

## Resume

### 1. Full name

Tohka, Jussi

### 2. Date of birth, nationality, current residence

Year of Birth: 1976

AI Virtanen Institute for Molecular Sciences,  
Neulamaentie 2, University of Eastern Finland, Kuopio, Finland  
E-Mail: [jussi.tohka@uef.fi](mailto:jussi.tohka@uef.fi) URL: <http://www.jussitohka.net>

Google scholar profile: <https://scholar.google.com/citations?user=StmRhaUAAAAJ>

### 3. Education and degrees awarded

- Adjunct professor (docent) in pattern recognition and image analysis in brain imaging, Tampere University of Technology, Finland, Feb. 2012.
- Ph.D. (with commendation) in signal processing, Tampere University of Technology, Finland, Oct. 2003
- M.Sc. in mathematics, University of Turku, Finland, Sept. 1999

### 4. Other education and training

2011 - 2012 15 ECTS of training in university pedagogy

2012 - 2013 Supervisor training (TAHTO12, 56 h)

### 5. Linguistic skills

Finnish (mother tongue), English (fluent), French (basics), Swedish (basics), Spanish (basics)

### 6. Current positions

- Associate professor (tenure track) of biomedical signal and image analysis  
AI Virtanen Research Institute, Faculty of Health Sciences, University of Eastern Finland
- Adjunct professor  
Department of Signal Processing, Tampere University of Technology, Finland

### 7. Previous work experience

#### Previous positions:

- CONEX Marie-Curie Visiting Professor (Very experienced category)  
Department of Bioengineering, Universidad Carlos III de Madrid, Spain and  
Instituto de Investigacion Sanitaria Gregorio Marañon, Madrid, Spain  
16 Feb 2015 - 31 Oct 2016
- Department of Signal Processing, Tampere University of Technology, Finland  
University Researcher (yliopistotutkija) 1st Dec 2014 - 15th Feb 2015  
Academy research fellow (Akatemiatutkija) 1st Dec 2009 - 30th Nov 2014  
Academy of Finland Post-doctoral fellow and Senior Researcher (Vanhempi tutkija)  
1st Nov 2005 - 31st Dec 2008
- STATCORE Research cluster of excellence, University Alliance Finland  
Senior Researcher (Vanhempi tutkija) 1st Jan 2009 - 30th Nov 2009
- Laboratory of Neuro Imaging, Department of Neurology, University of California, Los Angeles (UCLA), CA, USA  
Post-doctoral fellow 1st Oct 2004 - 31st Oct 2005.
- Institute of Signal Processing, Tampere University of Technology, Finland  
Senior Researcher (Vanhempi tutkija), 1st Nov 2003 - 30th Sep 2004  
Researcher (Tutkija), 1st Jul 1999 - 31st Oct 2003

**International mobility:**

- Marie Curie visiting professor in Universidad Carlos III de Madrid, Spain 2015 - 2016
- Post-doc in University of California, Los Angeles (UCLA), CA, USA 2004 - 2005
- McConnell Brain Imaging Centre, Montreal Neurological Institute, Montreal, Canada (7 months in 2001 - 2002, shorter visits (2 weeks - 1 month) during 2007, 2011, and 2013)

**8. Research funding, leadership in research work, and supervision****Major research funding as principal investigator:**

**2017** University of Eastern Finland, 20000 EUR start-up package

**2015 - 2017** CONEX programme funded by the Universidad Carlos III de Madrid, the European Union Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 600371, El Ministerio de Economía y Competitividad (COFUND2013- 40258) and Banco Santander. A grant connected to my previous Marie-Curie position, salary + 63 kEUR for mobility and research costs  
Title: Machine Learning in Brain Imaging

**2012 - 2014** The Academy of Finland 105000 EUR  
New neuroinformatics methods for automatic analysis of brain images

**2009 - 2014** The Academy of Finland 516850 EUR  
New neuroinformatics methods for automatic analysis of brain images

**2005 - 2008** The Academy of Finland 156090 EUR  
Academy post-doc position in Tampere University of Technology

**Participation to other research projects (only the most recent or significant ones)**

- Co-PI in a research contract with Microsoft, 2014 (50 kEUR, PI: Ari Visa).
- Investigator in Center of Excellence in Signal Processing, Department of Signal Processing, 2006 – 2011 (total funding 6 mEUR, PI: Jaakko Astola)
- Coordinator of STATCORE research cluster of excellence, University Alliance Finland, 2009 (300 kEUR, PI: Erkki Liski)
- Participated to projects under major NIH center grants LONIR and CCB while post-doc at UCLA 2004 – 2005 (PI: Arthur W. Toga)
- Member in a research team in a project: Computational correction of PET/CT images - Re-evaluation of 100 PET cancer studies, Tampere Tuberculosis Foundation, 40 kEUR, 2009 – 2010.

