

incf | Neuro Informatics 2013

August 27 - 29
Stockholm, Sweden



Artwork by Nina Johansson | ninajohansson.se

Nina Johansson 2013

PROGRAM BOOK



The International Neuroinformatics Coordinating Facility (INCF), together with its 17 member countries, coordinates collaborative informatics infrastructure for neuroscience and manages scientific programs to develop standards for data sharing, analysis, modeling, and simulation in order to catalyze insights into brain function in health and disease. INCF is an international organization launched in 2005, following a proposal from the Global Science Forum of the OECD to establish international coordination and collaborative informatics infrastructure for neuroscience. INCF is hosted by Karolinska Institutet and the Royal Institute of Technology, and the Secretariat is located on the Karolinska Institute Campus in Solna. INCF currently has 17 member countries across North America, Europe, Australia, and Asia. Each member country establishes an INCF National Node to further the development of Neuroinformatics and to interface with the INCF Secretariat. The mission of INCF is to share and integrate neuroscience data and knowledge worldwide, with the aim to catalyze insights into brain function in health and disease.

To fulfill this mission, INCF establishes and operates scientific programs to develop standards for neuroscience data sharing, analysis, modeling, and simulation. Currently there are 4 program areas: Digital Brain Atlasing, Ontologies for Neural Structures, Multi-scale modeling, and Standards for Data Sharing. More than 180 leading international researchers are involved in the programs. A cloud-based data federation - the INCF Dataspace - has been developed to enable collaboration between researchers through the sharing of neuroscience data, text, images, sounds, movies, models, and simulations.

Learn more: incf.org
software.incf.org
neuroinformatics2013.org

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Victoria, Australia

*as of August 2013

Welcome to the 6th INCF Congress in Stockholm, Sweden!

The 6th Neuroinformatics Congress returns to where the congress started: Stockholm, the lively capital of Sweden, and site of the INCF secretariat. We expect many attendees, attracted by our exciting congress program and by Stockholm as a nice summer destination.

Neuroinformatics 2013 is organized by the INCF together with the Swedish INCF Node. Overall the program structure is similar to previous years, mostly single track with 6 Keynotes, 4 Workshops, and 2 Poster and Demo Sessions; this year, we have introduced more contributed program content. For the first time, there will be an Oral Presentations Session for which 10 submitted abstracts were selected by the Program Committee out of 39 abstracts that requested an oral presentation. This session will bring you the newest science, and it nicely presents the wide range of research topics that are of interest to neuroinformaticians. Like last year, we also have two concurrent Workshops that were selected among submitted proposals.

Content-wise we have an increased focus on clinical neuroinformatics, an important growth area for INCF and the community, and we end the congress with a Special Session on Large-Scale Brain Initiatives that will present Mindscope, BRAIN and the Human Brain Project. To broaden the scope of the congress, the program committee invited several Keynotes speakers who are not traditionally part of the neuroinformatics community to talk about highly relevant work in related fields.

So while the Stockholm location may seem familiar to regular congress attendees, they will notice that this year's program covers a wider range of neuroinformatics research and applications.

Erik De Schutter

*Okinawa Institute of Science and Technology
INCF 2013 Program Committee Chair*

Organizers

Program Committee

Erik De Schutter, (Chair) *Okinawa Institute of Science and Technology*
Albert Cardona, *Howard Hughes Medical Institute, Janelia Farm*
Sonja Grün, *Forschungszentrum Jülich*
Magali Haas, *One Mind for Research*
Soo Young Lee, *Brain Research Center, KAIST*
Thomas Nichols, *University of Warwick*
Jessica Turner, *Mind Research Network*
Mathew Abrams (secretary), *INCF Secretariat*

Local Organizing Committee

Anders Lansner (Chair), *Royal Institute of Technology*
Sten Grillner, *Karolinska Institute*
Jeanette Hellgren Katoleski, *Karolinska Institute/Royal Institute of Technology*
INCF Secretariat



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Congress Program at a glance

