

RISE Talks Series

Who?	Yi Lu, Ph.D.
What?	Function and Curve Registration
When?	12:00-1:00 on Thursday, November 15th
Where?	Hall of Sciences, Room 326

The general topic of this talk is the Bayesian registration of functional data. Function registration refers to the process of temporally aligning a set of functions. In other words, the goal is to separate the phase and amplitude variations in the observed functional data. It has a vast literature and is often required as a pre-processing step before carrying out other statistical procedures.

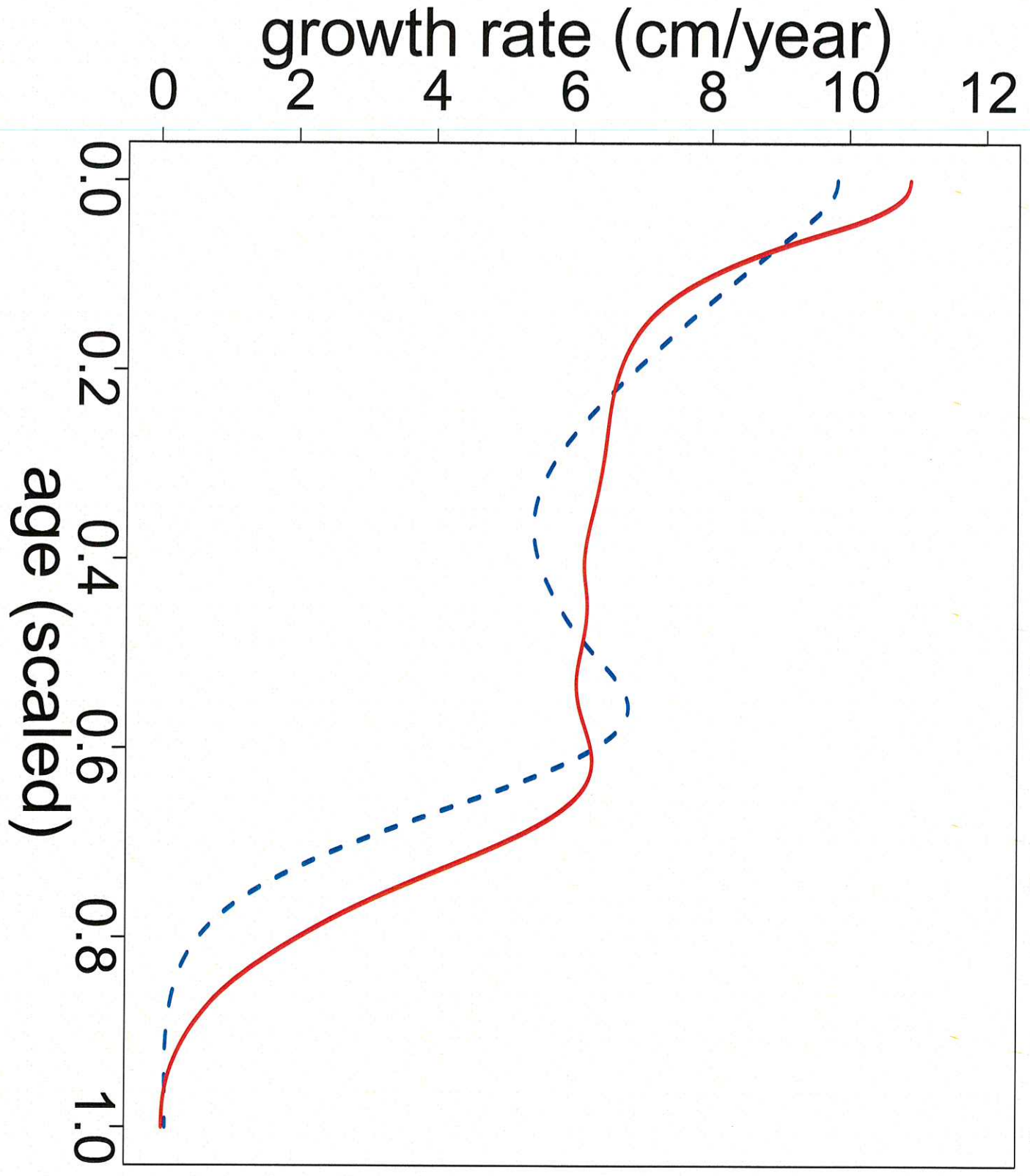
At the core of our approach is a series of transformations of the data and functional parameters, developed under a differential geometric framework. The motivation of these transformations is to simplify both the observation space and the parameter space. Another key component in our approach is a novel Markov chain Monte Carlo (MCMC) algorithm for obtaining approximate draws from the posterior distribution of the functional parameters. The designing principle of the algorithm is to avoid discretization of functional objects for as long as possible, thus minimizing the potential pitfalls associated with high-dimensional Bayesian inference.

