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*When Online Learning Meets Stochastic Calculus*

Online learning is a theoretical framework for learning and optimization without statistical assumptions on the data. Optimization methods developed in this setting are usually robust and have formal notions of worst-case or adaptive performance. A recent line of work has looked at online learning through the lens of differential equations and continuous-time analysis. This viewpoint has yielded new understanding of classical results, and has also led to new optimal results for several problems. In this talk I will discuss a few uses of stochastic calculus in the design and analysis of online learning methods, focusing on the classical problem of prediction with experts' advice.

Joint work with Chris Liaw (Google Research), Sikander Randhawa (UBC) and Victor Sanches Portella (University of São Paulo).