

**Title:** Bayesian Optimisation and Applications

**Speaker:** Sunil Gupta (Associate Professor, Deakin University)

**Abstract:**

Bayesian optimisation is a sample-efficient method for optimising expensive black-box functions. It models a black-box function using a Bayesian model (e.g. a Gaussian process) and uses the model estimated uncertainties about the function values to suggest the next function evaluation. This approach is closely related to well-established reinforcement learning paradigm for sequential decision-making such as multi-arm bandits, Markov decision processes, etc. In this talk, I will give an introduction to Bayesian optimisation and then talk about its applications to both machine learning hyperparameter tuning and other real-world applications such as alloy design, short polymer fiber design etc. If time permits, I will briefly touch upon some of our latest theoretical machine learning contributions published in premier venues - ICML, NIPS, AISTATS etc.

**Bio:**

Prof. Gupta is currently an associate professor in artificial intelligence at Applied Artificial Intelligence Institute (A2I2), Deakin University, Australia. He completed his Masters from Indian Institute of Science, Bangalore and then his PhD from Curtin University, Australia. Prior to these, he has worked at LRDE, Bangalore (DRDO) as a scientist for research projects relating Radar development. His current research relates to the broad areas of machine learning including matrix factorisation, subspace learning, Bayesian models, mathematical optimisation and supervised learning. He has published more than 100 papers in various journals and conferences, including premier venues such as ICML, NIPS, AISTATS, AAAI, IJCAI, KDD, ICDM, Nature Digital Medicine, Nature SciRep, British Medical Journal, PLOS One. More information can be found at <https://personal-sites.deakin.edu.au/~sunil/>