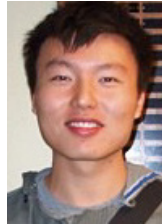




Department of Biomathematics Seminar Series:
Frontiers in Systems and Integrative Biology

BIO
MATH

Stochastic Modeling and Inference with Multi-type Branching Processes



Jason Xu, Ph.D.

Postdoctoral Fellow

Department of Biomathematics

UCLA

Thursday, November 17, 2016

4:00 PM

A2-342 MDCC, Moss Auditorium

Marion Davies Children Clinic

ABSTRACT:

Markov branching processes are a class of continuous-time Markov chains (CTMCs) with ubiquitous scientific modeling applications. Multi-type processes are necessary to model phenomena such as competition, predation, or infection, but often feature large or uncountable state spaces, rendering standard CTMC techniques impractical. We present recent methodology that enables likelihood computations and EM algorithms in these settings. We examine the performance of these techniques applied to data from molecular epidemiology and hematopoiesis studies, and briefly explore alternatives when such methods are limited, including moment-based estimators and compressed sensing techniques that scale to large systems and datasets.

Host: Mary Sehl, M.D., Ph.D.

To receive e-mail seminar notices, contact David Tomita (dtomita@biomath.ucla.edu)