Ece Gelal

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CAREER OBJECTIVES

A position that utilizes my expertise on the PHY/MAC/Routing layers of a wide range of wireless communication systems.

EDUCATION

2006 – 2009	**Ph.D., University of California, Riverside** Ph.D. in Computer Science and Engineering Thesis: *Cross-Layer Design for Wireless Networks Using Antenna Arrays* Supervisor: Prof. Srikanth V. Krishnamurthy GPA=3.96/4.00
2004 – 2006	**M.Sc., University of California, Riverside** M.Sc. in Computer Science and Engineering Thesis: *An Integrated Scheme for Fully-Directional Neighbor Discovery and Topology Management in Mobile Ad Hoc Networks* Supervisor: Prof. Srikanth V. Krishnamurthy GPA=3.96/4.00
2000 – 2004	**B.Sc., Sabanci University**, Istanbul, TURKEY B.Sc. in Telecommunications Engineering Thesis: *Design of a Broadband Service Manager* Supervisors: Prof. Ozgur Gurbuz and Prof. Ozgur Ercetin GPA=3.29/4.00

WORK EXPERIENCE

09/2004 – 08/2009	**Graduate Research Assistant,** Univ. of California, Riverside, Dept. of Comp. Sci. and Eng. *Advisor:* Prof. Srikanth V. Krishnamurthy • Examining the cross-layer interactions between the physical layer and the higher layers for exploiting the spatial diversity achieved with MIMO systems in multi-hop networks. Building practical and accurate models that represent spatial diversity at the higher network layers. (First effort for the cross-layer design of a model of the communication characteristics when using IEEE 802.11n systems.) • Cross-layer design of topology control algorithms for facilitating Multi-User MIMO in multi-hop networks. Evaluation in various network settings using OPNET. (First effort to optimize the usage of resources (time, bandwidth) on realistic communication models.) • Design, simulation and graph-theoretical analysis of topology control algorithms for wireless multi-hop networks that use directional beamforming antenna systems to communicate over large distances. (First effort to jointly optimize power consumption and route lengths in multi-hop networks.)
07/2006 – 10/2006	**Intern,** Los Alamos National Laboratory (LANL), Discrete Simulation Sciences (CCS-5) Group *Supervisor:* Stephan Eidenbenz • Parsing and analyzing the connection requests in the metropolitan US cities of Seattle, Chicago, and Houston using a Packet-Switched Telephone Network (PSTN) simulator.
10/2003 - 06/2004	**Graduation Project** in collaboration with **Gantek Technologies**, Istanbul, Turkey *Supervisors:* Prof. Ozgur Gurbuz and Prof. Ozgur Ercetin • Designing the architecture (i.e., modules and functionalities) of a Broadband Service Manager for subscriber and session management in building-centric WLANs. This design constituted the first part of a two-year project. This architecture has been implemented in the following year; this project resulted in the company's commercial product.
08/2003 - 10/2003	**Intern, TURKCELL**, Istanbul, Turkey Technical Operations Group/Engineering-Planning Division/Platforms-Services Unit *Supervisor:* Adnan Alagul, Director of the Value-Added Services (VAS) Team • Modeling and simulation of the GSM operator's interface to the third-party service provider companies. The company used this prototype for examining test cases.

07/2003 - 08/2003	**Intern, The Scientific and Technical Research Council of Turkey (TUBITAK)** Research Marmara Center, Kocaeli, Turkey

- Basic projects targeted to learning multi-threaded socket programming in C#.

07/2002 - 08/2002	**Intern, Ege Elektronik A.S.**, Izmir, Turkey Control and System Design Department

- Observation of the network infrastructure for the RFID-based billing mechanism used by the city's transportation system.

11/2002 - 05/2002	**Lab Administrator, Sabanci University**, Istanbul, Turkey Computer Vision and Pattern Analysis Lab, Prof. Aytul Ercil

- In the establishment phase of the lab, my role was to identify and order the necessary equipment.

PUBLICATIONS

E. Gelal, K. Pelechrinis, I. Broustis, T.-S. Kim, S.V. Krishnamurthy and B. Rao, Topology Control for Effective Interference Cancellation in Multi-User MIMO Networks, under review.

E. Gelal, K. Pelechrinis, I. Broustis, S. Mohammed, S.V. Krishnamurthy and A. Chockalingam, Capturing the Impact of Spatial Diversity on Higher Layers, under review.

E. Gelal, G. Jakllari, S.V. Krishnamurthy and N.E. Young, Topology Management in Directional Antenna Equipped Ad hoc Networks, IEEE Transactions on Mobile Computing, Vol. 8, No. 5, May 2009

V. Shah, *E. Gelal*, and S.V. Krishnamurthy, Handling Asymmetry in Power Heterogeneous Ad Hoc Networks, Elsevier Computer Networks Journal (COMNET), July 2007.

