

Machine learning meets statistics

Guiding medicine into the future

Monday 25 – Tuesday 26 March 2019
Clifford Allbutt Lecture Theatre, Cambridge, UK

Agenda

Day 1 (Monday 25 March)

Time	Title	Speaker
9.15 – 9.45	<i>Registration & Refreshments</i>	
9.45 – 10.00	Welcome and Introduction	Sylvia Richardson (MRC Biostatistics Unit) & Mihaela van der Schaar (University of Cambridge)
10.00 – 11.00	<p>Keynote: "Robust machine learning for causal inference in health care"</p> <p>Chair: Sylvia Richardson (MRC Biostatistics Unit)</p>	David Sontag (MIT Computer Science and Artificial Intelligence Laboratory, and Institute for Medical Engineering and Science, USA)
11.00 – 11.30	<i>Refreshments</i>	
11.30 – 12.45	<p>"Ambient Intelligence in AI-Assisted Hospitals"</p> <p>"Learning the molecular determinants of human disease trajectories"</p> <p>Chair: Frank Bretz (Novartis, Basel)</p>	<p>Serena Yeung (Harvard University)</p> <p>Chris Yau (University of Birmingham)</p>
12.45 – 13.45	<i>Lunch</i>	
13.45 – 15.00	<p>"Learning from our clinical data"</p> <p>"Human In Silico Clinical Trials in Cardiology and Pharmacology"</p> <p>Chair: Sofia Villar (MRC Biostatistics Unit)</p>	<p>Frank Bretz, Mark Baillie & David Ohlssen (Novartis)</p> <p>Blanca Rodriguez (University of Oxford)</p>

15.00 – 15.30	<i>Refreshments</i>	
15.30 – 16.45	<p>“Data-driven disease progression modelling with subtype and stage inference (SuStaln)”</p> <p>“Cardiovascular risk prediction using big data: A statistician’s perspective”</p> <p>Chair: Chris Yau (University of Birmingham)</p>	<p>Daniel Alexander (University College London)</p> <p>Jessica Barrett (MRC Biostatistics Unit)</p>
17.30 – 20.00	<p>Networking and Abstract Competition, with refreshments</p> <p>Taking place at the seminar rooms at MRC Biostatistics Unit (5 minute walk from Clifford Allbutt Lecture Theatre)</p>	

Day 2 (Tuesday 26 March)

Time	Title	Speaker
9.00 – 9.30	<i>Arrival & Refreshments</i>	
9.30 – 10.45	<p>“Multi-Task Time Series Analysis applied to Drug Response Modelling”</p> <p>“Where multi-armed bandit models meet response-adaptive randomisation for clinical trials”</p> <p>Chair: Daniel Alexander (University College London)</p>	<p>Chris Williams (University of Edinburgh)</p> <p>Sofia Villar (MRC Biostatistics Unit)</p>
10.45 – 11.15	<i>Refreshments</i>	
11.15 – 12.15	<p>Keynote: “Deep Reinforcement Learning: Challenges and Successes”</p> <p>Chair: Mihaela van der Schaar (University of Cambridge)</p>	<p>Oriol Vinyals (Google DeepMind)</p>
12.15 – 13.30	<i>Lunch</i>	
13.30 – 14.45	<p>“Low-priced Lunch in Conditional Independence Testing”</p> <p>“Unsupervised learning in high dimensions via adaptive projections”</p> <p>Chair: Chris Holmes (University of Oxford)</p>	<p>Rajen Shah (University of Cambridge)</p> <p>Sach Mukherjee (DZNE, Bonn)</p>
14.45 – 15.15	Closing Remarks & Abstract Competition Winners announced	Chris Holmes (University of Oxford)

This workshop is jointly organised by **The Alan Turing Institute** and **MRC Biostatistics Unit, University of Cambridge**

Lead Organisers:

- **Professor Sylvia Richardson** (Director, MRC Biostatistics Unit, University of Cambridge and Fellow of The Alan Turing Institute)
- **Professor Mihaela van der Schaar** (John Humphrey Plummer Professor of Machine Learning, Artificial Intelligence and Medicine, University of Cambridge and Fellow of The Alan Turing Institute)

