize systems, and are (usually) ultimately the users of the ML-based applications we are developing.

In this talk, we will cover 4 human-centered perspectives in the ML development process, along with methods and systems, to empower humans to maximize the ultimate impact of their ML-based applications. In particular, we will cover:

1. Developer tools for ML that allow a wider range of people to create intelligent applications.
2. Helping humans understand why ML models make each prediction, when these models will break, and how to improve them.
3. Closing the gap between the loss function we optimize in ML and the product metrics we really want to optimize.
4. How the properties of ML models actually impact the ultimate user experiences we want to build, and what we can start to do about it.

BIOGRAPHY

Carlos Guestrin is the Amazon Associate Professor of Machine Learning at the Computer Science & Engineering Department of the University of Washington. He is also the Senior Director of Machine Learning and AI at Apple, after the acquisition of Turi, Inc. (formerly GraphLab and Dato), a company Carlos co-founded, which developed a platform for developers and data scientist to build and deploy intelligent applications. His team also released a number of popular open-source projects, including XGBoost, MXNet, TVM, Turi Create, LIME, GraphLab/Power Graph, SFrame, and GraphChi. His previous positions include the Finmeccanica Associate Professor at Carnegie Mellon University and senior researcher at the Intel Research Lab in Berkeley.

Carlos received his MSc and PhD in Computer Science from Stanford University, and a Mechatronics Engineer degree from the University of Sao Paulo, Brazil. Carlos' work received awards at a number of conferences and journals: KDD, IPSN, VLDB, NIPS, UAI, ICML, AISTATS, JAIR, ACL, and JWRPM. He is also a recipient of the ONR Young Investigator Award, NSF Career Award, Alfred P. Sloan Fellowship, and IBM Faculty Fellowship. Carlos was named one of the 2008 'Brilliant 10' by Popular Science Magazine, received the IJCAI Computers and Thought Award and the Presidential Early Career Award for Scientists and Engineers (PECASE).



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