

THE DEPARTMENT OF MATHEMATICAL SCIENCES

Purdue University Fort Wayne

is pleased to present

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**Machine Learning Methods
Applied to the Medical Sciences**

Abstract

In this lecture, we will discuss some supervised learning techniques and their applications to concrete medical problems. We first describe linear regression and logistic regression and their use and misuse in a celebrated and debated observational study, the “Intersalt study”. We later introduce neural networks (NN) as universal approximators and discuss the basic ingredients of their architectures. We briefly comment on some popular designs of NNs, such as Fully Connected NNs (FCNs), Convolutional NNs (CNNs), and Generative Adversarial Networks (GANs). If time permits we will discuss an application of these deep learning methods to the problem of brain imaging synthesis (in particular MRI to CT synthesis) which is having a big impact in radiotherapy treatment planning. The area is full of nice problems on which both graduate and undergraduate students can enjoy working. An introductory knowledge of calculus is more than enough to follow the talk.

Noon – 1:00, Tuesday, Nov. 20, 2018. Location: Kettler 218

<http://www.pfw.edu/departments/coas/depts/math/news/seminars.html>