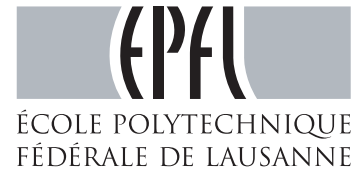

IPCAT2003

Fifth International Workshop on Information Processing in Cells and Tissues
September 8 – 11, 2003
Swiss Federal Institute of Technology, Lausanne, Switzerland
<http://lslwww.epfl.ch/ipcat2003>



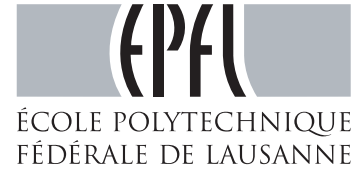
Program

Monday, September 8, 2003

- 0830 - 0930 Registration, EL A
- 0930 - 0945 Welcome, *Patrick Aebischer*, President of the EPFL
- 0945 - 1005 Information, *Christof Teuscher*, EPFL
Introduction, *Daniel Mange*, EPFL
- 1005 - 1035 **Invited Talk**
Moshe Sipper, Ben-Gurion University, Israel
Machine Nature: The Coming Age of Bio-Inspired Computing
- 1035 - 1100 Coffee, EL A
- 1100 - 1200 **NEURAL MODELS AND SYSTEMS I:** (Chair: Carlos-Andrés Peña-Reyes)
DaeEun Kim
A Spiking Neuron Model for Synchronous Flashing of Fireflies
- Jianfeng Feng*
Neuronal Models With Masked Signal Inputs
- Kazuhisa Fujita, Yoshiki Kashimori, Meihong Zheng, Takeshi Kambara*
A role of burst firings in encoding of spatiotemporal-varying stimulus
- 1200 - 1400 Lunch, Le Parmentier
- 1400 - 1500 **MODELLING I:** (Chair: Gianluca Tempesti)
D. C. Walker, J. Southgate, G. Hill, M. Holcombe, D. R. Hose, S. M. Wood, S. Mac Neil, R. H. Smallwood
The Epitheliome: Agent Based Modelling of the Social Behavior of Cells
- Duncan Jackson, Mike Holcombe, Francis Ratnieks*
Coupled computational simulation and empirical research into the foraging system of *Monomorium pharaonis*
- C. Ruggiero, S. Benvenuti, S. Borch, M. Giacomini*
Mathematical model of retinal mosaic formation
- 1500 - 1530 Coffee, EL A
- 1530 - 1630 **NEURAL MODELS AND SYSTEMS II:** (Chair: Olivier Michel)
Nobuyuki Suzuki, Nobuhiro Hashimoto, Yoshiki Kashimori, MeiHong Zheng, Takeshi Kambara
A neural model of predictive recognition in form pathway of visual cortex
- Margarita Kuzmina, Eduard Manykin, Irina Surina*
Oscillatory Network with Self-Organized Dynamical Connections for Synchronization-Based Image Segmentation
- Eigo Kamata, Satoru Inoue, MeiHong Zheng, Yoshiki Kashimori, Takeshi Kambara*
A neural mechanism for detecting the distance of a selected target by modulating the FM sweep rate of biosonar in echolocation of bat
- 1645 Inaugural reception, EL A

IPCAT2003

Fifth International Workshop on Information Processing in Cells and Tissues
September 8 – 11, 2003
Swiss Federal Institute of Technology, Lausanne, Switzerland
<http://lslwww.epfl.ch/ipcat2003>



