

CURRICULUM VITAE

for Ernst Nordström

Personal Data

Born in Uppsala, Sweden, on April 12, 1966

Academic Qualifications

- Jun. 1985 Gymnasieexamen at Natural Science Program, Falun
- Mar. 1992 Master of Science in Engineering Physics, Uppsala University
Thesis: Interpretation of Results from Artificial Neural Networks
Used for Error Diagnostics within Telecommunication
- Sep. 1995 Licentiate in Computer Systems, Uppsala University
Opponent: Soren Blaabjerg
Thesis: Neural Networks for Traffic Control in ATM Networks
- Dec. 1998 Ph.D in Computer Systems, Uppsala University
Opponent: Michal Pioro
Thesis: Markov Decision Problems in ATM Traffic Control

Professional activities

- Jun. 1986 – Jul. 1987 Computer programmer, Administrative software development,
Televerket, Falun
- Jun. 1988 – Aug. 1988 Operator, Control of paper manufacturing process, Kvarnsvedens Paper
Mill, Borlänge
- Jun. 1989 – Aug. 1989 Computer programmer, Technical software development for design of
mechanical bearings, KLF-ZVL OMNIA, Zilina, Slovakia
- Jun. 1990 – Aug. 1990 Computer programmer, Technical software development for JAS 39
Gripen: image classification tools, Ericsson Radar, Kista
- Aug. 1991 – Jan. 1992 Master thesis worker, Application of artificial intelligence to error
management of AXE switches, Ellemtel Telecommunication Systems
Laboratories, Älvsjö
- Feb. 1992 – Dec. 1998 PhD thesis worker, Application of stochastic models to telecom network
routing, Department of Computer Systems, Uppsala University
- Aug. 1996 – Oct. 1996 Senior researcher, Modelling of telecom traffic control, Department of
Telecommunications, Technical University of Denmark, Denmark
- Jan. 1999 – May 2000 Associate professor, Teaching and research, Department of Computer
Systems, Uppsala University
- Jun. 2000 – Aug. 2000 Senior researcher, Simulation of telecom link operation, Ericsson Traffic
Lab, Budapest, Hungary
- Sep. 2000 – Jun. 2008 Associate professor, Teaching and research, Department of Economics
and Social Sciences, Dalarna University
- Jul. 2008 – Sep. 2009 Self employed, Development of own company BizOpt Research, Falun
- Oct. 2009 – May 2016 Telecom engineer, Administration of rail traffic management systems,
Department of Traffic Systems, Swedish Transport Administration

Outcome of work at Swedish Transport Administration

Professional goals

- Envisioning new technical functions in green transportation systems
- Specify performance models (RAM) and economic models (LCC) of railway infrastructure
- Specify control mechanisms of railways as a complex technical systems
- Specify technical market based instruments (MBI) for deregulated railway maintenance

Specialities

- Reliability, Availability, Maintainability (RAM) of rail traffic management infrastructure
- Life cycle costs (LCC) of rail traffic management infrastructure
- Functional and technical system integration (SI) for rail traffic control
- Service Level Agreement (SLA) for telecommunication services
- Administration of rail traffic management organisation
- Role of public authority as professional buyer and user of railway maintenance services

Results

- 60+ strategic/technical documents
- Network with professional contacts

Outcome of work at BizOpt Research

Professional goals

- Help customers build ICT systems that are attractive for subscribers and profitable for operators
- Perform design and analysis of ICT business models and help customers to choose competitive business strategies

Specialities

Business modelling:

- Design of business models for DTV operators
- Qualitative analysis of business models
- Techno-economic analysis of business cases

Future TV services:

- Modelling of interactive and social TV services
- Modelling of consumer value of TV services
- Human-Computer Interaction (HCI)
- Human factors
- Consumer psychology

Traffic engineering:

- Packet traffic modelling
- Packet schedulers
- Packet-level performance (QoS) evaluation
- Call traffic modelling
- Call admission control
- Unicast and multicast QoS routing
- Call-level performance (GoS) evaluation

