

TITLE: Topics in Machine Learning - an Introduction

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ABSTRACT: In this talk I will introduce Machine Learning from the perspective of my own research. This includes several completed dissertations and ongoing graduate research.

Machine Learning and Mathematics are increasingly focused on problems involving large quantities of data ("Big Data"). Their solution is coupled with high impact on the society, such as providing better medical care, automation of task such as driving or distribution of goods, saving natural resources, etc.

In this talk I will introduce some examples of data and the questions we would like to answer with Machine Learning.

One traditional problem in Artificial Intelligence is that Optical Character Recognition (OCR). The goal is to retrieve text from images (scans or photographs). We study two flavors of this problem posed by text in Traditional Chinese and Pashto.

Another problem I will introduce is that of classification of images and image segmentation. The data presented will be X-ray images of the spinal chord in scoliosis patients.

In this talk I will give a brief overview of the methods used, with further details left for the second RTG talk.