

Dr. Antti Tölli

Curriculum Vitae

9 June 2017

PERSONAL DATA

Name: <u>Antti-Heikki</u>	Home address: Kurkiojantie 19, 90650 Oulu, Finland
Surname: Tölli	
Gender: Male	Work address: Centre for Wireless Comm., P.O. Box 4500, 90014 University of Oulu, Finland
Marital status: Married	E-mail: antti.tolli@ee.oulu.fi
Nationality: Finnish	www-page: www.ee.oulu.fi/~atolli/
Date of birth: 17 December 1974	Telephone: +358 44 5000 180
Place of birth: Oulu, Finland	

EDUCATION, DEGREES AWARDED AND TRAINING

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|---|-------------------------------------|
| Title of Docent (Adjunct Professor)
<i>Centre for Wireless Communication (CWC), University of Oulu</i> | Jan 2013
<i>Oulu, Finland</i> |
| · Field: radio resource management in wireless networks | |
| Doctor of Science in Technology
<i>University of Oulu</i> | June 2008
<i>Oulu, Finland</i> |
| · Major: telecommunications, minor: digital signal processing | |
| · Title: "Resource Management in Cooperative MIMO-OFDM Cellular Systems" | |
| Master of Science in Engineering
<i>University of Oulu</i> | Mar 2000
<i>Oulu, Finland</i> |
| · Major: telecommunications, minors: electronics and signal processing. | |
| · Title: "Comparison of Different Uplink Antenna Configurations in WCDMA Base Stations", Grade: Excellent | |
| · <i>MSc student</i> at University of Oulu, Dept of EE, Finland | <i>Sept 1994 – Mar 2000</i> |
| Finnish Matriculation Examination
<i>Ruukin lukio</i> | June 1993
<i>Ruukki, Finland</i> |
| · Upper secondary school, Sept 1990 – May 1993 | |
| <i>University studies abroad</i> University of Idaho, USA,
Studies in wireless communications and electronics | <i>Aug 1997 – May 1998</i> |
| <i>Military service</i> , Reserve officer (Second Lieutenant)
Jääkäriprikaati, Anti-tank Company, Sodankylä, Lapland, Finland, | <i>June 1993 – May 1994</i> |

KNOWLEDGE OF LANGUAGES

Finnish: mother tongue, English: fluent, Spanish: fluent, French: intermediate, Swedish: intermediate, German: basic

PRESENT PROFESSIONAL POSITION

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| Academy of Finland Research Fellow (Akatemiatutkija)
<i>Centre for Wireless Communication (CWC), University of Oulu</i> | Sept 2014 – Oct 2019
<i>Oulu, Finland</i> |
| · Tasks: fundamental research, acquisition of research funding, supervision of doctoral and M.Sc. students, teaching of graduate and postgraduate courses | |
| · Main research interests: System level issues in future wireless systems, radio resource management (RRM) research with special focus on resource allocation and interference management for multi-user MIMO cellular systems with limited inter-node coordination. | |

PREVIOUS PROFESSIONAL POSITIONS

Visiting Scholar <i>EURECOM</i>	Oct 2015 – June 2016 <i>Sophia Antipolis, France</i>
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- Research visit hosted by Prof. David Gesbert and funded by the Academy of Finland.

Senior Research Fellow (Yliopistotutkija)

Nov 2009 – Aug 2014

CWC, University of Oulu

Oulu, Finland

- Tasks: fundamental research, acquisition of research funding, supervision of doctoral and M.Sc. students, teaching of graduate and postgraduate courses

Project Manager

Jan 2008 - Oct 2009

CWC, University of Oulu

Oulu, Finland

- Main responsibility was to lead CWC's research activities in the large European research project CELTIC WINNER+ "Wireless world INitiative NEw Radio".
- Task Leader in Advanced Antenna Schemes task in WINNER+
- Main research interests: System level issues in beyond 3G systems. Radio resource management (RRM) research with special focus on resource allocation for adaptive multi-user MIMO-OFDM cellular systems.

Research Scientist

Aug 2003 - Dec 2007

CWC, University of Oulu

Oulu, Finland

- Main research interests: RRM research with special focus on resource allocation for adaptive multi-user MIMO-OFDM cellular systems.