Tuesday, Aug 27th

- 08:30 Opening statement
- 08:40 Welcome from the INCF Director
- 09:00 Keynote:
Sophia Ananiadou
- 09:50 **Coffee break**
- 10:20 Workshop 1:
*Analysis and interpretation of
massively parallel electrophysical
data*
Chair:
Sonja Grün
Speakers:
**Nicholas Hatsopoulos, Robert
E. Kass, Jonathan Pillow,
Matteo Carandini**
- 12:10 **Lunch**
- 13:00 Poster and demo session 1
- 15:30 **Coffee served**
- 16:00 Keynote:
Hiroki R. Ueda
- 16:50 Presentation by
Huron Technologies
- 17:00 Keynote:
Randal Burns
- 17:50 Presentation by
Frontiers
- 18:00 End
- 19:00 **Welcome reception at
Stockholm City Hall**

Wednesday, Aug 28th

- 09:00 Keynote:
Apostolos P. Georgopoulos
- 09:50 **Coffee break**
- 10:20 Workshop 2:
*The informatics underlying
meta-analysis and
reproducibility in neuroimaging*
Chair:
Jessica Turner
Speakers:
**Satrajit Ghosh, Tal Yarkoni,
Gully Burns, Angie Laird**
- 12:10 **Lunch**
- 13:00 Keynote:
Barbara Franke
- 13:50 Poster and demo session 2
- 15:00 **Coffee served**
- 16:30 Oral presentations
of selected abstracts:
**Stephen Larson, Giorgio M.
Innocenti, Gaël Varoquaux,
Cameron Craddock, Kit Cheung,
Krishnan Padmanabhan,
Michele Migliore, Shreejoy J.
Tripathy, Fan Meng, Anita
Bandrowski**
- 18:20 End
- 19:15 **Banquet at Vinterviken**

Thursday, Aug 29th

- 09:00 Keynote:
Fred Hamprecht
- 09:50 **Coffee break**
- 10:20 PARALLEL WORKSHOPS
- 10:20 Workshop 3:
*Orion Bionetworks: Predictive
models powering the search for
cures*
Chair:
Magali Haas
Speakers:
**Robert McBurney, Philip L.
De Jager, Jamie Heywood, Iya
Khalil, Stephen Larson**
- 10:20 Workshop 4:
*Transfer entropy - an
information theoretic tool of
choice for brain research*
Chair:
Zbigniew R. Struzik
Speakers:
**Zbigniew R. Struzik, Daniele
Marinazzo, Damien Battaglia,
Michael Wibral**
- 12:10 **Lunch**
- 13:00 Special session:
Large scale brain initiatives
Speakers:
**Clay Reid, Tom Insel, Karlheinz
Meier**
- 15:30 **Coffee break**
- 16:00 INCF Swedish Node
special symposium
- 17:30 Closing remarks
- 18:00 End

GENERAL INFORMATION

VENUE

A venue overview is available on page 12.

Keynote lectures and workshops take place in lecture hall **Berzelius**, with the exception of workshop 4, which takes place in lecture hall **Vesalius**.

Exhibits are located outside the lecture halls. Featured exhibitors are listed on page 16-17.

The poster and demo sessions will take place in the hall across from the exhibit area.

Tuesday, Aug 27 13:00 – 16:00

Wednesday, Aug 28 13:50 – 16:30

The poster boards and demo stations will be marked with numbers referring to those stated in this book, and the abstract book. Materials for putting up the posters will be provided. The meeting staff will remove posters not taken down by Thursday, August 27, at 18:00. The meeting organizers do not accept responsibility for any materials left behind.

INTERNET

Individual usernames and passwords for the WiFi will be handed out at registration.

LUNCH

Several lunch options are available for SEK 75 in the restaurant located inside the congress venue. Other options are available around the campus (see map on p. 13). Coffee will be served in the exhibits area.

CONFERENCE COORDINATORS ON SITE

Rosa Cusato-Sörnäs, INCF +46 8 524 870 16

Helena Ledmyr, INCF +46 8 524 870 35

Emelie Franck, Meetagain +46 760 39 65 86

OPENING HOURS OF THE REGISTRATION DESK

Aug 27 8:00 – 18:00

Aug 28 - Aug 29 8:30 – 18:00

PARTICIPATION, NAME TAGS

Official conference name tags will be required for admission to all conference functions.

Participants who lose their name tags will have to pay a fee of 25.00 EUR to obtain a replacement tag.

SOCIAL EVENTS

The City of Stockholm has invited all pre-registered participants to a Welcome Reception in City Hall on August 27. Buses to the Welcome reception will depart from the venue at 18:30.

