

Department of Mathematics and Statistics Colloquium

Wicked Problems require Evolving Solutions: from Data Science to Data Science for Global Human Development

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Abstract:

With its focus on big data, machine learning and the human oriented syntaxes of programming languages such as R and Python, data science has emerged as a formidable force within the context of a number of disciplines. This emergence is arguably most prevalent in the social sciences where geospatio-temporal data science methods have proven to be significantly useful. Machine learning algorithms with census and survey data as well as remotely sensed satellite data and call detail records (CDR data from cell phones) are rapidly changing the way we describe and analyze global human populations especially in low and middle income countries (LMICs). In this talk, I will present my approach to introducing freshmen to the joy and excitement of data science at the College of William & Mary. I will also introduce a general overview of top down and bottom up approaches that are being used to describe human populations and their demographic and economic characteristics with greater accuracy at increasingly higher resolutions. I will conclude with an overview of the numerous gravity type models that have emerged in an effort to use CDR data to describe and understand global human movement.

Speaker Bio:

A Lecturer in the newly formed Data Science program, Tyler Frazier has been introducing William & Mary freshmen to the open source, interpreted programming language R since he joined the College in the summer of 2015. Approaching computational and statistical data science methods from the perspective of research questions that emerge primarily from the social sciences, Professor Frazier instructs students on how to describe and analyze dimensions of global human development as geospatial patterns and processes. Exploratory investigations focus on problems such as infectious disease outbreaks, responding to natural disasters, measuring and reducing poverty, alleviating hunger, and planning for informal urbanization. More advanced students are introduced to agent-based modeling as a tool to simulate these phenomenon and visually communicate scenario results.

Prior to joining the College, Professor Frazier held academic appointments at the Santa Fe Institute and the Technical University Berlin. He has been a PI or contributing researcher on a number of development related projects, primarily in Ghana where he lived for several years from 2007 until 2012. Tyler Frazier holds his PhD in Geography from the University of Bonn and his Master of City Planning from Georgia Tech.

Monday, September 23 at 4.00 pm in Roop 103

Refreshments at 3:30 pm