

Vasil Y. Hnatyshin, Ph.D.

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TECHNICAL AND RESEARCH INTERESTS

- Service Differentiation and Quality of Service in IP and Wireless networks
- Network Management
- Computer and Network Security
- Simulation of Network Performance
- Mobile ad hoc Networks
- Wireless Technology
- Distributed Systems
- Intelligent Software Agents
- Object-Oriented Languages

EDUCATION

- **Ph.D. in Computer and Information Sciences, August 2003**
University of Delaware – Newark, DE
Thesis: *Dynamic Bandwidth Distribution Techniques for Scalable per-flow QoS*
Advisor: Dr. A. S. Sethi
GPA: 4.0/4.0
- **M.S. in Computer Science, May 1999**
University of Delaware – Newark, DE
Concentration in Quality of Service and Management of computer networks
GPA: 3.7/4.0
- **B.S. in Computer Science (Suma Cum Laude), May 1997**
Major: Computer Science, Minor: Mathematics
Widener University – Chester, PA
Senior Thesis: “Security of the Java Language”
GPA: 3.9/4.0

WORK EXPERIENCE

- **Assistant Professor:** Department of Computer Science, Rowan University, Glassboro, NJ, Fall 2003 - to date.
- **Software engineer:** Ericsson IP Infrastructures, Rockville, MD, Summer 2001
 - Implemented a Management Information Base (MIB) for Differentiated Services (RFC 3289) and integrated it with the Quality of Service daemon for the Ericsson’s AXI 540 IP services router.

- **Associated Technician**, Internship program at SmithKline Beecham, Gulf Mills, PA, June 1996 – December 1996
 - Customized helpdesk software for the company’s purposes, created new forms, queries, reports and surveys, wrote workflow rules using Applix Helpdesk software package, as well as used Crystal Reports report writer, Lotus Notes, Microsoft Access, Excel, and other software. Extensively used SQL+ for modification of existing Oracle databases.
- **VAX Manager**, Computer Laboratory, Widener University, June 1995 – May 1997
 - Supervisor of MicroVAX 3400. Managed user accounts and troubleshoot problems.

TEACHING EXPERIENCE

- **Assistant Professor:** Department of Computer Science, Rowan University, Fall 2003 - to date.
 - Taught the following courses:
 - *TCP/IP and Internet Protocols* (tcpdump, OPNET IT Guru and Modeler)
 - *Data Communications and Computer Networks* ((tcpdump, OPNET IT Guru)
 - *Computer Organization*
 - *Data Structures and Algorithms (Visual C++ and Java)*
 - *Computer Science and Programming (Visual C++)*
 - *Introduction to Scientific Programming (Visual Basic)*
 - *Introduction to Programming (Visual Basic)*
- **Laboratory Instructor:** Department of Computer and Information Science, University of Delaware, Newark DE, Fall 1997 – Summer 1998
 - Conducted Introduction into Computer Science Labs, teaching Windows 95-98, Microsoft Word, Excel, Access and other desktop applications.
- **Instructor**, Widener University, January 1997 – May 1997
 - Taught a complete course “Introduction into Java Programming”
- **Tutor**, Math Center, Widener University, September 1994 – May 1997

RESEARCH EXPERIENCE

- **Graduate Research Assistant**, University of Delaware, Newark, DE, September 1999 – Summer 2003. Advisor: Dr. A.S. Sethi.
 - Studied the problem of proving per-flow Quality of Service in computer networks. Designed and implemented the load distribution scheme (LDS) for providing per-flow guarantees and fair resource distribution in the Internet and mobile ad hoc networks. Implemented a distributed message exchange protocol of the LDS using OPNET network simulator.
 - Investigated the problem of providing scalable per-flow QoS in the Internet using a Service Differentiation approach for the IP networks. Implemented Differentiated Services framework using the OPNET network simulator.
 - Within the projects funded by the US Army Research Lab Consortium, designed and implemented location management SNMP agent and its management information base (MIB) using net-snmp package. Implemented bi-directional communication for the

exchange of the node management information between OPNET simulator and SNMP Agent using UNIX sockets.

- **Independent Study**, Department of Computer and Information Sciences, University of Delaware, Newark, DE, Spring 1998. Advisor: Dr. K. Decker
 - Implemented initial architecture, communication framework, and graphical interface for the Distributed, Environment-Centered Agent Framework (DECAF) using Java programming language.