On August 28, INCF hosts a Congress Banquet at Vinterviken, the old factory of Alfred Nobel from 1891 which has been transformed into a top-class restaurant. Buses to the Banquet will depart from the venue at 18:30.

PUBLIC TRANSPORTATION

An SL Access card is required to use the public transportation system in Stockholm. Cards must be purchased before travel and can be found at subway stations, Pressbyrå shops etc. The cards cannot be purchased on buses. More information: sl.se/en/Visitor/Tickets/Visitor-tickets

TO THE VENUE

Bus 3, 70, 77 (nearest bus stop: Karolinska institutet)

Bus 69, 507 (nearest bus stop: Tomtebodavägen Karolinska institutet)

Subway station: S:t Eriksplan, change to bus 3, 70, 77, or 507

Commuter train station: Karlberg station, change to bus 507

MAP

Scan QR code for local google map with the venue, hotels, transportations and social events



Tuesday, August 27, 2013

08:30 OPENING STATEMENT

Jan Bjaalie, University of Oslo, Norway

Erik De Shutter, Okinawa Institute of Science and Technology, Japan

08:40 WELCOME

Sean Hill, INCF Executive Director

09:00 KEYNOTE ► *Integrating and ranking the evidence from pathways to text*

Sophia Ananiadou, University of Manchester, United Kingdom

09:50 Coffee break

10:20 WORKSHOP 1 ► *Analysis and interpretation of massively parallel electrophysiological data*

Chair: **Sonja Grün**, Forschungszentrum Jülich, Germany

10:25 **Nicholas Hatsopoulos**, University of Chicago, USA

10:50 **Robert E. Kass**, Carnegie Mellon University, USA

11:15 **Jonathan Pillow**, University of Texas at Austin, USA

11:40 **Matteo Carandini**, University College London, United Kingdom

12:10 Lunch

13:00 POSTER AND DEMO SESSION 1

15:30 Coffee served

16:00 KEYNOTE ► *Systems and synthetic biology of biological timings*

Hiroki R. Ueda, RIKEN Quantitative Biology Center, Japan

16:50 Presentation by **Huron Technologies**

17:00 KEYNOTE ► *Data-intensive computing for neuroscience: The open connectome project*

Randal Burns, The Johns Hopkins University, USA

17:50 Presentation by **Frontiers**

18:00 End

18:30 Buses departure from the venue to the Welcome Reception

19:00 Welcome Reception at Stockholm City Hall

Wednesday, August 28, 2013

09:00 **KEYNOTE** ▶ *Brain function in healthy aging*

Apostolos P. Georgopoulos, University of Minnesota, USA

09:50 **Coffee break**

10:20 **WORKSHOP 2** ▶ *The informatics underlying meta-analysis and reproducibility in neuroimaging*

Chair: **Jessica Turner**, Mind Research Network, USA

10:25 **Satrajit Ghosh**, Massachusetts Institute of Technology, USA

10:50 **Tal Yarkoni**, University of Colorado at Boulder, USA

11:15 **Gully Burns**, University of Southern California, USA

11:40 **Angie Laird**, Florida International University, USA

12:10 **Lunch**

13:00 **KEYNOTE** ▶ *How to make sense of genetics for psychiatric disorders?*

Barbara Franke, Radboud University Medical Centre in Nijmegen, The Netherlands

13:50 **POSTER AND DEMO SESSION 2**

15:00 **Coffee served**

16:30 **ORAL PRESENTATIONS OF SELECTED ABSTRACTS**

Chair: **Erik De Shutter**, Okinawa Institute of Science and Technology, Japan

Stephen Larson, OpenWorm.org, USA

Giorgio M. Innocenti, Karolinska Institute, Sweden

Gaël Varoquaux, INRIA, France

Cameron Craddock, Child Mind Institute/Nathan Kline Institute for Psychiatric Research/The Neuro Bureau Research Institute, USA

Kit Cheung, Imperial College London, United Kingdom

Krishnan Padmanabhan, Salk Institute for Biological Studies, USA

Michele Migliore, Yale University, USA/National Research Council, Italy

Shreejoy J. Tripathy, Carnegie Mellon University, USA

Fan Meng, University of Michigan, USA

Anita Bandrowski, The University of California, San Diego, USA

18:20 **End**

18:30 **Buses departure from the venue to the banquet**

19:15 **Banquet at Vinterviken**

Thursday, August 29, 2013

09:00 KEYNOTE ► *Electron microscopy circuit reconstruction*
Fred Hamprecht, Ruprecht Karl University of Heidelberg, Germany

