COLLOQUIUM AND MATHEMATICAL BIOLOGY SEMINAR

FRIDAY, FEBRUARY 4, 12:00 – 1:00 PM

WXLR A309

Brain evolution as a machine learning problem

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We have entered a golden age of artificial intelligence research, driven mainly by the advances in ANNs over the last decade or so. Applications of these techniques—to machine vision, speech recognition, autonomous vehicles, machine translation and many other domains—are coming so quickly that many observers predict that the long-elusive goal of "Artificial General Intelligence" (AGI) is within our grasp. However, we still cannot build a machine capable of building a nest, stalking prey, or loading a dishwasher. I will describe several projects, ranging from theories of evolution of neural development to the perception of smells, in which we are attempting to understand the algorithms that the nervous system is using to solve some of these challenging problems.

DR. ALEXEI KOULAKOV IS THE CHARLES ROBERTSON PROFESSOR OF NEUROSCIENCE AT THE COLD SPRING HARBOR LABORATORY. HIS GROUP APPLIES METHODS FROM MATHEMATICS AND THEORETICAL PHYSICS TO UNDERSTAND THE BRAIN. THEY ARE GENERATING NOVEL IDEAS ABOUT NEURAL COMPUTATION AND BRAIN DEVELOPMENT, INCLUDING HOW NEURONS PROCESS INFORMATION, HOW BRAIN NETWORKS ASSEMBLE DURING DEVELOPMENT, AND HOW BRAIN ARCHITECTURE EVOLVED TO FACILITATE ITS FUNCTION.

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