

# Jörg Widmer

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## RESEARCH INTERESTS

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My research interests are in the areas of computer networks and multimedia applications, with particular interest in congestion control, multicast communication, and ad-hoc networking.

## EDUCATION

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Ph.D. in Computer Science expected April 2003  
University of Mannheim, Germany

M.Sc. in Computer Science and Business Administration February 2000  
(Dipl. Wirtschaftsinformatiker), University of Mannheim, Germany

Master's thesis at ICSI Center for Internet Research (formerly ACIRI) on "Equation-Based Unicast Congestion Control"

## HONORS

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Graduate student scholarship of the "German National Merit Foundation" (Studienstiftung des deutschen Volkes)

Research fellowship of the German National Merit Foundation for studies at the International Computer Science Institute, Berkeley

Best student paper award, NGC 2001

## DISSERTATION

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"Equation-Based Congestion Control for Unicast and Multicast Data Streams", May 2003

## OTHER RESEARCH EXPERIENCE

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Research Stay, École Polytechnique Fédérale de Lausanne (EPFL), Summer 2002  
– Research on congestion control for flows with variable packet sizes

Short-Term Research Stay, ICSI Center for Internet Research, September 2001  
– Specification of the TFMCC protocol as Internet draft

Short-Term Research Stay, University College London, August 2001  
– Research on congestion control for non-adaptable flows and networked computer games

Research Intern, ICSI Center for Internet Research, Summer 2000  
– Worked on the design and implementation of a multicast congestion control protocol for streaming media

- Research Intern, ICSI and DaimlerChrysler Research and Technology Center, Palo Alto, Spring 2000
- Designed communication architecture and conducted network simulations in project on wireless communication and Mobile IP

## WORK EXPERIENCE

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- Trainer / Consultant, Orientation in Objects, Gemmingen, Germany, 1999
- Taught seminars in Java programming for Sun Microsystems, IT department of major banc, etc.
- Research Assistant, Computer Science Department, University of Mannheim, 1996 – 1999
- Developed real-time transfer protocol network library
  - Enhanced video conference tool by adding on-the-fly image segmentation capabilities
  - Responsible for transmission of lectures over the Internet
- Programmer, Script-X Film- and Multimedia Studio, Weinheim, Germany, 1996 – 1998
- Programmed and coordinated CD-ROM based multimedia presentation projects

## TEACHING EXPERIENCE

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- Teaching Assistant for “Computer Networks”, Spring 2000, 2001, and 2002
- Teaching Assistant for “Multimedia Technologies”, Fall 2001
- Supervised Student Programming Projects on “MP3 Streaming”, Fall 2001
- Supervised Student Programming Projects on “Peer-to-Peer Network Design”, Fall 2002
- Seminar on “Mobile Communication”, Spring 2001
- Seminar on “Mobile and Wireless Networking”, Fall 2000

## MS THESES SUPERVISED

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- Arndt Oberhöffken, “Street-to-Link Abstraction for Position-Based Routing in Ad-Hoc Networks”, ongoing
- Martin Arnold, “Application-Aware Distribution Trees for Application-Level Multicast”, ongoing
- Michael Moeske, “Real-World Evaluation of a Vehicular Ad Hoc Network using Position-Based Routing”, ongoing
- Christian Lochert, “Ad Hoc Routing for Inter-Vehicle Communication in City Scenarios”, March 2003
- Wolfgang Kieß, “Hierarchical Location Service for Mobile Ad Hoc Networks”, March 2003
- Michael Käseman, “Beaconless Position-Based Routing for Mobile Ad-Hoc Networks”, February 2003
- Thomas Lang, “Multicasting in Wireless Ad Hoc Networks”, September 2002
- Matthias Transier, “Dynamic Load-Balancing for Position-Based Routing Algorithms”, Juli 2002
- Jürgen Hötzel, “VBR Video Coding and Transmission using a Single-Rate Multicast Transport Protocol”, April 2002
- Jan Peter Damm, “Probabilistic Congestion Control for Non-Adaptable Flows”, April 2001

## ACTIVITIES

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Member of ACM, ACM SIGCOMM

Instructor for Deutsche Schülerakademie, Juli 2001

Taught seminar for Jugendakademie Mannheim, January 2002

## PUBLICATIONS

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### Book Chapters

Jörg Widmer, Martin Mauve, Hannes Hartenstein, Holger Füßler. "Position-Based Routing in Ad-Hoc Wireless Networks." In Mohammad Ilyas (ed.): *The Handbook of Ad Hoc Wireless Networks*, CRC Press, December 2002.

