



The Institute for Neural Computation

ROCKWOOD MEMORIAL LECTURE



RODNEY DOUGLAS

Director and Professor, Institute of Neuroinformatics
Swiss Federal Institute of Technology (ETH)
and University of Zurich

Constructive Cortical Computation

There is today a widespread belief that the brain can be reverse-engineered by an exhaustive reductionistic program such as connectomics: Once the neurons and their connections are fully described, knowledge of function will follow directly. Over the past two decades the Institute of Neuroinformatics has contributed to that philosophy by characterizing the connectivity of visual neocortex; by proposing how the recurrent circuits of the superficial layers could implement rich computational primitives; and by engineering neuromorphic electronic systems that emulate those circuits. But these research programs stumble on the crucial questions of how the cortical circuits are intelligently constructed and configured. So, in recent years we have begun exploring a synthetic approach to these questions by simulating the methods of self-construction used by Biology to evoke the cortical circuits from only a few precursor cells. The notion is that the organization and function of neuronal circuits may be better and more efficiently understood in terms of the dynamics of their unfolding developmental process than by measuring their adult connection matrix or 'connectome'. This talk will describe steps in that direction of research.

Please join us:

Monday, April 4th, 2011

4:30PM

San Diego Supercomputer Center Auditorium, Room B211E

Host: Gert Cauwenberghs

The Rockwood Memorial Lectures are endowed by Mr. and Mrs. Jerome Rockwood in memory of their late son, Paul, who received a B.S. in Computer Science from UCSD in 1980 and then obtained a second degree B.A. in Psychology in 1981. In 1983 he started a company, Integral Solutions, to develop a universal language translation, but died tragically in a mountaineering accident before he could fulfill his promise.

<http://inc.ucsd.edu/>