Various positions at Nokia Networks

May 1997 - June 2003

- *Research Project Manager* (Jul 2002 – June 2003) *Málaga, Spain*
- *Research Engineer* (Oct 2000 – June 2002) *Málaga, Spain*
- *Research Engineer* (Mar 2000 – Sept 2000) *Oulu, Finland*
- *MSc thesis worker* (Mar 1999 – Feb 2000) *Oulu, Finland*
- *Trainee* (May 1997 – 20.8.1997, Jul 1998 – Feb 1999) *Oulu, Finland*
- Duties related to project management, 3GPP standardisation, algorithm development, link and system level simulations and simulator modelling, and field measurements of radio network performance. In addition, work experience related to system integration and analogue/digital circuit design.
- Main research interests: radio resource management algorithms for WCDMA/(E)GPRS systems including intra/inter-system traffic balancing, inter-system handover, packet scheduling, load estimation algorithms, multi-sensor transceivers, receiver algorithms and diversity schemes.

Trainee

June 1995 – May 1997

Masera Electronics Oy

Oulu, Finland

- Part-time and full-time position in a contract manufacturing company. Responsible for development of production management and quality control programmes (database programming). Also worked in computer support.

GRANTED RESEARCH PROJECTS AND SCHOLARSHIPS

Academy of Finland

- A. Tölli (Principal investigator, PI), "WiFiUS: Millimeter Wave-based Wearable Networks in High-end IoT Applications", Apr 2017 – Dec 2019, 131 008€, No. 311741 (12.04.2017). Joint project with University of Texas at Austin, USA (Robert Heath) and Tampere University of Technology (Olga Galinina)
- A. Tölli (PI), "Innovation of Transmission Technologies towards 5G Networks", Feb 2015 – Dec 2017, 157 000€, No. 284727 (27.1.2015)
- A. Tölli (PI), "Distributed Multidimensional Signal Processing in Heterogenous Networks (additional funding)", Sept 2014 – Aug 2017, 300 000€, No. 284590 (12.6.2014)
- A. Tölli (PI), "Distributed Multidimensional Signal Processing in Heterogenous Networks (Academy Research Fellow position)", Sept 2014 – Aug 2019, 434 485€, No. 279101 (16.5.2014)

Finnish Funding Agency for Technology and Innovation (Tekes)

- A. Tölli (PI), "Energy-Efficient Wireless Networks and Connectivity of Devices Densification" (EWINE-D), May 2013 – Apr 2015, 254872€, Appl. No. 194/31/2013, Dec. No. 40140/13 (19.4.2013)

- A. Tölli (PI), "Interference Management for Wireless Networks Beyond Present Horizon+" (IMANET+), Jul 2011 – June 2013, 400000€, Appl. No. 547/31/2011, Decision No. 40178/11 (29.4.2011)
- A. Tölli (PI), "Interference Management for Wireless Networks Beyond Present Horizon" (IMANET), Jul 2010 – June 2011, 208435€, Appl. No. 673/31/2010, Dec. No. 40158/10 (6.5.2010)

Grants and Scholarships

- A. Tölli, "Hajautettu moniuloitteinen signaalinkäsittely heterogeenisissa verkoissa", 12000€ grant from "Tutkijat maailmalle" Foundation for a research visit at Eurecom, France, 2015
- In total seven scholarships in 2004-2007 for doctoral studies from various Finnish foundations: Nokia Oyj:n säätiö, Oulun yliopiston tukisäätiö, Tauno Tönningin säätiö, Riitta ja Jorma J. Takasen säätiö, Seppo Säynäjäkankaan tiedesäätiö and Kaupallisten ja teknillisten tieteiden säätiö.
- Doctoral student in the Infotech Oulu Graduate school in 2003-2007

STUDENT SUPERVISION AND TEACHING

Supervision of Doctoral students

- D.Sc. Petri Komulainen, "Coordinated multi-antenna techniques for cellular networks : Pilot signaling and decentralized optimization in TDD mode", (Nov 2013, co-supervised with Prof. M. Juntti)
- D.Sc. Xiaojia Lu, "Resource allocation in uplink coordinated multicell MIMO-OFDM systems with 3D channel models" (Dec 2013, co-supervised with Prof. M. Juntti)
- D.Sc. Valtteri Tervo, "Joint multiuser power allocation and iterative multi-antenna receiver design" (May 2015, co-supervisors Profs. T. Matsumoto, M. Juntti)
- D.Sc. Harri Pennanen, "Coordinated beamforming in cellular and cognitive radio networks" (Sept 2015, co-supervised with M. Latva-aho)
- Currently (co-)supervising 5 doctoral students: M.Sc. Jarkko Kaleva (2017), M.Sc. Ganesh Venkattraman (2017) and M.Sc. Hossein Asgharimoghaddam (2018), M.Sc. Praneeth Jayasinghe (2019), M.Sc. Antti Arvola (2019) out of which four as a principal supervisor.

Supervisor or examiner for 15 master's theses.

