CRUNCH Seminars at Brown, Division of Applied Mathematics

Friday – September 6, 2019

A new generation of PINN: Systems Biology Informed Deep Learning: Inferring Hidden Dynamics and Parameters

Alireza Yazdani

"We have developed a novel systems-biology-informed deep learning algorithm that incorporates the system of ordinary differential equations into the neural networks. Enforcing these equations effectively adds constraints to the optimization procedure that manifests itself as an imposed structure on the observational data. Using few scattered and noisy measurements, we are able to infer the dynamics of unobserved species, systematic forcing and the unknown model parameters. We have successfully tested the algorithm for three different benchmark problems."