QUALIFICATIONS

- **Network Technology:** Internet Protocols (TCP/UDP/IP, routing), MAC protocols, management (ASN.1, SNMP, CMIP, RMON, interoperability), IEEE 802.11.
- Extensive experience in programming and developing simulations using **OPNET**, **QualNet**, and **ns** network simulation tools.
- **Software development:** Java, C/C++, Pascal, LISP, Assembly, Basic, HTML, script languages.
- **Operating Systems:** UNIX (Solaris, SunOS, Linux), X Windows, VAX/VMS, MS Windows, MS DOS, Berkeley sockets, RPC, and multithreaded programming.

PROFESSIONAL ACTIVITIES

- **Member of Committees:**
 - International Advisory Committee for IEEE Tencon '05
 - Program Committee of EESD 2004 Conference
 - IASTED Technical Committee on Networks for the term 2004-2007
- **Session Chair:**
 - IASTED CIIT 2004 Conference
 - EESD 2004 Conference
- **Conference Presentations:** NCUR '97, ARLAS '00, MILCOM '01, ITCOM '01, IC '02, IPCCC'03, IPCCC'04, CIIT'04, PDPTA'05, OPNETWORK'05
- **Book Reviewer:** *Principles of Data Networks and Computer Communications, 1e.*
- **Reviewer for the Journals:**
 - Computer Networks Journal
 - International Journal of Network Management, a Wiley publication
 - Journal of Network and Systems Management
 - IEEE e-Transactions on Network and Service Management
 - International Journal of Ad Hoc and Ubiquitous Computing
- **Paper Reviewer for conferences:** MobiCom '00, NOMS'02, IWQoS'04, NYMAN'04, CIIT'04 IM'03, ACST '04, CSS '04, EESD '04, NCS '05, WTAS'05, ACIT-ASA'05, ACIT-CS'05, IMSA '05, DSOM'05, MILCOM'05, Tencon'05, CIIT'05, CCN'05, CSA'06, WNET '06

ADDITIONAL ACTIVITIES

- Member of the University Senate, Rowan University, 2005-2007
- Rowan University Senate Technological Resource (chairperson), Summer 2005 - current
- Member of Departmental Committees:
 - Library (chairperson),
 - Club/ACM Programming Contest,
 - Research Activities,
 - Adjunct Review,
 - Curriculum,
 - High School Programming content
- Member of the Graduate Students Senate at the University of Delaware, Sep.'02 - May'03

OTHER HONOR AND ACHIEVEMENTS

- Research Assistantship, University of Delaware (Sep. '98 – May '03)
- Teaching Assistantship, University of Delaware (Sep. '97 – Aug. '98)
- Computer Science Award, Widener University (1997)
- Science Award, Widener University (1997)
- Widener University Full Ukrainian Scholarship, (Sep. '94 – May '97)
- Annual Science Division Award, ('94 – '96)
- Top Student of the class, ('95 – '96)
- Dean's List, (Dec. '94 – May '97)
- President's List, (May, 1995)

SPOKEN LANGUAGES

- Fluent in Ukrainian, English, and Russian.

REFEREED PUBLICATIONS:

1. V. Hnatyshin, A. Lobo, P. Bashkirtsev, R. DeDomenico, A. Fabian, G. Gramatges, J. Metting, M. Simmons, and M. Stiefel, "*Modeling a University Computer Laboratory using OPNET Software*", in Proceedings of Fourteenth International Conference on Telecommunication Systems: Modeling and Analysis (ICSTM06), pp. 211 - 218, October 5-8, 2006, Reading PA.
2. V. Hnatyshin and A. S. Sethi, "*Bandwidth Distribution Scheme for Dynamic, Scalable, and Fair Allocation of Bandwidth*," **International Journal of Network Management** (Wiley), Volume 16, Issue 5, September/October 2006, pp 317- 336.
3. V. Hnatyshin, J. Ogren, J. Pucci, and C. Clement, "Influence of the discarding the out-of-profile packets policy on TCP traffic," In Proceedings of the 2005 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'05), Volume 3, pages 1215 - 1221, Las Vegas, NV, June, 2005.
4. V. Hnatyshin and A. S. Sethi, "Estimation Based Load Distribution in the Internet," **Computer Networks**, Volume 48, Issue 4, 15 July 2005, Pages 525-547.
5. V. Hnatyshin and A. S. Sethi, "*Scalable Architecture for Providing Per-flow Bandwidth Guarantees*," Proceedings of the IASTED conference on Communications, Internet and Information Technology (CIIT 2004), St. Thomas, Virgin Isles, November 2004.

