

Prof. Dipl.-Ing. Dr.techn. Alexander Helmut Jung

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Education

2012: Phd with “**sub-auspiciis**” (**highest academic distinction in Austria**), Electrical Engineering and Computer Science/Institute of Telecommunications at the Technical University of Vienna (TU Vienna), Austria. Supervisor: Prof. Franz Hlawatsch

2008: Master (with highest honors), Electrical Engineering and Computer Science/Institute of Telecommunications at the TU Vienna, Austria.

Positions

2015-: Assistant Professor, Department of Computer Science, Aalto University, Finland

2012-2015: Post-Doc, Institute of Telecommunications, TU Vienna, Austria

2012: Post-Doc, Group of Prof. Helmut Bölcskei, ETH Zurich, Switzerland

Supervision

- bachelor students: Alexander Rudolf Hartl (2014, TUW); Miriam Leopoldseder (2014, TUW), Maxim Afteny (2018)
- master students: Bernhard Kausl (2012, TUW); Yang Gao (2016), Alexandru Mara (2016-2017), Saeed Basirian Jahromi(2016-2017), Oleksii Abramenko(2016-), Niroj Pokhrel (2017 - 2018), Dan Koskeniemi (2017-2018)
- PhD students: Gabor Hannak (2014-2017, TUW), Gita Babazadeh Eslamlou (2014-, TUW); Nguyen Tran Quang (2016-), Luiza Sayfullina (2017-), Roope Tervo (2017-), Jinping Sui (2017 -), Wu MengHao (2017 -), Timo Huuhtanen (2017-), Buse Atli (2017-)
- Post-Docs: Sabeur Aridhi, Peter Berger (both 2016)

Teaching

- 2013-2015: “Discrete Time Signal Processing” at TU Vienna
- 2014: “Compressed Sensing” at TU Vienna (designed from scratch)
- 2015-2016: “Signal Processing for Big Data” at TU Vienna (designed from scratch)
- 2015- : “Machine Learning: Basic Principles” at Aalto University (heavily redesigned to cope with enormous demand, enrolled by **more than 600 students**)

student feedback samples: “Especially good on the course was the high pedagogical level of lectures by Alex Jung! Thank you for that!”, “Alex is the best professor I’ve encountered in Aalto university and one of the best ones in general. Really really good, doing his absolutely best to help student understand.”

- 2016- : “Convex Optimization for Big Data over Networks” at Aalto University (designed from scratch, enrolled by **more than students**)
student feedback samples: “A very nice and, for me, novel approach to convex optimization using fixed-point iterative algorithms.”, “Lectures are interesting and relevant. Alex is enthusiastic and looks like he enjoys teaching the course. I mostly like the fact that the arguments are explained in detail so that people who are interested in the convex optimisation problems can get an important contribution to their knowledge.”
- 2018-: “Artificial Intelligence” at Aalto University, together with Prof. Tomi Janhunen (designed from scratch, enrolled by **more than 450 students**)
student feedback samples: “Overall, the course provided a good understanding and starting point for different methods used in the field of Artificial Intelligence. The structure of having weekly assignments was good. Alex Jung is a great lecturer and would like to give huge props to him.”; “The lectures and provided material on MDP and ML were succinct yet informative. Once these are studied, one gets a firm basis on the covered topics. Jung is a flexible, modern and knowledgeable lecturer.”;

Service

- Member of PC for the 2018 IEEE International Conference on Big Data (IEEE Big Data 2018)
- Member of PC for The 7th International Conference on Analysis of Images, Social Networks, and Texts (AIST) 2018
- Member of candidacy team for ISIT 2022 (led by Prof. Olav Tirkkonen)
- Member of AScI Steering Group, since 2018
- Member of Professors’ council task force on “Decision Making”, 2017
- Member of Phd Jury led by Prof. Pierre Vandergheynst at École polytechnique fédérale de Lausanne (EPFL), 2017
- Reviewer for “Mathematical Reviews” of the American Mathematical Society.
- Co-Editor for Special Research Topic “Compressed Sensing over Complex Networks for Deep Learning from Big Data” of Frontiers
- Member of Selection Committee for the Master Programme “Machine Learning, Data Science and Artificial Intelligence (Macadamia)”
- Co- Organizer (with Prof. Mikko Kivelä) of the “Complex Systems and Networks Seminar” at the department of Computer Science
- Member of Editorial Board of Mathematics of Computation and Data Science, Frontiers
- Journal review activities for **Journal of Machine Learning Research (JMLR)**, **IEEE Transactions on Information Theory**, **IEEE Transactions on Signal Processing**, **IEEE Signal Processing Letters**, **IEEE Transactions on Knowledge and Data Engineering**, **Elsevier Signal Processing**, **EURASIP Journal on Wireless Communications and Networking**
- Conference review activities: **for IEEE ICASSP, IEEE SSP, IEEE SPAWC, IEEE VTC, IEEE ISIT, EUSIPCO**
- **Track Chair** at EUSIPCO 2014, Lisbon.