### Journal Articles

Holger Füßler, Jörg Widmer, Michael Käsemann, Martin Mauve, Hannes Hartenstein. "Contention-Based Forwarding for Mobile Ad-Hoc Networks." accepted for publication in *Elsevier AdHoc Networks Journal*

Martin Mauve, Hannes Hartenstein, Holger Füßler, Jörg Widmer, Wolfgang Effelsberg. "Positionsbasiertes Routing für die Kommunikation zwischen Fahrzeugen." *it + ti*, October 2002.

Martin Mauve, Jörg Widmer, Hannes Hartenstein. "A Survey on Position-Based Routing in Mobile Ad-Hoc Networks." *IEEE Network*, November 2001.

Jörg Widmer, Robert Denda, Martin Mauve. "A Survey on TCP-Friendly Congestion Control." *Special Issue of the IEEE Network Magazine Control of Best Effort Traffic*, May/June 2001.

Thomas Fuhrmann, Jörg Widmer. "On the Scaling of Feedback Algorithms for Very Large Multicast Groups." *Special Issue of Computer Communications on Integrating Multicast into the Internet*, March 2001.

### Refereed Conference Contributions

Martin Mauve, Holger Füßler, Jörg Widmer, Thomas Lang. "Position-Based Multicast Routing for Mobile Ad-Hoc Networks (poster)." *MobiHoc'03*, Annapolis, MD, June 2003.

Jürgen Vogel, Jörg Widmer, Dirk Farin, Martin Mauve, Wolfgang Effelsberg. "Priority-Based Distribution Trees for Application-Level Multicast." *NetGames 2003*, Redwood City, CA, May 2003

Jörg Widmer, Martin Mauve, Jan Peter Damm. "Probabilistic Congestion Control for Non-Adaptable Flows." *12th International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSSDAV)*, Miami, FL, May 2002.

Martin Mauve, Stefan Fischer, Jörg Widmer. "A Generic Proxy System for Networked Computer Games." *NetGames 2002*, Braunschweig, April 2002.

Jörg Widmer, Thomas Fuhrmann. "Extremum Feedback for Very Large Multicast Groups." *Proc. Third International Workshop on Networked Group Communication (NGC)*, London, November 2001.

Jörg Widmer, Mark Handley. "Extending Equation-based Congestion Control to Multicast Applications." *Proc. ACM SIGCOMM 2001*, pp. 275-286, San Diego, CA, August 2001.

Sally Floyd, Mark Handley, Jitendra Padhye, Jörg Widmer. "Equation-Based Congestion Control for Unicast Applications." *Proc. ACM SIGCOMM 2000*, pp. 43-56, Stockholm, Sweden, August 2000.

### RFCs and Internet Drafts

Mark Handley, Sally Floyd, Jitendra Padhye, Jörg Widmer. “TCP Friendly Rate Control (TFRC): Protocol Specification.” RFC 3448, *Standards Track*, January 2003.

Jörg Widmer, Mark Handley. “TCP-Friendly Multicast Congestion Control (TFMCC): Protocol Specification.” *Internet draft*, draft-ietf-rmt-bb-tfmcc-01.txt, November 2002.

### TALKS

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Jörg Widmer, Hannes Hartenstein. “Position Based Routing in Mobile Ad Hoc Networks – State of the Art and Current Challenges”, I&C Seminar, EPFL, Lausanne, November 2002.

Jörg Widmer. “Issues in TCP-Friendly Equation-Based Congestion Control”, University of Saarbruecken, April 2002.

Jörg Widmer. “TCP-Friendly Equation-Based Congestion Control”, Ericsson Eurolab, Aachen, March 2002.

Jörg Widmer, Mark Handley. “TCP-Friendly Multicast Congestion Control”, 52nd IETF Meeting, Salt Lake City, December 2001.

Jörg Widmer. “Overview of Mobile Network Architectures”, NEC, Heidelberg, February 2001.

Jörg Widmer. “Mobile Network Architecture”, DaimlerChrysler Research Lab, Palo Alto, CA, April 2000.

Jörg Widmer. “The Network Simulator ns-2: An Overview”, International Computer Science Institute, Berkeley, CA, March 2000

### LANGUAGES

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- German (native language)
- English (fluent)
- French (fluent)

### REFERENCES

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Available upon request.