STOR Fest

Celebrating 75 years of Statistics, 50 years of Operations Research, and 20 years of STOR!

• Program•

September 17-19, 2023
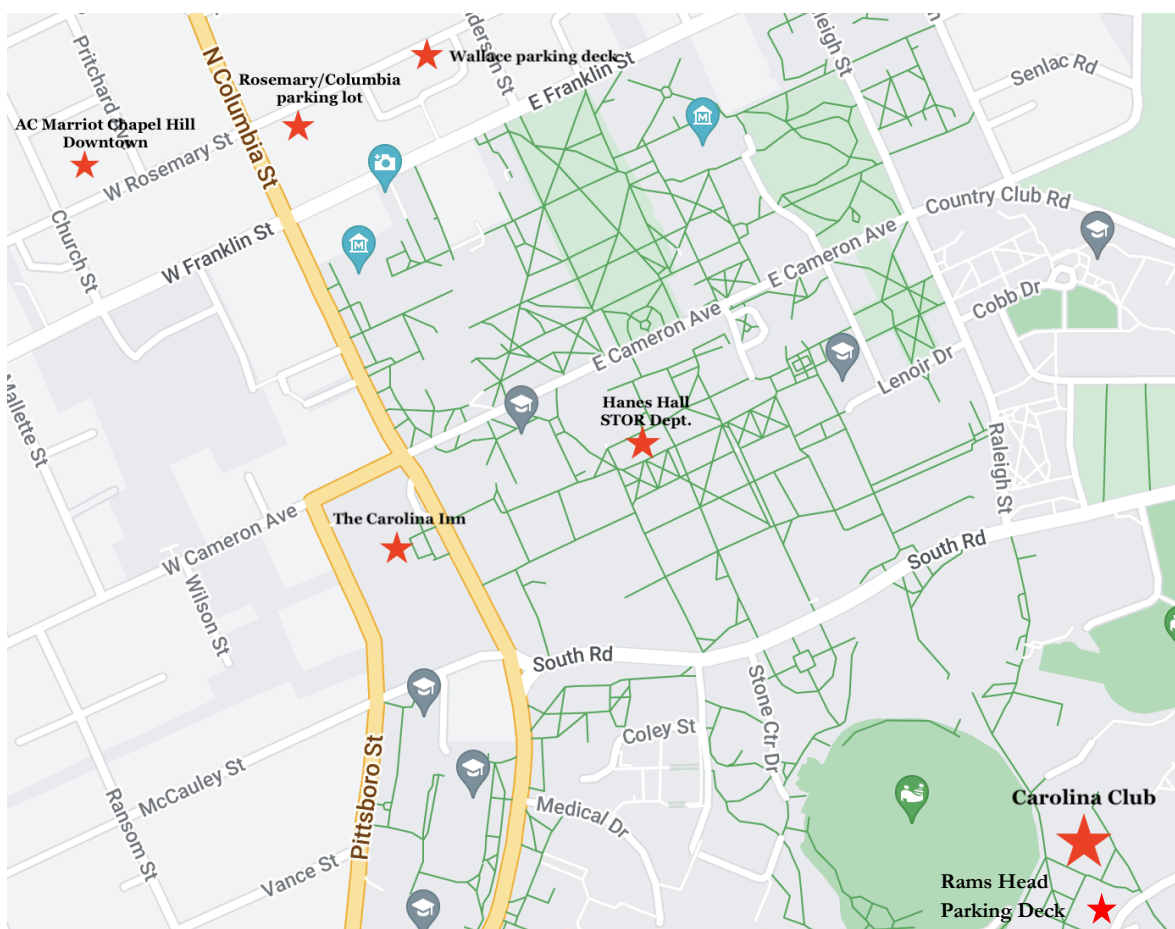## Chapel Hill, NC

THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

Contents

Map

- All events will take place at the **Carolina Club** (150 Stadium Dr, Chapel Hill, NC 27514).
- For the most convenient access to the Club, park at the **Rams Head Parking Deck**. Thirty daily coupons for September 18 and 19 can be picked up at the registration desk.
- Parking on Sunday, September 17 is free.

Advisory Committee

- Andrew Nobel
- Mariana Olvera-Cravioto
- Vladas Pipiras

Organizing Committee

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- Quoc Tran-Dinh
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- Nghia Nguyen
- Dilay Ozkan
- Akshay Sakanaveeti
- Dawn Sanderson
- Andrew Walker
- Yikai Wang
- Sinan Yorukoglu
- Wan Zhang
- Yuhao Zhou

Schedule

Sunday, September 17

5:30pm to 7:30pm	Mixer and registration

Monday, September 18

8:00am to 9:00am	Breakfast and registration
9:00am to 9:45am	Opening remarks
9:45am to 10:45am	Susan Murphy (Harvard University) Dyadic Reinforcement Learning Chair: Runze Li (Pennsylvania State University)
10:45am to 11:00am	Coffee break
11:00am to 12:00pm	Renato Monteiro (Georgia Tech) Complexity of proximal augmented Lagrangian methods and ADMM for solving constrained smooth nonconvex composite optimization problems Chair: Chihoon Lee (Stevens Institute of Technology)
12:00pm to 2:00pm	Lunch and posters
2:00pm to 2:15pm	Messages from professional organizations
2:15pm to 3:15pm	Victor Perez Abreu (CIMAT) Random matrix theory and relationships with some interests from the 75 years of the STOR community Chair: Haonan Wang (Colorado State University)
3:15pm to 3:30pm	Coffee break
3:30pm to 5:00pm	Panel "STOR in Industry: Current Perspectives" Guilaume Bonnet (Google) Bryan Davis (Centari) Mike Hoekstra (CDC) Stefanos Kechagias (SAS) Radhika Kulkarni (SAS) Duyeol Lee (Wells Fargo)
5:00pm to 6:30pm	Break
6:30pm to 9:00pm	Banquet Banquet Speaker: Robert Lund (UC Santa Cruz)