Research Visits

- **EPFL Lausanne - Signal Processing Laboratory**, Lausanne, Switzerland, Group of Prof. Pierre Vandergheynst, Dec. 2017.
- **RWTH Aachen University - Lehrstuhl C für Mathematik (Analysis)**, Aachen, Germany, Group of Prof. Holger Rauhut, Jan. 2017.
- **University of Michigan - Department of Electrical Engineering and Computer Science**, Ann Arbor, MI, Group of Prof. Alfred O. Hero III, June 2014.
- **University of Edinburgh - School of Engineering**, Edinburgh, United Kingdom, Group of Prof. Mike E. Davies, October 2013.

Funding ID

Project title. “Communication and Complexity Constrained Inference over Graphs for Big Data”

Funding source. Vienna Science and Technology Fund (WWTF) under number ICT15-119

Amount. \approx 500kEuro

Period. Dec. 2015 - Nov. 2019

Comments. proposal has been prepared and accepted with me as PI but due to my appointment at Aalto, I switched roles with Co-PI Prof. Gerald Matz (TU Vienna)

Project title. “Machine Learning for Big Data”

Funding source. Aalto University - Tenure Track Starting Package

Amount. \approx 300kEuro

Period. Aug. 2015 - Jul. 2020

Selected Merits

- selected a member of the EURASIP Special Area Team (SAT) “Signal and Data Analytics for Machine Learning”, 2018
- co-author of a student paper award finalist paper, Asilomar 2017
- short listed for **tenure track position within Department of Data Science and Knowledge Engineering at Maastricht University**, 2017
- short listed for **tenure track position within Artificial Intelligence Lab at Vrije Universiteit Brussel**, 2017
- short listed for **tenure track position at Ghent University**, 2017
- short listed for **tenure track position at KTH Stockholm**, 2016
- appointed Assistant Professor at Aalto University (**out of 65 applicants**), 2015
- offered Post-Doc positions at KTH Stockholm (Prof. Jalden), Technion (Prof. Eldar), TU Berlin (Prof. Kutyniok), Imperial College London (Prof. Dragotti), 2012-2015
- Travel Grant at Workshop on Statistical Issues in Compressive Sensing (SICS), 2013
- ISTFELLOW Post-Doc scholarship by Institute of Science and Technology Austria (ISTA), 2012
- **Promotio sub auspiciis Praesidentis rei publica** (the highest academic distinction for students in Austria), 2012
- **Best Student Paper Award IEEE ICASSP 2011**
- Award of excellence by Austrian Federal Ministry of Science and Research 2008, 2011
- Award for best diploma thesis by Austrian Electrotechnical Association (OVE), 2008

Invited Talks

- “Compressed Sensing of Big Data Networks” at EPFL, Lausanne, Dec. 2017
- “Solving the Food Waste Challenge: An Artificial Intelligence perspective” at Slush, Helsinki, Dec. 2017.
- “Information-Theoretic Limits of Learning Networks for Big Data”, at the Tenth Workshop on Information Theoretic Methods in Science and Engineering (WITMSE), Paris, Sept. 2017.
- “Backpropagation” at the Artificial Intelligence Laboratory, Vrije Universiteit Brussel, Jun. 2017.
- “When is Network Lasso Accurate?”, within group seminar of Prof. Klaus Witrisal, TU Graz, Apr. 2017.
- “When is Network Lasso Accurate?”, within group seminar of Prof. Thomas Pock, TU Graz, Apr. 2017.
- “Compressed Sensing for Big Data over Complex Networks”, within group seminar of Prof. Sjoerd Dirksen and Prof. Holger Rauhut, RWTH Aachen, Jan. 2017.
- “Graphical Model Selection for High-Dimensional Processes”, within the *Stochastic Sauna*, Aalto University, Dec. 2016.
- “Graph Signal Recovery using Convex Optimization”, within the *Helsinki Algorithms Seminar* of Aalto University and the University of Helsinki, May 2016.

- “An Information-Theoretic Approach to Dictionary Learning”, within group seminar of Prof. Gitta Kutyniok, TU Berlin, Jun. 2015.
- “On the Sample-Complexity of Dictionary Learning”, within the *Mathematics Colloquium* of the Mathematics Department, University of Innsbruck, Jun. 2015.
- “Fundamental Recovery Thresholds for Dictionary Learning”, group workshop of Prof. Holger Rauhut, RWTH Aachen, Sept. 2014.
- “Performance Limits of Dictionary Learning for Sparse Coding: An Information-Theoretic Approach”, group seminar of Prof. Alfred O. Hero III, University of Michigan, Jun. 2014.
- “Compressive Nonparametric Graphical Model Selection for Time Series: A Multitask Learning Approach”, within Workshop on Statistical Issues in Compressed Sensing, University of Goettingen, Nov. 2013.
- “Compressive Nonparametric Graphical Model Selection for Time Series: A Multitask Learning Approach”, within IDCOM Seminar, University of Edinburgh, Oct. 2013.