Robin Thomas | Curriculum Vitae

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Objective

Mobile Communications PhD candidate with 5 years academic research experience in signal processing and algorithm design. Currently focused on the practical development of innovative algorithmic techniques for LTE/LTE-A as well as 5G technologies in the physical layer with emphasis on performance enhancement and low-complexity design.

Education

University of Pretoria, Pretoria, South Africa

MEng. Electronic Engineering   *2010–2012*

Research-based degree, specialization in Wireless Communications

University of Pretoria, Pretoria, South Africa

BEng. (Honours) Electronic Engineering   *2009*

Coursework-based degree, specialization in Telecommunications

University of Witwatersrand, Johannesburg, South Africa

BSc. Electrical:Information Engineering   *2005–2008*

Experience

Vocational

Eurecom (Telecom Paristech), Biot, France

PhD Candidate   *2013–Present*

The thesis explores enhanced interference management techniques for the development of advanced receiver structures as well as spectrally efficient strategies for relay networks. These techniques are analyzed and practically validated using the libraries from the *OpenAir Interface* simulation platform (open-source hardware and software platform for wireless communication experimentation).

Detailed achievements:

○ Integrated and synthesized inputs from multiple project partners for deliverable D7.2 titled 'Assessment of Research Results and Trends in Flexible Radio and Cognitive Radio Research', as part of the FP7 Project, ACROPOLIS.

○ Presentation of poster, 'Intelligent Transceiver Design for Highly Mobile Heterogeneous Networks in Vehicular Environments' at the *BMW Summer School on Smart Mobility 2020*, Munich, Germany, 2013.

○ Developed a solution for the interference-aware detection of higher-order MIMO Hetnets, which was published and presented as a conference paper,'Detection using Block QR decomposition for MIMO HetNets' in the *ASILOMAR Conference on Signals, Systems and Computers*, Pacific Grove, USA, 2014.

○ Practically validated and implemented a spectrally enhanced half-duplex relay strategy for LTE relays, which was published and presented as a conference paper, 'An LTE implementation of a Novel Strategy for the Gaussian Half-Duplex Relay Channel' in the *International Conference on Communications*, London, UK, 2015.

EURECOM, Biot, France

Research Intern   *January 2011–June 2011*

Conducted exploratory research in the area of multiband TOA positioning for cognitive radio systems through a combination of theoretical and simulation work as part of the Master's degree.

University of Pretoria, Pretoria, South Africa

Master's Thesis   *January 2010–June 2012*

This research work explored an efficient bandwidth determination model for a Cognitive Positioning System (CPS) and an improved multiband time-of-arrival location estimation algorithm in a cognitive radio environment.

Presented Conference Papers:

- R.R. Thomas, B. Zayen, R. Knopp and B.T. Maharaj, 'A multiband TOA positioning technique for cognitive radio systems', in *PIMRC Workshop on Cognitive Radio and Networking: Solutions and Challenges Ahead*, Toronto, Canada, September 2011, pp. 2315-2319.
- R.R. Thomas, S.D. Barnes and B.T. Maharaj, 'TOA Location Estimation based on Cognitive Radio Channel Occupancy Prediction', in *IEEE WiMob 2012*, Barcelona, Spain, October 2012, pp. 733-738.
- S.D. Barnes, K. Dhuness, R.R. Thomas and B.T. Maharaj, 'Proactive dynamic spectrum access based on energy detection', *Southern African Telecommunication Networks and Application Conference*, George, South Africa, September 2012.

Published Journal Articles:

- R.R. Thomas and B.T. Maharaj, 'Towards a bandwidth efficient cognitive positioning system', IET Electronics Letters, vol. 48, no. 12, pp. 736-737, June 2012.
- R.R. Thomas, B.T. Maharaj, B. Zayen and R. Knopp, 'Multiband TOA positioning technique using an UHF Bandwidth Availability model for Cognitive Radio', IET Radar, Sonar and Navigation, vol. 7, no. 5, pp. 544-552, June 2013.

Terabytes, Kochi, India

Software Engineering Intern   *December 2006–February 2007*

Assisted in the design and implementation of a school management web application using Visual C#.NET as the front end and SQL Server 2000 as the back end of the application. Responsible for the database design and implementation of code for student profiles as well as attendance register modules. Developed skills related to front-end and database design.

Technical Skills

Basic: Visual C#, HTML, CSS, XML, Git, SQL, ATMEL STK500

Intermediate: Visual Studio, PSpice, MultiSim, FilterLab, UML modelling, C++

Advanced: MATLAB, C, SVN, LaTeX, LyX

Awards

2014-Present: National Research Foundation PhD Scholarship

2011-2012: National Research Foundation Scarce Skills Scholarship for Masters Students

2010: Sentech Chair in Broadband Wireless Multimedia Communications Postgraduate Scholarship

2008: University of Witwatersrand's Alcom Matomo Prize in Telecommunications for the best final year undergraduate design project in telecommunications

2005: University of Witwatersrand Scholarship

Languages

English: Native/Full working proficiency

Afrikaans: Limited working proficiency

French: Elementary proficiency

Interests

- Startups

- Hiking

- Football

- Tennis

- Volleyball

- Travelling

Volleyball

Volunteering

Conferences

Student Volunteer

Volunteering roles include:

- Assisting with on-site registration of delegates and setup of exhibits and demos.
- Served as a session monitor for a number of tutorials, technical paper presentations and workshops during the conference.