E. Gelal, G. Jakllari and S.V. Krishnamurthy, Exploiting Diversity Gain in MIMO-Equipped Ad Hoc Networks, Asilomar Conference on Signals and Systems 2006, San Diego, CA (Invited Paper).

E. Gelal, G. Jakllari, S.V. Krishnamurthy and N.E. Young, Topology Control to Simultaneously Achieve Near-Optimal Node Degree and Low Path Stretch in Ad Hoc Networks, in Proceedings of IEEE SECON 2006, Reston, VA.

E. Gelal, G. Jakllari, S.V. Krishnamurthy and N.E. Young, An Integrated Scheme for Fully-Directional Neighbor Discovery and Topology Management in Mobile Ad hoc Networks, in Proceedings of IEEE MASS 2006, Vancouver, CA.

OTHER PROJECTS

- Do MIMO Systems Provide Better Routes?, supervised by Prof. Michalis Faloutsos, 2006
- A Survey on Mesh Networks, supervised by Prof. Michalis Faloutsos, 2006
- Exploiting MIMO Systems at the MAC and Network Layers, supervised by Prof. Srikanth Krishnamurthy, 2005
- A Measurement Study: UDP versus TCP Performance in Congested Routers, supervised by Prof. Mart Molle, 2004
- Cooperative Diversity in Wireless Networks, supervised by Prof. Ozgur Gurbuz, 2004
- Networking for Multimedia: A Simulation Study of Service Scheduling Disciplines and Transport Protocols, supervised by Prof. Ozgur Gurbuz, 2003
- Examination of Different Equalization Techniques in High-Density Magnetic Recording Channel via Matlab Implementation, supervised by Prof. Mehmet Keskinoz, 2003
- Simulation of a Real-Time Spectrum-Analyzer in Assembly and C, supervised by Prof. Ayhan Bozkurt, 2003
- Design of an AM Transmitter/Receiver, supervised by Prof. Ayhan Bozkurt, 2001

HONORS and ACCOMPLISHMENTS

09/2006	IEEE SECON Travel Award supported by NSF
09/2004 – 06/2005	Deans Fellowship, University of California, Riverside
08/2003	TCP-IP Seminar Participation Certificate, Turkcell Academia, TURKCELL, Istanbul
2000 – 2002	Certificate of High Honor (12/2000, 06/2001, 12/2001) and Honor (06/2002), Faculty of Engineering and Natural Sciences, Sabanci University, Istanbul, Turkey
09/2000 – 06/2004	Merit Scholarship for all semesters in Sabanci University, Istanbul, Turkey
06/2000	Ranked 16th among 1.5 million students in the annual nationwide university entrance examination in Turkey
07/1998	Delegate of Turkey, Annual International Space Camp, Huntsville, AL, USA
07/1998	Right Stuff Award, International Space Camp, Huntsville, AL, USA

SKILLS

Languages:	C and C++ (programming); Perl, Linux Bash (scripting)
Software:	OPNET network simulator (Excellent), Matlab, MS Visual Studio, Xcode, MS Office
Standards and Protocols:	IEEE 802.11a/g/n, TCP/IP, AODV, DSR

PROFESSIONAL SERVICES and ACTIVITIES

- ***Program Committee member and organizer*** for PhD Forum in ACM MobiSys 2008, Breckenridge, CO
- ***External reviewer*** for IEEE INFOCOM, IEEE ICNP, ACM MobiHoc, IEEE SECON, IEEE ICC, ACM MobiSys (PhD Forum) IEEE Trans. on Mobile Computing, IEEE Trans. on Networking, Elsevier Ad Hoc Networks, Elsevier COMNET, Springer WINET
- ***IEEE student member*** since 2003
- Attended the ***conferences***: IEEE PIMRC'05, Berlin, Germany; IEEE SECON'06, Reston, VA, USA; ACM MobiSys'08, Breckenridge, CO, USA.
- ***Talks:*** *"Handling Asymmetry in Gain in Directional Antenna-Equipped Ad Hoc Networks",* in IEEE PIMRC 2005, Berlin, Germany. *"Topology Control to Simultaneously Achieve Near-Optimal Node Degree and Low Path Stretch in Ad Hoc Networks"*, in IEEE SECON 2006, Reston, VA, USA.

SELECTED COURSEWORK

- *Graduate:* Advanced Computer Architectures, Advanced Computer Networks, Design and Analysis of Algorithms, Performance Evaluation of Computer Networks, Queuing Theory, Data Mining, Network Routing, Wireless Networks and Mobile Computing
- *Undergraduate:* Discrete Mathematics, Data Structures, Communication Systems I&II, Electronic Circuits, Discrete-Time Signals and Systems, Electromagnetics I&II, Computer Architectures, Algorithms, Multimedia Communications, Wireless Communications, Digital Communications, Antennas and Propagation for Wireless Systems, Microcomputer Based System Design