

Department of Mathematics and Computer Science

Friday, November 20, 2020, 4:00 pm

COLLOQUIUM TALK

Speaker: Chad Kelterborn (UNC Chapel Hill)

Zoom Meeting

Machine Learning: How to train programs to recognize data?

Abstract:

Machine learning has in the past ten years experienced a tremendous growth in applications. From optimal path planning and navigation in driverless vehicles to facial recognition technology to medical diagnostics to voice-to-text speech recognition, there are numerous applications of machine learning in our everyday life. How does machine learning work? By machine learning we mean create a function that fits a collection of data well. We are interested in a specific type of function, called a neural network, built out of matrix multiplications. In this talk, we will describe how neural networks work. We will also show how our gradient descent algorithm applies to neural networks and compare it to other algorithms. A lot of the methods for constructing neural networks relies on trial and error. We will discuss some open questions that will need to be answered to improve our theoretical understanding of machine learning. This talk is based on joint work with Bogdan Petrenko (Eastern Illinois University) and Marcin Mazur (Binghamton University).

This talk is intended for a general audience.