Tuesday, September 9, 2003

- 0945 - 1030 **Invited Talk**
Dario Floreano, EPFL
Co-evolution of active vision and feature selection in natural and artificial behavioral systems
- 1030 - 1100 Coffee, EL A
- 1100 - 1200 **MODELLING II:** (Chair: Mike Holcombe)
Richard Gregory, Ray Paton, Jon Saunders, Q. Henry Wu
Parallising a model of bacterial interaction and evolution
- A. Takamatsu, T. Yamamoto, T. Fujii*
Spontaneous Switching of Frequency-locking by Periodic Stimulus in Oscillators of Plasmodium of the True Slime Mold
- Deborah K Dunn-Walters, Hanna Edelman, Ramit Mehr*
Immune System Learning and Memory Quantified by Graphical Analysis of B-Lymphocyte Phylogenetic Trees
- 1200 - 1400 Lunch, Le Parmentier
- 1400 - 1500 **HARDWARE:** (Chair: Eduardo Sanchez)
Yann Thoma, Gianluca Tempesti, Eduardo Sanchez, Juan-Manuel Moreno Arostegui
POEtic: An electronic Tissue for Bio-Inspired Cellular Applications
- Oriol Torres, Jan Eriksson, Juan Manuel Moreno, Alessandro Villa*
Hardware Optimization and Serial Implementation of a Novel Spiking Neuron Model for the POEtic Tissue
- 1500 - 1530 Coffee, EL A
- 1530 - 1600 **NEURAL MODELS AND SYSTEMS III:** (Chair: Christoph Schmid)
Folgheraiter Michele, Gini Giuseppina
Human-Like Reflex Control for an Artificial Hand
- Brigitte Galliot, Dominique Gauchat, Marijana Miljkovic-Licina*
Expression of evolutionarily-conserved regulatory genes in a first-evolved nervous system, the hydra nervous system
- 1930 Conference Dinner

IPCAT2003

Fifth International Workshop on Information Processing in Cells and Tissues
September 8 – 11, 2003
Swiss Federal Institute of Technology, Lausanne, Switzerland
<http://lslwww.epfl.ch/ipcat2003>

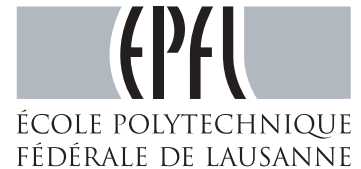


Wednesday, September 10, 2003

- 0945 – 1030 **Invited Talk**
Henry Markram, EPFL
Neural chips
- 1030 – 1100 Coffee, EL A
- 1100 – 1200 **ARTIFICIAL CELLS:** (Chair: Moshe Sipper)
Daniel Mange, Andre Stauffer, Enrico Petraglio, Gianluca Tempesti
Artificial Cell Division
- I. Ardelean, M. Gheorghe, C. Martin-Vide, V. Mitrana*
A Computational Model for Cell Differentiation
- Mathieu S. Capcarrere*
An evolving ontogenetic cellular system for better adaptiveness
- 1200 – 1400 Lunch, Le Parmentier
- 1400 – 1500 **GENETIC MODELS AND PROGRAMMING:** (Chair: André Stauffer)
Assaf Zariwsky, Moshe Sipper
Coevolving Solutions to the Shortest Common Superstring Problem
- Roger Eriksson, Bjorn Olsson*
Adapting Genetic Regulatory Models by Genetic Programming
- Michael A. Lones, Andy M. Tyrrell*
Modelling biological evolvability: implicit context and variation filtering in enzyme genetic programming
- 1500 – 1530 Coffee, EL A
- 1530 – 1630 **GENES AND GENETIC MODELS:** (Chair: Christoph Schmid)
James Watson, Nicholas Geard, Janet Wiles
Towards more biological mutation operators in gene regulation studies
- Elebeoba E. May, Mladen A. Vouk, Donald L. Bitzer, David I. Rosnick*
Coding Theory Based Models for Protein Translation Initiation in Prokaryotic Organisms
- Wolfram Liebermeister, Edda Klipp, Stefan Schuster, Reinhart Heinrich*
A theory of optimal differential gene expression

IPCAT2003

Fifth International Workshop on Information Processing in Cells and Tissues
September 8 – 11, 2003
Swiss Federal Institute of Technology, Lausanne, Switzerland
<http://lslwww.epfl.ch/ipcat2003>



Thursday, September 11, 2003

- 0945 – 1030 **Invited Talk**
Marcello Barbieri, University of Ferrara, Italy
The definitions of information and meaning: Two possible boundaries between physics and biology
- 1030 - 1100 Coffee, EL A
- 1100 - 1200 **COMPUTATION AND INFORMATION:** (Chair: Mathieu Capcarrère)
- Gerard Battail*
An engineer's view on genetic information and biological evolution
- Peter J. Bentley*
Evolving Beyond Perfection: An Investigation of the Effects of Long-Term Evolution on Fractal Gene Regulatory Networks
- M. Sakthi Balan, Kamala Krithivasan*
Parallel Computation of Simple Arithmetic using Peptide-Antibody Interactions
- 1200 - 1215 Concluding remarks
- 1200 - 1400 Lunch, Le Parmentier