

Emergent Research:

The PIMS Postdoctoral Fellow Seminar



March 15, 2023 | 9:30am Pacific

The Bootstrap

Learning Algorithm

ABSTRACT:

Constructing and training the neural network depends on various types of Stochastic Gradient Descent (SGD) methods, with adaptations that help with convergence by boosting the speed of the gradient search. Convergence for existing algorithms requires a large number of observations to achieve high accuracy with certain classes of functions.

We work with a different, non-curve-tracking technique with the potential of achieving better speeds of convergence. In this talk, the new idea of 'decoupling' hidden layers by bootstrapping and using linear stochastic approximation is introduced. By utilizing resampled observations, the convergence of this process is quick and requires a lower number of data points. This proposed bootstrap learning algorithm can deliver quick and accurate estimates. This boost in speed allows the approximation of classes of functions within a fraction of the observations required with traditional neural network training methods.

For more information and registration:

<https://www.pims.math.ca/seminars/PIMSPDF>



Jyoti Bhadana

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SPEAKER BIO:

Jyoti Bhadana's primary research interest is in Stochastic Dynamics and Mathematical Modeling. She completed her Ph.D. in Complex Systems from Jawaharlal Nehru University (JNU), New Delhi, India. She gained experience in computational and mathematical techniques during her Ph.D. and has applied those techniques in biology and other systems. This integrated knowledge of interdisciplinary topics has given her the proper perspective to think, study and analyze complex systems. Currently, Jyoti is working as a PIMS Postdoctoral Fellow with Prof. MA Kouritzin, Department of Mathematics and Statistical Sciences, University of Alberta, where she is exploring filtering theory and deep neural network learning.

ABOUT PIMS PDF SEMINARS:

PIMS ongoing lecture series featuring our Postdoctoral Fellows every three weeks. You will have the opportunity to connect with emerging research in the mathematical sciences from a PIMS Postdoctoral Fellow. PIMS PDFs are amongst the top young researchers in Canada, and this is an excellent opportunity to learn about them, and their work.