6. V. Hnatyshin and A.S. Sethi, "*Optimization of the Bandwidth Distribution Scheme for Handling Topology Changes*," Proc. IPCCC'04, Phoenix, AZ, April 2004.
7. V. Hnatyshin and A.S. Sethi, "*Reducing load distribution overhead with message aggregation*," Proc. IPCCC'03, Phoenix, AZ, April 2003.
8. V. Hnatyshin and A.S. Sethi, "*Fair and Scalable Load Distribution in the Internet*," Proc. 3rd International Conference on Internet Computing, Las Vegas, NV (June 2002).
9. V. Hnatyshin and A.S. Sethi, "*Achieving Fair and Predictable Service Differentiation Through Traffic Degradation Policies*," Proc. SPIE QoS 2001, Conference on Quality of Service over Next-Generation Data Networks, Denver, CO, Aug. 2001.
10. V. Hnatyshin and A.S. Sethi, "*Avoiding Congestion Through Dynamic Load Control*," Proc. ITCom-2001, SPIE's International Symposium on The Convergence of Information Technologies and Communications, Denver, CO, Aug. 2001, pp. 309-323.
11. A.S. Sethi, D. Zhu, V. Hnatyshin, and P. Kokati, "*Battlefield Network Applications of the SHAMAN Management System*," Proc. MILCOM '01, IEEE Military Communications Conference, McLean, VA, Oct. 2001.
12. Vasil Hnatyshin, "*Computer Security: Research of Java Language and its Security Problems*," Proc. of Eleventh National Conference on Undergraduate Research, Austin TX, April 1997.

NON-REFEREED PUBLICATIONS

1. V. Hnatyshin and A.S. Sethi, "*Providing per-flow QoS using load distribution scheme*," TR 2002-06, Department of Computer and Information Science, University of Delaware, Newark, DE, February 2002.
2. A.S. Sethi, D. Zhu, and V. Hnatyshin, "*Hierarchical Management of Battlefield Networks with the SHAMAN Management System*," In Final Report (1996-2001) Advanced Telecommunications and Information Distribution Research Program (ATIRP), pp. 7.1-7.28, US Army Research Laboratory, 2001.
3. A.S. Sethi, D. Zhu, V. Hnatyshin, P. Kokati, D.-P. Hsing, and L. Kant, "*Application of the SHAMAN Management System to Configuration Management of Tactical Internets*," Proc. Fifth ARL/ATIRP Annual Conference, College Park, MD, March 2001.
4. A.S. Sethi, K. Sivakumar, V. Hnatyshin, M. Humphrey, B. Rivera, "*Integrating SHAMAN Management Applications with Battlefield OPNET Simulations*," Proc. of ARL Federal Laboratory 4th Annual Symposium, College Park, MD, March 2000.

SELECTED PRESENTATIONS

1. Vasil Hnatyshin, "Supporting Quality of Service in the Internet", presentation at the Computer Science Colloquium, Feng Chia University, Taichung, Taiwan. June 6, 2006.
2. Vasil Hnatyshin, "*Bandwidth Distribution Scheme*," Mathematics and Computer Science Departments Colloquium, Spring 2006.
3. Vasil Hnatyshin, "Teaching with OPNET software", session 1020: "Academic and Professional Instruction using OPNET Software", OPNETWORK 2005 conference, Washington DC, August 2005.
4. Vasil Hnatyshin, "*Supporting per-flow QoS using the Bandwidth Distribution Scheme*," Computer Science Department, Rowan University, Fall 2004.
5. Vasil Hnatyshin, "*Quality of Service in the Internet*," Presented at Rowan University Computer Science Seminar and Widener University Science Seminar, December 2003.
6. Vasil Hnatyshin, "*Providing fair and scalable per-flow Quality of Service through the load distribution techniques*," Presented at the University of Delaware Special Interests Group in Networking meeting, November 2002.
7. Vasil Hnatyshin, "*Differentiated Services: A new Approach to QoS for the Internet*," Presented at the University of Delaware Special Interests Group in Networking meeting, October 1999.