

MINDS, TECHNOLOGY, AND SOCIETY

Seminar Series

UC MERCED, Spring 2018

Jeff Clune

“AI Neuroscience: How much do deep neural networks understand about the images they classify? & Robots that can adapt like animals”

Abstract: A talk in two parts. The first part of the talk describes our sustained effort to study how much deep neural networks know about the images they classify. Our team initially showed that deep neural networks are “easily fooled,” meaning they will declare with near certainty that completely unrecognizable images are everyday objects, such as guitars and starfish. These results suggested that deep neural networks (DNNs) do not truly understand the objects they classify, but instead latch onto a few discriminative features per class. However, our subsequent results reveal that DNNs actually have a surprisingly deep understanding of objects. These new techniques can also be applied to hidden units in the network, enabling us to study the features that each neuron has learned within a network. Our Plug & Play Generative Networks also generate diverse, high-resolution, realistic images, and are thus a state-of-the-art generative model. The second part of the talk describes our Nature paper on learning algorithms that enable robots, after being damaged, to adapt in 1-2 minutes and soldier on with their mission.

Jeff Clune is the Loy and Edith Harris Associate Professor in Computer Science at the University of Wyoming and a Senior Research Scientist and founding member of Uber AI Labs. He focuses on robotics and neural networks, either via deep learning or evolutionary algorithms. He has also researched open questions in evolutionary biology using computational models of evolution, including the evolutionary origins of modularity, hierarchy, and evolvability. Prior to becoming a professor, he was a Research Scientist at Cornell University, received a PhD in computer science and an MA in philosophy from Michigan State University, and received a BA in philosophy from the University of Michigan.



**Monday,
April 16, 2018**

3:30 PM

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Please contact Jeff Yoshimi (jyoshimi@ucmerced.edu) for more information.