Research Statement

Research Philosophy

My research lies at the intersection of systems and theory. I am motivated by problems presented by real life. My goal is to explore the properties of those systems and find real life algorithms. I am intrigued by communication network systems, such as wireless sensor networks, ad-hoc systems, and by related problems, such as routing, backbones and energy efficiency In addition, I am also interested in Wi-Fi and Wi-Max Combination and routing in MMR systems. A topic I have recently started to work on is maximizing the lifetime of sensor networks. The main constraint of sensor nodes is their low finite battery energies/energy, which limits the network's lifetime and affects the quality of the network. Therefore, design of energy efficient routing protocols for sensor networks is of paramount importance.

I believe in a multidisciplinary research approach; in particular, I have been using tools and results from mathematics, graph theory, game theory, electrical engineering and computer science. I stand for team work and enjoy the enrichment of collaboration, both within my field and between fields. I am a self-taught hard working person, one who is not intimidated by new challenges. I am looking for a full time post-doc position that encourages independent thinking as well as teamwork and one that will enable me to further develop my abilities. Last but not least, I hope to find an environment that will enable me to continue enjoying productive collaboration and intellectual growth.

Future Research

In future work I would like to pursue my research on aspects of real-life phenomena. Systems and problems that I find appealing for my next investigations are, for example:

- Intelligent Transportation System.
- Wireless Ad Hoc Networks.
- Vehicular Ad Hoc Network.
- Sensor Networks.

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EDUCATION:

2004 - 2008 PhD student in Communication Systems Engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel. (Degree expected: Spring 2009)

Topic: Optimizing Traffic Parameters in Wireless Network Communication Backbones.

Advisor: Prof Michael Segal.

2002 - 2004 M.Sc. in Electro-Optical Engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel.

Topic/Thesis: SPLAST: A Novel Approach for Multicasting in Mobile Wireless Ad Hoc Networks.

Advisor: Prof Michael Segal and Dr. Yehuda Ben-Shimol.

1998 - 2002 B.Sc. in Communication Systems Engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel.

PROFESSIONAL EXPERIENCE:

2004 - present Research Assistant, Ben Gurion University, Beer-Sheva, Israel

2004 - 2005 Consultanted, Tadiran Telecom Ltd, Israel.

- Designed and simulated an army communication network.

2002 Summer internship in TU Dresden, Vodafone Department, Germany.

- Researched on “Bit Loading Algorithm in OFDM”
- Worked under the direct supervision of Professor Gerhard Fettwies, Head of the Vodafone Department.

2000-2002 QA and technical support, NESS-ISI, Clalit Health Services, Beer-Sheva, Israel.

- QA and technical support for a unique medical applications that operate in clinics and hospitals.

TEACHING EXPERIENCE:

2002 - present Lecturer in the Department of Communication Systems Engineering, Ben-Gurion University, Beer-Sheva, Israel.

Courses:

- Introduction to Computer Science (Java).
- Introduction to Communication Networks.
- Network Architecture (Data link and Network layers protocols).

2002 - present Teaching assistant in the Department of Communication Systems Engineering, Ben-Gurion University, Beer-Sheva, Israel.

Courses taught:

- Algorithms in Sensor Networks.
- Network Programming.
- C++ fundamental programming.
- Introduction to Computer Science (Using OO/Java).
- Communication Networks (Layers Phy-Network).

2002 - present Tutor on student projects in the Department of Communication Systems Engineering, Ben-Gurion University, Beer-Sheva, Israel.

Projects name:

- Wi-Fi, Wi-MAX Combination, won “The Hubert Burda Prizes for Innovation Awarded” and “The IDF's Computer Service Directorate awarded”.
- MMR Routing algorithm.
- Cores in Sensor Networks.

RESEARCH AND DEVELOPMENT ACTIVITIES:

2004 - present Optimizing Traffic Parameters in Wireless Network Communication Backbones.
Institution: Ben-Gurion University of the Negev
Supervisor: Dr. Michael Segal.

2008 – present Reviewer – MobiHoc 2008, MobiHoc 2009, AlgoSensor 2009.

2006 - present Wi-Fi, Wi-MAX Combination.
Institution: Ben-Gurion University of the Negev
Company: Intel (2006 – 2007), BGU (2007 – present)
Supervisor: Dr. Michael Segal.

2006 - 2008 Radar Project
Institution: Ben-Gurion University of the Negev
Company: Deutsche Telekom
Supervisor: Dr. Michael Segal.

2007 – 2008 MMR Routing algorithm.
Institution: Ben-Gurion University of the Negev
Company: Remon - Israel 4G Consortium
Supervisor: Dr. Michael Segal.

2002 - 2004 Developed a new routing algorithm for static and mobile wireless ad hoc networks.
Institution: Ben-Gurion University of the Negev
Supervisors: Dr. Michael Segal and Dr Yehuda Ben-Shimol.

1998-2002 Optimal directional antenna positioning.
Institution: Ben-Gurion University of the Negev
Supervisor: Dr. Michael Segal and Dr Yehuda Ben-Shimol.

Publications:

1. B. Ben-Moshe, Y. Ben-Yehezkel, Y. Ben-Shimol, **A. Dvir** and M. Segal "An Automated Wireless Fixed-Access Network Antenna Positioning Algorithm", *Journal of Heuristics*. 2006.
2. Y. Ben-Shimol, **A. Dvir** and M. Segal, "SPLAST: A Novel Approach for Multicasting in Mobile Wireless Ad Hoc Networks", *Network Theory and Applications: Special issue on Advances in wireless networks and mobile computing*, 2008.
3. **A. Dvir** and M. Segal, "Placing and Maintaining a Core Node in Wireless Ad Hoc Sensor Network", *Journal of Wireless Communications and Mobile Computing*, Accepted.
4. **A. Dvir** and M. Segal, "The (k, l) Coredian Tree for Ad Hoc Networks", *Ad Hoc & Sensor Wireless Networks*, 6(1-2): 123-144, 2008.
5. **A. Dvir** and N. Carlsson, "Power-aware Recovery for Geographic Routing", accepted, WCNC 2009.
6. B. Ben-Moshe, **A. Dvir**, M. Segal, and A. Tamir, "Centdian Computation for Sensor Networks", submitted, 2009.

AREAS OF INTEREST:

- Intelligent Transportation Systems.
- Vehicle Positioning Systems.
- Sensor Networks.
- Ad Hoc Networks.
- Body Area Networks.
- Wi-Fi and Wi-Max Combination.

PROGRAMING:

- Java.
- C++.
- C.
- Matlab.
- Omnet/NS2.
- TinyOS.

ACADEMIC AWARDS:

2006: Student Travel Grant IEEE CCNC06
2003: Intel's Excellency Award for Higher Academic Degree Studies.
2002: Teva's Excellency Award.

LANGUAGE SKILLS:

- Hebrew - Mother Tongue.
- English - Very good.

References

Prof. Michael Segal

Chairman

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