**Academic leadership and student supervision**

- Leader of the new *Biosignal analysis group* at the AI Virtanen Research Institute, University of Eastern Finland, Nov 2016 onward.
- Leader of the *Brain Image Analysis* research group at the Department of Signal Processing, Tampere University of Technology, Finland, 2009 – 2015.
- Post-Doc supervised, Antonietta Pepe, 2014, Tampere University of Technology (currently post-doc Aix-en-Marseille University, France)
- 7 supervised PhD theses (5 as the main supervisor and 2 as the co-supervisor) in Tampere University of Technology, Finland. 1) Juha Pajula 2010 – 2016, currently with VTT technical research centre of Finland ltd. 2) Antonietta Pepe 2008 – 2014, currently post-doc at Aix-en-Marseille University, France 3) Jukka-Pekka Kauppi 2008 – 2011, currently Academy of Finland post-doc at University of Helsinki, Finland; 4) Lu Zhao 2006 – 2010, currently with University of Southern California, USA; 5) Evgeny Krestyannikov 2004 – 2008, currently with Intel corp., Finland; 6) Esa Wallius 2003 – 2007, currently with Agency for rural affairs, Finland; 7) Anu Juslin 2003 – 2007, currently Research development manager at Tampere University of Technology, Finland.
- Students currently supervised: 1) Elaheh Moradi (PhD thesis, Tampere University of Technology from 2013) 2) Ali Abdollahzadeh (PhD thesis, University of Eastern Finland from Nov 2016)

- Official follow-up group member of 6 PhD students (5 from Aalto University, 1 from Department of Mathematics at Tampere University of Technology)
- 8 supervised M.Sc. theses at Tampere University of Technology, 1 supervised Fin de Grado thesis at Universidad Carlos III de Madrid

## 9. Merits in teaching and pedagogical competence

- 7 supervised PhD theses (5 as the main supervisor, 2 as the instructor), 9 supervised MSc. theses.
- Courses lectured at the Tampere University of Technology (2003 – 2014) included Introduction to Pattern Recognition/Johdatus hahmontunnistukseen, 4 ECTS, BSc. level; Pattern recognition 5 ECTS, Doctoral level; Graduate Seminar on Medical Image Processing, 5 ECTS.
- Organization and teaching in international summer schools:
  - Person in charge for organizing international SERA (surface extraction, representation and analysis) summer school in Tampere June 2012
  - Invited speaker at EU funded AMBIA summer school, Brno, Czech Republic, August 2011

## 10. Awards and recognitions

- Our team (with Huttunen and Kauppi) won the PASCAL2 Challenge on MEG Mind Reading organized in conjunction of the ICANN2011 conference. 10 teams participated to the competition: <http://www.cis.hut.fi/icann2011/mindreading.php>
- Our team (with Foi, Maggioni and Pepe) won the Fetal Ultrasound Image Challenge organized in conjunction of the ISBI 2012 conference. 6 teams participated to the competition: <http://www.ibme.ox.ac.uk/challengeus2012/>
- Our team (with Kauppi and Pajula) won the Real-life cognition contest in 2014 [http://studyforrest.org/reallifecognition\\_contest\\_results.html](http://studyforrest.org/reallifecognition_contest_results.html) (prize 3000 EUR)
- My PhD students have been recognized in top international conferences for the work that I have supervised: a top student paper prize in ISBI 2007; a runner up for best student paper in EUSIPCO 2009, a finalist in the best student paper prize competition in IEEE-ITAB 2010.

