CRUNCH Seminars at Brown, Division of Applied Mathematics

Friday - September 11, 2020

The effectiveness of PINNs for solving inverse heat transfer problems

VIVEK OOMMEN

In this talk, we would like to demonstrate the effectiveness of PINNs in solving inverse heat transfer problems. To justify its effectiveness, we compare the time taken by PINNs to solve the entire problem, with the time taken by COMSOL Multiphysics Software (a FEM software) to solve the forward problem once. Steady and unsteady problems governed by both linear and nonlinear PDEs have been chosen as the test cases, to check if PINNs can handle a variety of problems often encountered in the field of heat transfer. Finally, we would also like to mention a specific type of PINN architecture that works very well for PDEs that are highly nonlinear.