Tuesday, September 19

8:00am to 9:00am	Breakfast
9:00am to 10:00am	Shane Henderson (Cornell University) Stochastic Modeling: Some STORies Chair: Barbara Hoopes (Virginia Tech)
10:00am to 10:15am	Coffee break
10:15am to 11:45am	Spotlight talks Gabor Pataki (UNC Chapel Hill) Mohammad R. Jahan-Parvar (Federal Reserve) Daniel Kessler (University of Michigan) Bala Krishnamoorthy (Washington State University) Ankur Patel (John Hopkins University) Xingye Qiao (Binghamton University) Yuying Xie (Michigan State University) Lingsong Zhang (Purdue University)
11:45am to 1:30pm	Lunch and posters
1:30pm to 3:00pm	Panel "STOR in Industry: Postcards from the Future" Yunxiao Liu (Reddit) Nick Locantore (NIMIRGA) Glenn Sabin (ZS Associates) Michele Trovero (SAS) Diane Wold (CDISC)
3:00pm to 3:15pm	Closing remarks
3:15pm to 5:00pm	Career Expo and ice cream social

Companies at the Career Expo:

- Amazon
- Demand Side Analytics
- Discovery ABA
- Drakeford, Scott & Assoc.
- Enact
- Institute for Advanced Analytics (NC State)
- Pro Financial Fitness
- Nicholas School of the Environment (Duke)
- SAS
- Siemens
- UCB
- United States Marine Corps
- YMCA
- ZS Associates

Abstracts

Susan Murphy

Dyadic Reinforcement Learning

Sequential decision making in digital health aims to enhance health outcomes by delivering interventions to individuals as they go about their daily life. The involvement of care partners and social support networks often proves crucial in helping individuals manage burdensome medical conditions. This presents opportunities in digital health to design interventions that target the dyadic relationship—the relationship between a target person and their care partner—with the aim of enhancing social support. In this paper, we develop dyadic RL, an online reinforcement learning algorithm designed to personalize intervention delivery based on contextual factors and past responses of a target person and their care partner. Here, multiple sets of interventions impact the dyad across multiple time intervals. We formally introduce the problem setup, develop dyadic RL and establish a regret bound. We demonstrate dyadic RL's empirical performance through simulation studies on both toy scenarios and on a realistic test bed constructed from data collected in a mobile health study.

Renato Monteiro

Complexity of proximal augmented Lagrangian methods and ADMM for solving constrained smooth nonconvex composite optimization problems

This talk discusses proximal augmented Lagrangian (PAL) methods and variants of the alternating minimization method of multipliers (ADMM) for solving constrained smooth non-convex composite optimization problems. Its purpose is to survey latest development and present our latest results related to the above topic. Special attention will be given to adaptive methods which do not require any specific knowledge about the problem instances (e.g., Lipschitz constants or lower curvature parameters for the objective and constraints functions) and hence are easy to run. We will also present numerical results demonstrating the significantly superior performance of adaptive methods compared to its non-adaptive versions. (joint work with William Kong and Arnesh Sujanani).

Victor Perez Abreu

Random matrix theory and relationships with some interests from the 75 years of the STOR community

We will take a tour of some pioneering breakthroughs in the theory of random matrices and point out connections to some areas of interest of the STOR community at some point in its 75 years, such as statistical communication theory, extreme values, stochastic simulation, and complex data, among others.

Shane Henderson

Stochastic Modeling: Some STORies

I'll present two war stories and, if time, describe some current work from my own experience, emphasizing themes and principles embodied by the stochastic modeling faculty in STOR at UNC. The first war story involves a court case on ambulance deployment. The second war story involves our (mostly) successful efforts to keep Cornell open for in-person instruction throughout the COVID 19 epidemic. The current work involves the design of volunteer schemes to decrease response times to the most urgent calls for medical assistance.

This is joint work with too many co-authors to list here.

Spotlight Talk Titles

Gabor Pataki (UNC Chapel Hill)

How do exponential size solutions arise in Semidefinite Programming?

Mohammad R. Jahan-Parvar (Federal Reserve)

Bayesian trend-cycle decomposition and forecasting

Daniel Kessler (University of Michigan)

Matrix-Variate Canonical Correlation Analysis

Bala Krishnamoorthy (Washington State University)

Median Shapes and Linear Programming

Ankur Patel (John Hopkins University)

Comparison of neural networks and traditional regression methods for estimating kidney function in children with chronic kidney disease

Xingye Qiao (Binghamton University)

On Set-valued Classification

Yuying Xie (Michigan State University)

Foundation Models in Single-cell Data Analyses: Challenges and Opportunities

Lingsong Zhang (Purdue University)

Some thoughts on precision medicine and causality

STOR Fest

75th anniversary of Statistics

50th anniversary of Operations Research

20th anniversary of STOR

Department of Statistics and Operations Research

University of North Carolina at Chapel Hill

Chapel Hill, NC

Designed by

Wan Zhang • Kai Zhang