The talk will focus on introducing what is functional data and what are some applications of function registration, as well as discussing advantages of a Bayesian approach compared to existing non-Bayesian methods. The proposed Bayesian approach will be illustrated via pairwise and multiple functional data registration, using both simulated and real datasets.

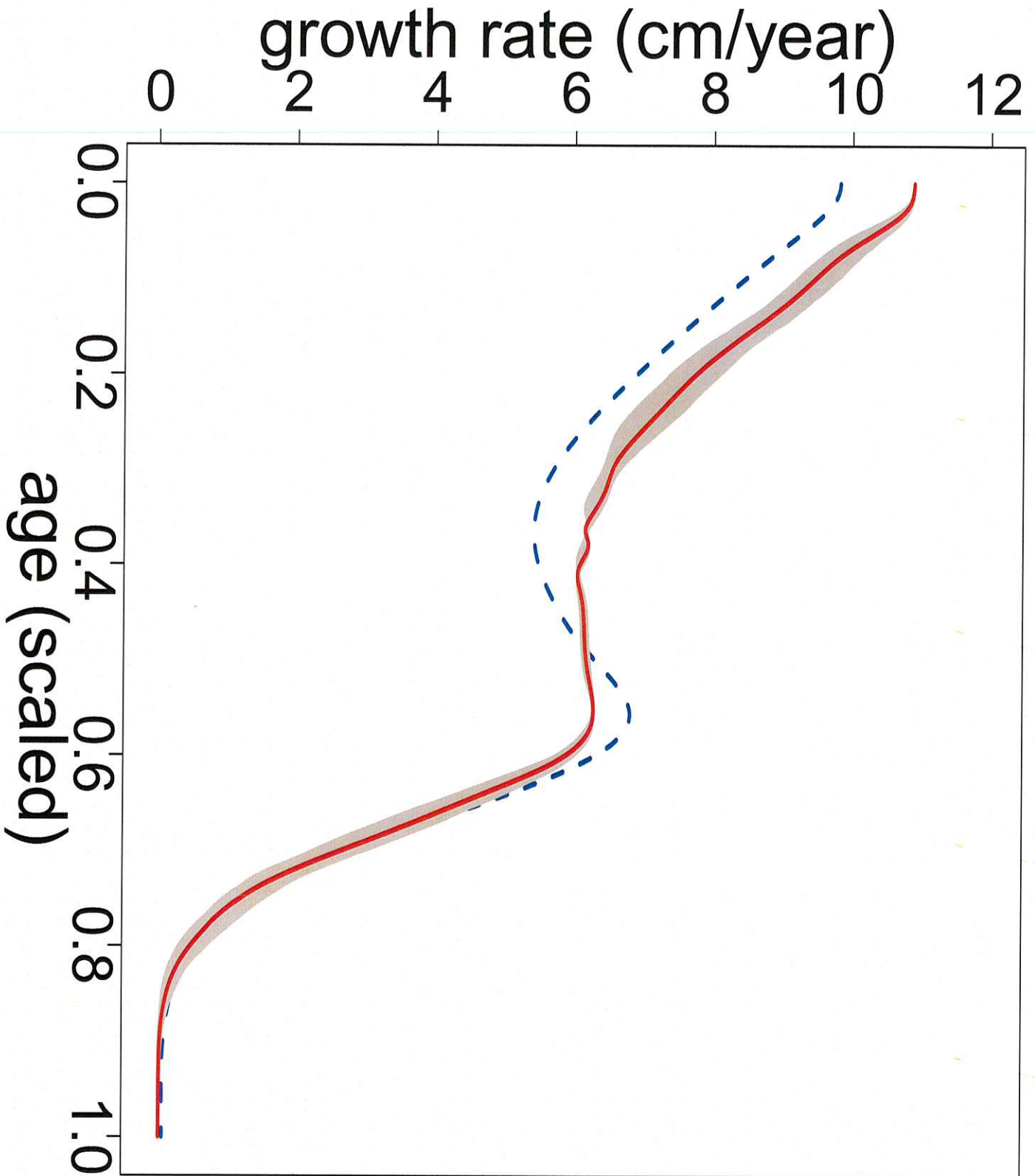
Bio:

Yi Lu obtained her Ph.D. in Statistics from the Ohio State University in 2017. Her research interests include Monte Carlo Markov Chain (MCMC) algorithms, functional data, and curve and image registration.

girls #1 and #2 (not registered)



girls #1 and #2 (registered)



estimated warping function