09:50 Coffee break

10:20 PARALLEL WORKSHOPS

Lecture hall Berzelius:

10:20 WORKSHOP 3 ► *Orion Bionetworks: Predictive models powering the search for cures*
 Chair: **Magali Haas**, One Mind for Research, USA
 10:25 **Robert McBurney**, Accelerated Cure Project for Multiple Sclerosis, USA
 10:45 **Philip L. DeJager**, Brigham & Women's Hospital, USA
 11:05 **Jamie Heywood**, PatientsLikeMe, USA
 11:25 **Iya Khalil**, GNS Healthcare, USA
 11:45 **Stephen Larson**, One Mind for Research, USA

Lecture hall Vesalius:

10:20 WORKSHOP 4 ► *Transfer entropy--an information theoretic tool of choice for brain research*
 Chair: **Zbigniew R. Struzik**, The University of Tokyo, Japan
 10:25 **Zbigniew R. Struzik**, The University of Tokyo, Japan
 10:50 **Daniele Marinazzo**, University of Gent, Belgium
 11:15 **Demian Battaglia**, Max Planck Institute for Dynamics and Self-Organization, Germany
 11:40 **Michael Wibral**, MEG Unit, Brain Imaging Center, Goethe University, Germany

12:10 Lunch

13:00 SPECIAL SESSION ON LARGE SCALE BRAIN INITIATIVES

► *Neural coding and project MindScope*

Clay Reid, Allen Institute for Brain Science, USA

► *The BRAIN initiative*

Tom Insel, National Institute of Mental Health, USA

► *The EU Human Brain Project - Scientific foundations and plans*

Karlheinz Meier, Ruprecht Karl University of Heidelberg, Germany

15:30 Coffee break

Thursday, August 29, 2013 (cont.)

16:00 INCF SWEDISH NODE SPECIAL SYMPOSIUM

Chair: **Jeanette Hellgren Kotaleski**, KTH, KI and INCF, Sweden

16:10 **Per Petersson**, Lund University, Neuronano Center, Sweden

16:40 **Edwin Johnson**, Stockholm Brain Institute, Sweden

17:10 **Linda Lanyon**, INCF Secretariat, Sweden

17:30 CONCLUDING REMARKS

Jeanette Hellgren Kotaleski, INCF Swedish Node and **Paul Tiesinga**, INCF Netherlands Node

18:00 End

INCF looks forward to welcoming you to the 7th Neuroinformatics
Congress in Leiden, the Netherlands, on August 25-27, 2014!

www.neuroinformatics2014.org



International Neuroinformatics Coordinating Facility

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Leiden, The Netherlands | August 23 -25

