SCHOOL OF INFORMATICS, COMPUTING, AND ENGINEERING

CENTER FOR BIOINFORMATICS RESEARCH TALK

Julia Fukuyama

Indiana University
Dept. of Statistics

Wednesday, October 24, 2018

4:00 pm

Luddy 0117

Learning Interpretable Representations of the Microbiome

Abstract: Studies of the microbiome, the complex communities of bacteria that live in and around us, present interesting problems for data analysis. In particular, bacteria are best understood as the result of a continuous evolutionary process and methods to analyze data from microbiome studies should use the evolutionary history. Motivated by this example, I describe adaptive gPCA, a method for dimensionality reduction that uses the evolutionary structure as a regularizer and to improve interpretability of the low-dimensional space. I also discuss implications for interpretable supervised learning incorporating both the phylogeny and variable selection.

Biography: I am an Assistant Professor in the Department of Statistics at Indiana University.

I received a PhD in Statistics from Stanford in 2017, where I was advised by Susan Holmes. Following that, I spent a year as a postdoctoral research fellow in the Department of Computational Biology at the Fred Hutchinson Cancer Research Center in Erick Matsen's group. My undergraduate degree was from Yale, where I received a B.S. in Biology.

I enjoy developing statistical and computational methods that help biologists understand complex, structured data. I have worked with David Relman's group on the human microbiome and with Catherine Blish's group on natural killer cell repertoires.

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