



DEPARTMENT OF COMPUTER SCIENCE AND AUTOMATION INDIAN INSTITUTE OF SCIENCE BANGALORE

Lectures on Brain and Computation

Prof. Christos Papadimitriou

Despite a deluge of exciting results in experimental and theoretical neuroscience over the past decades, some of the top researchers in the area agree that progress has been slow on the field's overarching question: How does the Brain (molecules, neurons, synapses) give rise to the Mind (cognition, behavior, learning, thought)? This is arguably one of the hardest and most fundamental challenges in science today. Many expect that computation will be an important workhorse, conceptual framework, and metaphor of this epic interdisciplinary scientific effort. On another front, advances in machine learning have often been inspired by the Brain, albeit in a pointedly tentative way.

The purpose of this series of **three lectures** is to give the participants some of the necessary background for appreciating this fascinating interface between computation and neuroscience, and for making progress in it.

Prof. Christos Papadimitriou, Pratiksha Visiting Chair Professor at IISc



Christos H. Papadimitriou is the Donoval Family Professor of Computer Science at Columbia University. Before joining Columbia this year, he taught at Harvard, MIT, NTU Athens, Stanford, UCSD, and at Berkeley since 1995. He has written many books and articles on the theory of algorithms and complexity, and its applications to optimization, databases, control, AI, robotics, economics and game theory, the Internet, evolution, and the brain. He holds a Phd from Princeton, and honorary doctorates from nine universities. He is a member of the National Academy of Sciences of the US, the American Academy of Arts and Sciences, and the National Academy of Engineering, and is a recipient of the Knuth prize, the Gödel prize, the Kalai prize for CS in Game Theory, the EATCS award, and the von Neumann medal. He has also written three novels: "Turing," " Logicomix," and his latest "Independence" (2017).

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