Confirmed speakers

Computational modeling of neural circuits

Dmitri (Mitya) Chklovskii

*Howard Hughes Medical Institute
Janelia Farms*

The Functional Connectomes Project

Michael Milham

Child Mind Institute

Neural coding and dynamics

Ila Fiete

University of Texas

Large scale modeling

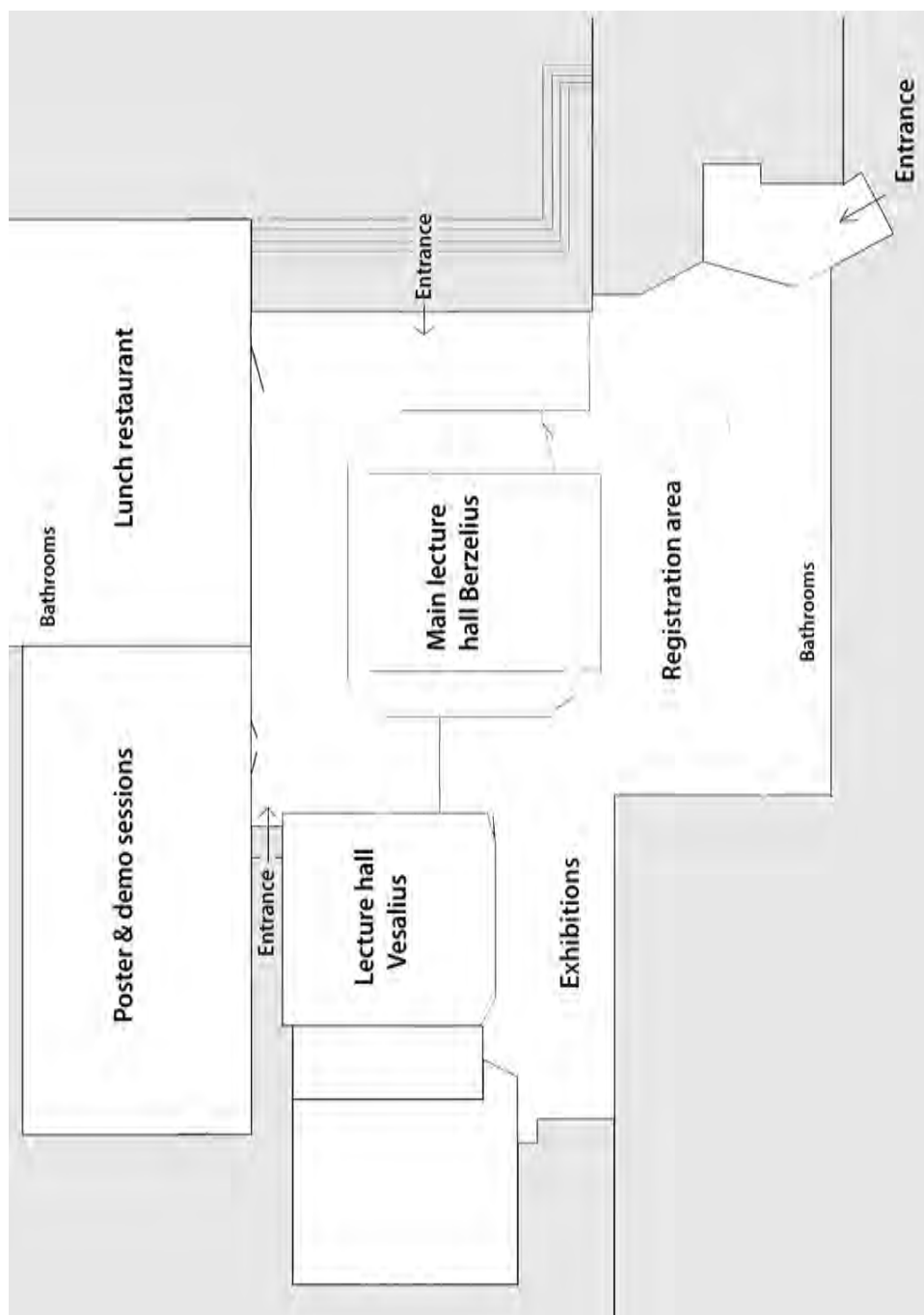
Felix Schürmann

École Polytechnique Fédérale de Lausanne



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PUBLICATIONS

IEEE PULSE: A Magazine of the IEEE Engineering
in Medicine and Biology Society
Transactions on Biomedical Engineering
Journal of Biomedical Health and Informatics
Transactions on Neural Systems and
Rehabilitation Engineering
Transactions on Medical Imaging

Transactions on NanoBioscience
Transactions on Computational Biology and Bioinformatics
Transactions on Biomedical Circuits and Systems
Reviews on Biomedical Engineering
IEEE Journal on Translational Engineering in
Health & Medicine

ELECTRONIC PRODUCTS

EMBS Electronic Resource

CONFERENCES

Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)
IEEE EMBS Special Topic Conference on Neural Engineering (NER)
International Symposium on Biomedical Imaging (ISBI)
International Conference on Biomedical Robotics and Biomechatronics (BIROB)
International Conference on Rehabilitation Robotics (ICORR)
Healthcare Innovation Conference (HIC)
EMBS Micro and Nanotechnology in Medicine (MNM)
Grand Challenges Conference Series (GCBE)
IEEE EMBS International Conference on Biomedical and Health Informatics (BHI)
IEEE EMBS Point-Of-Care Healthcare Technologies

