



The Math/Stats Colloquium
Department of Mathematics and Statistics
San José State University



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BYU

Teaching a computer to solve problems: Root finding, optimization, and machine learning
SEP 16, 2020, VIA ZOOM

Abstract: Most of the amazing machine learning and AI applications making headlines these days boil down to solving an optimization problem, that is, finding min/max of a function. Calculus teaches you to optimize by finding all points where the derivative is zero. For most of my life I thought that finding where functions (or derivatives) are zero would be easy to do on a computer, but it turns out that it can be really hard, which is part of why it takes so much computing power to train a neural network to write poetry or drive a car. I'll talk about some applications, challenges, and progress on these problems.

Background: One semester linear algebra.

About the speaker: Tyler Jarvis is a recipient of the Haimo Award for Distinguished University Teaching, awarded nationally by the MAA. He is also the director and co-founder of the BYU Applied and Computational Mathematics Emphasis and a coauthor of the textbook *Algorithms, Approximation, Optimization* (SIAM). His current research is in machine learning and numerical algebraic geometry.

COLLOQUIUM BROADCAST VIA ZOOM, 3PM PACIFIC/6PM EASTERN
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For our full schedule, see: <http://www.timhsu.net/colloq/>