

CRUNCH Seminars at Brown, Division of Applied Mathematics

Friday - July 24, 2020

Error estimates for PINNs

Siddhartha Mishra, ETH Zurich, Switzerland

We present estimates on the generalization error for Physics informed neural networks (PINNs) in approximating forward problems and Data assimilation inverse problems for PDEs. The estimates bound the generalization (approximation) error in terms of the training error and the number of training points. The estimates are derived for an abstract formulation, based on stability estimates for the underlying PDEs and are applied to several examples of linear and non-linear PDEs.