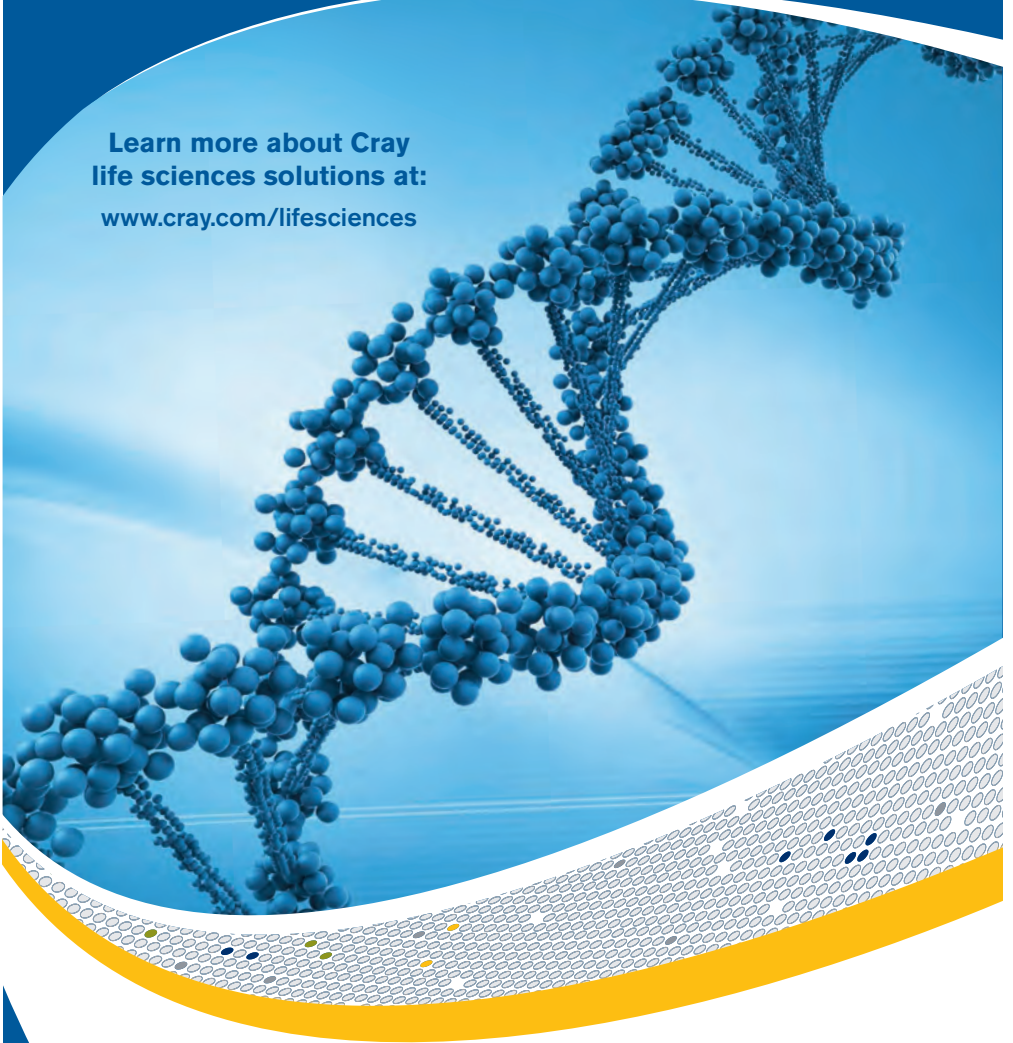
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Reference index for abstracts

P = Poster

OP = Poster which will also be presented in the oral session at 16:30 on Wednesday, August 28.

D = Demo

The abstract list is sorted in alphabetical order by the corresponding author's last name.

Session 1

Tuesday, August 27 13:00 - 15:30

Abstracts with even numbers will be presented

Session 2

Wednesday, August 28 13:50 - 16:00

Abstracts with uneven numbers will be presented

All abstract presenters have been asked to be available during both sessions if possible.

