CSDS 500 and ECSE 500
Fall 2020 Colloquium

11:30AM to 12:30PM
Tuesday, September 8, 2020

Zoom Webinar ID: 862 815 806
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Sensory and Perceptual Computation

Does perception in biology follow computational principles? To take two extremes, one view says that perception is nothing more than a bag of clever tricks, because evolution cannot step back and design an optimal system from scratch like an engineer would. The other view says that biology is optimal for reasons of selective pressure: biological systems will have adapted to the optima determined by the underlying limits of information processing. As an example, consider the problem of transforming the vibrations at the eardrum, through the cochlea, to a neural code at the auditory nerve. Out of the infinite range of possible codes, why do biological systems use the codes they do? Are there theories that can explain the auditory code? Or are animals stuck with something sub-optimal due to limitations of their hardware? In this talk, I will show how simple computational principles can explain how both auditory and visual neural codes are optimally adapted to their sensory environment. Furthermore, it is possible to extend these theories to provide functional theories for higher-level aspects of perception.

Michael Lewicki, CWRU

Prof. Lewicki received his B.S. from Carnegie Mellon University and his Ph.D. from the California Institute of Technology. He did post doctoral studies at the Salk Institute. He was previously an Associate Professor with tenure in the Computer Science Department and Center for the Neural Basis of Cognition at Carnegie Mellon University. Prior to his current appointment at CWRU, he was a fellow at the Institute for Advanced Study in Berlin, Germany. His research focuses on understanding neural information processing and computational principles in sensory coding, perception, and scene analysis.

This is to certify that _____attended this seminar. Certified by _____.
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