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RESEARCH & EXPERIENCE

*Researcher, Communication Networks and
Systems Laboratory*

SICS
Kista, Sweden
Nov 95 - present

Oct 2001-Present

Enrolled in November 2000 as a doctoral student at the Royal Institute of Technology, Stockholm, Sweden. Professor Gunnar Karlsson is my main adviser. The title of my research is “Quality aspects of real-time packetised voice”. Defended the licentiate examination in June 2003. A licentiate can be seen as slightly more than 50% of a PhD degree. The publications section outlines the academic achievements within this study so far.

Within the scope of my studies, I have worked on several Swedish national and EU projects:

- Currently I am working within the EU Integrated Project “4WARD”. This is a clean-slate approach to finding objects on the Internet. Rather than go to a URL, one will simply type “latest financial news” and objects matching that description will be returned. An alternative title for this kind of approach is Networks of Information.
- An affordable wireless services infrastructure, where we are looking at cheaper alternatives for building wireless infrastructures. My participation is middleware for audiovisual communication, in this context middleware exists between the application and the network layer. Our particular focus is sharing cross-layer information between 802.11 networks and speech coders for more robust and better speech quality see <http://wireless.kth.se/AWSI>.
- I worked the European Union 6th framework program “Ambient Networks”. Our work package had a focus on a generic congestion control architecture for large, diverse networks <http://www.ambient-networks.org/>.
- During 2006 a colleague and I designed and implemented a handover module for real-time voice in 802.11 networks. Calls could be switched from the local area to the cellular network without loss in quality for the user. This automatic triggering module is used in commercial systems today.
- I have actively participated in the EU 5th framework COST program, “Quality of Future Internet Services”, working on a measurement infra-structure, paper reviewers as well as on the local organising committee for QoFIS 2003.

Oct 2001

Concurrently with the above, a colleague and I investigated the TCP protocol over variable capacity networks. A small contract with a local networking Swedish company, Dynarc AB. This work resulted in a publication at an international conference.

Oct 1997 - Jul 2001

I worked on a Ericsson sponsored project Real-time Internet. The goal was to research, implement and test QoS mechanisms for their product range. I implemented a number of different weighted fair queuing algorithms (WFQ) for UNIX platforms, both in user-space and in the kernel. Also I started some of the audio applications in collaboration with Telia research (old incumbent telephony operator in Sweden).

Nov 1995 - Oct 1997

Worked on the design of a multicast-based file system, Jetfile, with Björn Grönvall, Assar Westerlund and Steve Pink with sponsorship from HP. Jetfile was a fully working file system whose results were published in 1996.

RESEARCH & EXPERIENCE

Researcher, networking group

**IBM European Networking Center
Heidelberg, Germany
Oct 92 - Oct 95**

- Worked on a networked kiosk system for a large German bank. As part of the EU RACE project entitled “Bank”. Worked on the initial ST-II (IPv5) implementation of a media-transport system.
- Spent six weeks completing a Video-on-demand (VoD) system in Washington D.C, USA.

RESEARCH & EXPERIENCE

*Guest scientist, mathematics and statistics
department*

**Commonwealth Scientific Research
Organisation
Sydney, Australia
Jan 91 - Jul 92**

- User interface system for the Bell Labs statistical language, S.
- Popular public domain system known as R available now

RESEARCH & EXPERIENCE

*Engineer, graphics and image processing
laboratory*

**3D Labs
Surrey, UK
Jan 89 - Jan 90**

- Graphics and image processing microcode primitives
- As above but on a parallel (SIMD) architecture.

EDUCATION

PhD student

**Royal Institute of Technology
Stockholm, Sweden
Dec 2000-current**

- PhD degree (December 2008)
- Licentiate degree (May 2003).

Licentiate thesis: “Quality aspects of audio communication”, *Royal Institute of Technology (KTH), Stockholm, Sweden*, ISRN KTH/IMIT/LCN/AVH-03/01 SE, May 2003.

Masters student

**Manchester University
Manchester, UK
1988**

- Masters Degree in System Design

Undergraduate student

**Manchester Polytechnic
Manchester, UK
1987**

- Bachelor Degree (Hons) Physics and Computer Science.
- Upper Second Degree from Manchester Polytechnic (2 I).

BOOK CONTRIBUTION

I. Marsh, F. Li and G. Karlsson, "Wide Area Measurements of VoIP Quality" *Final Report of the COST 263 European Action on Quality of Future Internet Services*, Chapter 1, COST 263 European Action, September 2003.

