SORA-TABA Workshop & DLSPH Biostatistics Research Day

Statistical Machine Learning for Biomedical Data

Thursday & Friday
August 20th & 21st, 2020
11:00am – 5:30pm (EDT)

Online Workshop

Noah Simon University of Washington

Associate Professor

Department of Biostatistics

Abstract: Dr. Noah Simon from the University of Washington will present a 2-day intensive workshop. He will present a number of supervised learning methods that can be applied to Biomedical Big Data: In particular he will cover penalized approaches to regression and classification; as well as support vector machines, tree-based methods, and deep learning.

Dr. Simon will consider the analysis of "high-dimensional Omics" data sets. These data are typically characterized by a huge number of molecular measurements (such as genes) and a relatively small number of samples (such as patients). In addition, he will discuss the use of these tools in the development of prognostic and predictive biomarkers.

Throughout the course, he will focus on common pitfalls in the supervised analysis of biomedical big data and how to avoid them. The course will include interactive discussions/"Challenge Questions" to help participants actively engage with applying these tools in biomedical scenarios.

By the end of the workshop, participants will be able to…

1) Understand the bias/variance trade-off and its various applications
2) Understand the use of split-sample validation for tuning bias/variance and evaluating performance
3) Have some intuition for the various regression/classification methods
4) Understand how model aggregation techniques can be applied
5) Have some working knowledge of how to apply these tools in common biomedical scenarios
6) Understand the main ideas in deep learning, how they relate to classical statistical ideas, and some scenarios where they may be useful.

Speaker Bio: Dr. Noah Simon received hid PhD in Statistics from Stanford University under the supervision of Professor Robert Tibshirani. He is an associate professor in the Department of Biostatistics at the University of Washington (and has affiliate appointments at the Therapeutics Development Network of Seattle Children's Hospital, and the Kaiser Permanente Health Research Institute). His work is at the intersection of biostatistics, machine learning, and computational biology: He develops methodology that engages with machine learning, biomarker discovery, and clinical trial design. His collaborative work includes applications in immunology, oncology, and cystic fibrosis (among other areas).

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