## 11. Other academic merits

- **Invited chapter:** *Rigid-body registration* to be included in *Brain Mapping: An Encyclopedic Reference* edited by A.W. Toga.
- **External examiner of 7 PhD dissertations:** Tomi Kauppi, Lappeenranta University of Technology, 2010 (examiner), Pavan Ramkumar, Aalto University, 2012 (examiner), Ondra Danek, Mazuryk University, Brno, Czech Republic, 2012 (examiner and opponent), Ahmed Abou-Elseoud, University of Oulu, Finland, 2013 (examiner), Jukka Remes, University of Oulu, Finland, 2013 (opponent), Enrico Gleran, Aalto University, Finland, 2015 (examiner), Harri Merisaari, University of Turku, 2016 (examiner)
- **Grant reviewing:** 1) Ad-hoc grant reviewer for Netherlands Organisation for Scientific Research  
2) Ad-hoc grant reviewer for Wellcome Trust, UK  
3) Reviewer of applications for Finnish Graduate School in Computational Sciences (FICS)
- **Extramural evaluator for promotion** from assistant to associate professor, UCLA School of Medicine, 2016.
- **Board member** of Finnish Pattern Recognition Society 2009 – 2015, **Vice president** 2012 – 2015. **Member** of the Organization for Human Brain Mapping.
- **Member of the committee** selecting the best PhD thesis in Finland in the field of pattern recognition, 2012, 2014.
- **Editorial boards and editorships:**
  - Associate editor of *IEEE Transactions on Information Technology in BioMedicine* (2007 - 2010)

- Editorial board member of *ISRN Molecular Imaging* (2012 – 2014) and *ISRN Biomedical Engineering* (since 2014)
- Editorial board member of *Computational Intelligence and Neuroscience* (since 2015)
- Guest editor of the special issue 'Imaging brain change across different time-scales' in *Frontiers in Neuroinformatics*, 2009, 2011
- Guest editor of the special issue 'Simulation and validation in brain image analysis' in *Computational Intelligence and Neuroscience*, 2015
- **Journal and conference reviewing:**
  - Reviewer for 26 distinct international journals (reviewing approx 15 papers for year) including: 1. *IEEE Transactions on Medical Imaging* 2. *NeuroImage* 3. *IEEE Transactions on Pattern Analysis and Machine Intelligence* 4. *Human Brain Mapping* 5. *Pattern Recognition* 6. *International Journal of Neural Systems* 7. *PLoS ONE* 8. *Philosophical Transactions of the Royal Society B*
  - Scientific/program/review committees: 1) *International Symposium on Signal Processing and Its Applications (ISSPA 2005,2012)* 2) *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)* (2005, 2006, 2007, 2012, 2013), 3) *European Signal Processing Conference (EUSIPCO)* (2006, 2014), 4) *International Conference on Artificial Neural Networks (ICANN)* (2011) 5) *The Annual Meeting of the Organization for Human Brain Mapping* (2009 – 2015) 6) *Scandinavian Conference on Image Analysis 2013, 2015*. 7) Patch-MI international workshop (2015, 2016)
- Invited lectures
  - CONEX lecture, Universidad Carlos III de Madrid, 15th May 2015
  - Annual seminar of Pattern Recognition Society of Finland (HATUTUS) (10th Dec 2012 in Turku, 26th Nov. 2010 in Stockholm, 21st Nov. 2008 in Tampere)
  - AMBIA summer school, Brno, Czech Republic, Aug 2011
  - The 1st InterBrain Symposium, ICA conference and EEGLAB workshop, Jyväskylä, Finland, 13th Jun 2010
  - INCF Imaging Brain Storm at Tampere, Finland 14th Apr 2008

## 12. Publications

- Complete publication list <http://www.jussitohka.net/publica>
- 46 full-length publications in international journals with peer review practice (17 as the first author, 14 as the senior author)
- 44 full-length articles in international conferences with peer review practice (8 as the first author, 15 as the senior author), in addition 46 international abstracts.
- Several open source software tools based on the research of my group are in world-wide use. For example, pvemri tool is widely used for segmentation brain MRI and integrated to several other toolboxes; ISCToolbox <https://www.nitrc.org/projects/isc-toolbox/> is the only GUI-based advanced ISC-based fMRI analysis software; see <https://sites.google.com/site/jussitohkasoftware/> for a complete list of the software by my group
- Invention disclosure *Automatic head contour extraction from fetal ultrasound images* filed on 18th Dec 2012