EDUCATIONAL RELATED ACTIVITIES

Program committees:

CSNDSP 2008 organized a Special Session on "QoS, Reliability and Performance Modelling" Graz, Austria, July 2008. Special Session Co-Organizers: Hind Castel and Periklis Chatzimisios

Next Generation Teletraffic and Wired/Wireless Advanced Networking (NEW2AN 2004 and 2005) Editors: Y.Kouheryavy, J.Harju, A.Kouheryavy

Thirteenth Annual Multimedia Computing and Networking (MMCN'06) Editors: S. Chandra and C. Griwodz

Advisory roles: External course evaluator for Multimedia Course at University of Oslo 2007

Teaching experience:

Supervised five masters students

Supervised five undergraduate students in an IP telephony course

PUBLICATIONS

W.Leister, T. Sutinen, S.Boudko, I. Marsh, C. Griwodz and P. Halvorsen *The 6th International Conference on Advances in Mobile Computing and Multimedia*, Linz, Austria, November 2008.

M. Varela, I. Marsh and B. Grönvall A Systematic Study of PESQ's Performance (from a Networking Perspective) *In Proceedings of MESAQIN'06*, Prague, Czech Republic, June 2006.

I. Marsh and B. Grönvall Performance evaluation of voice handovers in real 802.11 networks *The Second International Workshop On Wireless Network Measurement*, Boston, Massachusetts, USA, April 2006.

I. Marsh, B. Grönvall and F. Hammer The design and implementation of a quality-based handover trigger *5th IFIP-TC6 Networking 2006*, Coimbra, Portugal May 2006.

I. Marsh, J. C. M. Severiano, V. Y. D. Nunes and G. Q. Maguire Jr IEEE 802.11b voice quality assessment using cross-layer information *1st Workshop on Multimedia over Wireless*, Athens, Greece April 2006.

I. Marsh “Quality Assessment of Voice quality over 802.11 networks“ *Infocom student workshop poster*, Miami, USA. March 2005

J.C.M. Severiano, G. Maguire Jr., I. Marsh and V. Y. D. Nunes “Cross-layer measurements using voice in 802.11b networks” *2nd Swedish National Computer Networks Workshop*, Karlstad, Sweden, November 2004.

O. Hagsand, I. Más, I. Marsh and G. Karlsson, “Self-admission control for IP telephony using early quality estimation,” *IFIP Networking 2004*, Athens, Greece, July 2004.

I. Marsh, F. Li and G. Karlsson, “Wide Area Measurements of VoIP Quality,” *Quality of Future Internet Services*, Stockholm, Sweden, October 2003.

O. Hagsand, I. Marsh and K. Hanson, “Sicsophone: A Low-delay Internet Telephony Tool,” *IEEE 29th Euromicro Conference*, Belek, Turkey, September 2003.

P. Biyani, O. Hagsand, G. Karlsson, I. Marsh and I. Más, “Early Estimation of Voice over IP Quality,” *21st NORDUnet Networking Conference*, Reykjavik, Iceland, August 2003.

I. Kaj and I. Marsh, “Modelling the Arrival Process for Packet Audio,” *Quality of Service in Multiservice IP Networks*, Milan, Italy, February 2003.

I. Marsh and F. Li, “A VoIP Measurement Infrastructure,” *16th Nordic Teletraffic Seminar*, Espoo, Finland, August 2002.

H. Abrahamsson, O. Hagsand and I. Marsh, “TCP over Variable Capacity Links: A Simulation Study,” *7th IFIP/IEEE International Workshop on Protocols for High Speed Networks*, Berlin, Germany, April 2002.

B. Ahlgren, A. Andersson, O. Hagsand and I. Marsh, “Dimensioning Links for IP Telephony,” *Internet Telephony Workshop 2001*, New York, USA, April 2001.

TECHNICAL REPORTS & NON-REFERRED ARTICLES:

O. Hagsand, I. Marsh and O. Hagsand, “Sicsophone: A Low-Delay Internet Telephony Tool,” *Swedish Institute of Computer Science Technical Report T2002:26*, December 2002.

I. Marsh and F. Li, “Wide Area Measurements of VoIP Quality,” *Swedish Institute of Computer Science Technical Report T2002:26*.

H. Abrahamsson and I. Marsh, “DTMsim - DTM Channel Simulation in ns-2,” *Swedish Institute of Computer Science Technical Report T200:10*,

B. Ahlgren, A. Andersson, O. Hagsand, I. Marsh, “Dimensioning Links for IP Telephony,” *Swedish Institute of Computer Science Technical Report T200:09*.

I. Marsh and F. Li, “Wide Area Measurements of Voice over IP Revisited,” *Radio Vetenskap och Kommunikation '02*, Stockholm, Sweden, August 2002.