

Mathematics of Neural Networks and Deep Learning		
Keynote speaker:	Gitta Kutyniok Technical University of Berlin	The Mathematics of Deep Learning: Can we Open the Black Box of Deep Neural Networks?
Session Chair:	Margaret Duff, Bath	
Session speakers:	Barbara Mahler, Oxford Patrick Kidger, Oxford Haoran Ni , Warwick	Contagion Maps for Manifold Learning Universal Approximation - Transposed! Numerical Estimation of Information Measures

Optimisation		
Keynote speaker:	Peter Richtarik KAUST	On Second Order Methods and Randomness
Session Chair:	Simon Vary, Oxford	
Session speakers:	Louis Sharrock, Imperial Nash Treetanhi, Oxford Florentin Goyens, Oxford Vadim Platonov, Edinburgh	Two-Timescale Stochastic Approximation in Continuous Time with Applications to Joint Online Parameter Estimation and Optimal Sensor Placement Uncertainty aversion in Multi-armed bandit problem Nonlinear matrix recovery Forward utilities and Mean-field games under relative performance concerns

Applications of machine learning in life sciences		
Keynote speaker:	Carola Schönlieb University of Cambridge	Hybrid mathematical and machine learning methods for solving inverse imaging problems - getting the best from both worlds
Session Chair:	Connah Johnson, Warwick	
Session speakers:	Tamara Grossman, Cambridge Melanie Beckerleg, Oxford Lancelot Da-Costa, Imperial Laura Guzmán Rincón, Warwick	Deeply Learned Spectral Total Variation Decomposition Binary Matrix Completion for Recommender Systems, with applications to Drug Discovery A global brain theory, stochastic thermodynamics and applications to autonomous behaviour Outbreak detection using Bayesian hierarchical modelling and Gaussian random fields

Bayesian methods		
Keynote speaker:	Alexandre Bouchard-Côté University of British Columbia	Scalable approximation of integrals using non-reversible methods
Session Chair:	Torben Sell, Cambridge	
Session speakers:	Dimitra Eleftheriou, Glasgow Henry Moss, Lancaster Sam Power, Cambridge Riccardo Barbano, UCL	Multilevel Adaptive Modelling of biomarkers for doping detection and prostate cancer diagnosis BOSH: Bayesian Optimisation Sampled Hierarchically Accelerated Sampling on Discrete Spaces with Non-Reversible Markov Processes Quantifying Model-Uncertainty in Inverse Problems via Bayesian Deep Gradient Descent