Results

- 6 strategic/technical reports available at home page www.bizopt.se
- Network with R&D contacts

Outcome of work at university

Teaching activities

Period: 1992-2008

Covered topics

- | | |
|----------------|--|
| • Applications | modelling, performance analysis and control of computers and telecommunications networks |
| • Technology | computer technology, Internet technology, wireless technology, network security |
| • Models | stochastic models |
| • Algorithms | decision optimisation: modelling, prediction and control of decision values; artificial intelligence, cryptography |

Courses

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|---------------------------------|-----------------------|
| • Hardware description language | B-level, 3 lectures |
| • Operating Systems | B-level, 4 lectures |
| • Data communication | B-level, 50 lectures |
| • Wireless communication | C-level, 50 lectures |
| • Network modelling | D-level, 45 lectures |
| • Network modelling | PhD-level, 9 lectures |
| • Operations research | D-level, 6 lectures |
| • Algorithms and complexity | D-level, 10 lectures |
| • Cryptography | B-level, 12 lectures |

Master thesis supervision

Covered topics

- Telecom network management
- Modelling of telecom traffic
- Performance evaluation of telecom networks
- Traffic control in telecom networks

Master thesis supervision

Period: 1994-2008

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|--|----------|
| • Factory LAN network design | 1 thesis |
| • Network signalling for set up/release of telecom connections | 1 thesis |
| • Internet access technologies | 1 thesis |
| • Internet traffic transfer protocols | 1 thesis |
| • Admission control of telecom connections | 1 thesis |
| • Routing of telecom connections | 5 theses |
| • Scheduling of telecom traffic transfers | 1 thesis |
| • Monitoring of telecom traffic flows | 1 thesis |
| • Modelling of telecom traffic flows | 2 theses |
| • Evaluation of telecom traffic schedulers | 4 theses |
| • Evaluation of telecom network availability | 2 theses |
| • Configuration of telecom traffic schedulers | 1 theses |
| • Network emulation/traffic generation | 2 theses |
| • Rate scheduling of radio access links | 2 theses |
| • TV content recommendation algorithms | 1 thesis |

PhD thesis supervisor

1998-2000 Reinforcement learning for admission control and routing, Assistant supervisor, Uppsala university

2003-2006 Image classification of road signs, Assistant supervisor, Dalarna university

Research projects

1992-1995 Performance evaluation of telecom packet switches, Licentiate thesis project, Uppsala university

1995-1998 Optimal resource allocation in telecom networks, PhD thesis project, Uppsala university

2001-2008 Performance evaluation and optimisation of resource utilisation in fixed and mobile telecommunication networks, Senior research project, Dalarna university

Research results

- 4 refereed journal articles
- 16 refereed conference articles
- Own software simulator for evaluation of resource allocation policies in telecom networks

- Network with research contacts

Sabbaticals

- 1996 Department of Telecommunication, Technical University of Denmark, Lyngby, Denmark (3 months)
 2000 Ericsson Traffic Laboratory, Budapest, Hungary (3 months)

Board member at Faculty and Department at university

- 2002-2004 Utbildnings och Forskningsnämnden, Dalarna university
 2004-2005 Institutionsnämnden Kultur, Media, Data, Dalarna university

Accademic merits

- 1995 Published one article in IEEE Communications Magazine (Invited)
 2005-2007 Published three articles in European Transactions on Telecommunications
 1998 Offered position as associate professor in Telecommunications at Lund university
 2009 Offered position as associate professor in Telecommunications at Blekinge university

Additional

- 1989-1991 Member of the International group, VDala Nation, Uppsala
 1994-1995 Project leader of Uppsala ATM pilot
 2000-2008 Examiner of Bachelor and Master theses in Computer Systems at Dalarna University, selected years
 2008 Evaluator of PhD thesis in traffic engineering at Budapest University of Technology and Economics