Complete abstracts are available online:



Abstract listing on
Frontiers' website



Abstract book on
Congress website

Corresponding author	Abstract title	Abstract number
Ahmed, Zeeshan	DroLIGHT: Real Time Embedded System towards Endogenous Clock Synchronization of Drosophila	D11
Antolik, Jan	Mozaik: a framework for model construction, simulation, data analysis and visualization for large-scale spiking neural circuit models	P75
Archie, Kevin	Head in the cloud: accessing distributed data and services through XNAT	D17
Asai, Yoshiyuki	PhysioDesigner for Multilevel Neural System Modeling	P13
Baker, Pamela	WM: an integrated framework for modeling the visual system	D03
Bakker, Rembrandt	Setting up a web-based neuroscience database has never been easier: The CoCoMac engine goes open source	D15
Bandrowski, Anita	A Unified Research Resource Layer; Experiences from the Neuroscience Information Framework	OP05
Benda, Jan	Single-file solution for storing neuroscience data and metadata.	P54
Boline, Jyl	The INCF Digital Atlasing Program, a look back and to the future	P32
Bota, Mihail	The rat BST-amygdala macroconnectome: a case study of functional-structural modules revealed by network analysis	P60
Brattico, Elvira	Systematic spatial Independent Component Analysis to decompose individual fMRI activity during continuous listening to music	P55
Brattico, Elvira	Human brain functional networks during automatic and conscious processing of musical emotions	P86
Brůha, Petr	The Ontology for Experimental Neurophysiology: a first step toward semantic annotations of neurophysiology data and metadata.	P58
Burns, Gully	Analyses of Topics Maps derived from Neuroanatomical publications	P63
Burunat, Iballa	Dynamics of brain activity underlying working memory for music in a naturalistic condition	P69
Carnevale, Nicholas	Senselab databases integrate neuronal data and modeling.	P53
Chakrabarti, Chayan	Naively successful: Naïve Bayes with and without decision trees for automated annotation of human neuroimaging abstracts	P87
Chaplin, Tristan A	Mapping the marmoset monkey cortex and the construction of a multimodal digital atlas	P98
Cheung, Kit	NeuroFlow: FPGA-based Spiking Neural Network Acceleration with High-level Language Support	OP10
Cong, Fengyu	Systematic spatial Independent Component Analysis to decompose individual fMRI activity during continuous listening to music	P55
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Craddock, Cameron	The Neuro Bureau Preprocessing Initiative: open sharing of preprocessed neuroimaging data and derivatives	OP09
Cromwell, Jeff	e-NeoTutor: A Novel Online Intelligent Tutoring System for Teaching Neuroscience Curriculums and Playing BCI NeuroGames in the Cloud	D10
Davison, Andrew	Helmholtz: a customizable framework for neurophysiology data management	P51
Davison, Andrew	An integration layer for neural simulation: PyNN in the software forest	P73
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Edward, Lydie	OntoCATI: Towards an ontology of neuroimaging measures in the CATI Platform	P89
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Fernandes, Evlyn	Influence of different modeling protocols for calcium currents in the ahp features of a type-s motoneuron	P21
Franović, Tin	Cortex-inspired network architecture for large-scale temporal information processing	P62
Georgopoulos, Apostolos	The effect of apolipoprotein E (apoE) genotype on synchronous neural interactions (SNI) in healthy brains	P70
Gerkin, Richard	NeuroUnit: Validation Tests for Neuroscience Models	P16
Goscinski, Wojtek	Informatics Infrastructure for the Australian Neuroscience Community: The Multi-modal Australian ScienceS Imaging and Visualisation Environment and the Characterisation Virtual Laboratory	D26
Gotsopoulos, Athanasios	A multivariate data-driven approach for decoding emotions	P26
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Grein, Stephan	Employing NeuGen 2.0 to automatically generate realistic morphologies of hippocampal neurons and neural networks in 3D	P24
Grethe, Jeffrey	The Neuroscience Information Framework (NIF): A Unified Semantic Framework and Associated Tools for Discovery, Integration, and Utilization of Biomedical Data and Resources on the Web	D19
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Haigh, Rob	Engineering the mind: a system engineering approach to modelling the brain	P30
Hamilton, David	Machine-readable representations of hippocampal neuron properties to facilitate investigative analytics	D12
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Herman, Pawel	Cortex-inspired network architecture for large-scale temporal information processing	P62
Hidayat, Egi	Laguerre domain estimation of the Elementary Motion Detector based on the fly visual system	P42
Hjertholm, Daniel	A Python test suite for statistical properties of probabilistic networks with and without spatial structure	P76
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