

Department of Biostatistics and Medical Informatics Seminar



Anuj Srivastava, PhD

Professor in the Department of Statistics
Florida State University

Friday, February 14, 2025

12:00-1:00 pm

Biotech Center Auditorium *or* via Zoom Link

<https://uwmadison.zoom.us/j/99879638765?pwd=wbtqxoucEFllPVCVc9SFbvKB1Av7Xk.1>

Passcode: 343271

Statistical Shape Analysis of Complex Natural Structures

Abstract: Statistical modeling and analysis of structured data is a fast-growing field in Statistics and Data Science. Rapid advances in imaging techniques have led to tremendous amounts of data for analyzing imaged objects across several scientific disciplines. Examples include shapes of cancer cells, botanical trees, human biometrics, 3D genome, brain anatomical structures, crowd videos, nano-manufacturing, and so on. Shapes are relevant even in non-imaging data contexts, e.g., the shapes of COVID rate curves or the shapes of activity cycles in lifestyle data. Imposing statistical models and inferences on shapes seems daunting because the shape is an abstract notion and one requires precise mathematical representations to quantify shapes. This talk has two parts. In the first part, I will present some recent developments in "elastic representations" of structures such as functions, curves, surfaces, and graphs. In the second part, I will focus on statistical analyses: computing shape summaries, estimation under shape constraints, hypothesis testing, time-series models, and regression models involving shapes.

Bio: Dr. Anuj Srivastava is a Professor in the Department of Statistics and a Distinguished Research Professor at the Florida State University. He obtained a B.Tech degree in Electronics Engineering from IIT-BHU (Varanasi, India) in 1990. During graduate school, he received M.S. and Ph.D. degrees in electrical engineering from Washington University in St. Louis, in the years 1993 and 1996, respectively, both under the guidance of Prof. Michael I. Miller (now at the Johns Hopkins University). During 1996-97, he was a visiting research scientist at the Division of Applied Mathematics, Brown University. In Fall 1997, he joined the Department of Statistics at the Florida State University as an Assistant Professor. During 2003-2006, he was an Associate Professor, and starting Fall 2007 he became a full Professor at FSU. He was recognized as a Distinguished Research Professor by FSU in 2014.



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