Teaching

- Teaching of master-level course "521317S Wireless Communications II", Spring 2013-
- Teaching of post graduate course "Multiuser Communications in Wireless Networks", 9 credit units, Fall 2011
- Various tutorials and invited talks in international conferences

RESEARCH VISITS

- Visiting scholar at EURECOM Institut, France hosted by Prof. D. Gesbert, Oct/2015 – Jun/2016
- Research visit at Japan Advanced Institute of Science and Technology (JAIST) invited by Prof. Tadashi Matsumoto, Feb – Mar 2010

SCIENTIFIC ACTIVITY

External evaluations

- Ranked 2nd best candidate from in total 40 applicants for Tampere University of Technology's Tenure track position in Communications Engineering, April 2015
- Ranked among 9 best candidates selected for the 2nd round evaluation from in total 104 applicants for Aalto University's Tenure track position in Communications Engineering and Networking Technology, group 3, December 2012
- Evaluation for the Title of Docent, Fall 2012

Publications, citations and h-index

- Total number of publications 171: 31 published or accepted journal publications (28 IEEE, 2 Eurasip), 113 international conference publications, 15 patents/applications, 4 book chapters

- Google Scholar: total number of citations: 2175, h-index: 25 (9 June 2017), public link: <http://scholar.google.com/citations?user=qwWSqawAAAAJ>
- Scopus: total number of citations: 1151, h-index: 18 (9 June 2017)

Duties in scientific meetings

- General co-chair of Workshop on Novel Medium Access and Resource Allocation for 5G Networks held in conjunction with IEEE ICC 2016, Kuala Lumpur, Malesia, June 2016
- General co-chair of International Workshop on Wireless Distributed Networks (WDN2011) held in conjunction with IEEE PIMRC2011, Toronto, Canada, Sep 2011 (<http://www.icwdn.org/>)
- Finance Chair of IEEE Communications Theory Workshop (CTW2011), Sitges, Catalonia, Spain, June 2011
- General co-chair of International Workshop on Wireless Distributed Networks (WDN2010) held in conjunction with IEEE PIMRC2010, Istanbul, Turkey, Sep 2010
- TPC member of various conferences including IEEE ICC, Globecom, WCNC, PIMRC, SPAWC, VTC Spring/Fall

External thesis reviews, opponent in doctoral/licentiate defense and thesis committee service

- Opponent in the Doctoral defense of Petteri Kela "Continuous Ultra-Dense Networks", Aalto University, June 2017
- Pre-examiner and opponent for the doctoral thesis of Jhanak Parajuli "Interference Alignment and DOF Analysis of Multi-User IC and IBC", Jacobs University, Germany, September 2016
- Pre-examiner for the doctoral thesis of Furqan Ahmed "Discrete and Continuous Optimization Methods for Self-organization in Small Cell Networks: Models and Algorithms", Aalto University, March 2016
- Opponent in the licentiate thesis defence of Ms. Rikke Apelfröjd "Design Aspects of Coordinated Multipoint". Uppsala University, Sweden, Aug 2014
- Pre-examiner for the doctoral thesis of Ömer Bulakci "Backhaul Link Enhancement and Radio Resource Management for Relay Deployments". Aalto University, Finland, March 2013
- Opponent in the licentiate thesis defence of Tilak Rajesh Lakshmana "Efficient Backhauling in Cooperative MultiPoint Cellular Networks". Chalmers University of Technology, Sweden, Feb 2013
- Pre-examiner for the doctoral thesis of Helka-Liina Määttänen "Linear transmission methods and feedback for downlink MIMO systems feedback for downlink MIMO systems". Aalto University, Finland, September 2011
- Opponent in the doctoral defence of Gerardo Gomez "QoS Modeling for End-to-end Streaming Performance Evaluation over Wireless Access Networks". Universidad de Málaga, Spain, June 2009
- Member of international review team for EU funded FET Project 265578 HIATUS, 2012-2014
- Frequent reviewer for several scientific publications, including IEEE Transactions on Signal Processing, IEEE Transactions on Wireless Communications, IEEE Transactions on Communications, IEEE Communications Letters, IEEE Signal Processing Letters and IEEE JSAC

Editorial Board memberships

- Associate Editor, IEEE Transactions on Signal Processing, 2017-

Membership in scientific societies

- Senior member of IEEE, member of IEEE Communication, Information Theory and Signal Processing Societies

LEISURE TIME INTERESTS

Music (tenor/baritone saxophone, clarinet, piano), playing in big band orchestras, windsurfing, kitesurfing, telemark and cross-country skiing, various other sports