



# Paweł Gburzyński

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**Note:** if you have obtained this CV from a [OneDrive folder](#),<sup>1</sup> then the same folder contains organized collections of my research papers and other documents related to the work mentioned in this CV.

## Education

- Ph.D. Informatics (Computer Science), University of Warsaw, 1982
- M.Sc. Informatics/Mathematics, University of Warsaw, 1976

## Positions held

2002-present

Olsonet Communications Corporation, Ottawa, Ontario, Canada, Chief Scientist (CTO) and Main Software Architect.

2014-present

Vistula University, Faculty of Engineering, Graphic Design, and Architecture, Warsaw, Poland, Professor.

1985-2010

University of Alberta, Computing Science, Edmonton, Alberta, Canada, Professor Emeritus since 2010, Full Professor since 1996,<sup>2</sup> Associate Professor 1991-1996 (tenured since 1991), Assistant Professor 1985-1991

2006-2007

Simon Fraser University, Engineering Science, Burnaby, BC, Canada, Visiting Professor

1999-2000

AppHome, Inc., Palo Alto, Ca., Co-founder and Chief Software Architect

1984-1985

University of Guelph, Computing & Information Science, Guelph, Ontario, Canada, Visiting Assistant Professor

1984

Christian Albrecht University, Applied Mathematics, Kiel, Germany, Visiting Assistant Professor

1980-1984

Kompeks, Warsaw, Poland, Co-founder and Systems Architect

1977-1986

University of Warsaw, MIMUW, Warsaw, Poland, Systems Programmer and Analyst 1980-1984,<sup>3</sup>

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<sup>1</sup> <https://1drv.ms/u/s!AhBcAGR10psli5YpyoJ9yLWzhgzjEQ?e=YqcrLI> .

<sup>2</sup> McCalla Professor 2003-2004, Associate Chair (graduate affairs) 1998-1999.

<sup>3</sup> Rector Award 1977, Minister of Higher Education Award 1986.

## Research interests and expertise

- **Telecommunications:** IoT, protocol design, medium access protocols, wireless sensor networks, wireless communication, performance evaluation, reliability, fairness, security, privacy
- **Operating systems:** embedded systems, real-time systems, turnkey systems, distributed processing, reliability, security
- **Software:** specification, distributed algorithms
- **Performance evaluations:** simulation, modeling

## Courses taught

### Academic, graduate level:

- Software design for microprocessor systems
- Embedded networked systems
- Operating systems (systems programming, Linux internals)
- Medium access protocols
- Protocol design
- Computer networks

### Academic, undergraduate level:

- Operating systems
- Network and system security
- Simulation of Telecommunication Systems
- Microcontrollers
- Computer organization and architecture IV
- Computer organization and architecture III
- Computer organization and architecture II
- Telecommunications and computers
- Systems programming
- Algorithm design and analysis
- Introduction to programming

### Industrial training:

- Embedded systems
- Wireless sensor networks
- Operating systems
- Design of real-time systems
- Systems programming

## Software

My programming experience includes designing, writing, debugging, and documenting hundreds of programs. Only major work is listed below. Links to some projects may be unavailable owing to the confidential (contracted) nature of the work or, in some cases, to the impact of time (projects from the pre-Internet era). The projects where I was the sole designer, implementer, and documenter are marked with \*.

## **Design, modeling, and performance of communication protocols:**

2001-present

Wireless Sensor Networks: designed and developed several commercial WSN solutions (with W. Olesinski), including industrial-grade asset/people monitoring systems, location-tracking systems, EcoNet (a massive ecological monitoring system), ILIAD<sup>4</sup> (a sensor network for Independent Living facilities), and PINDA: a prototype WSN facilitating social interactions at conferences and gatherings.

1998-present\*

Numerous scripting projects, including prototyping and implementing reactive programs and lightweight (web) servers as well as OSS interfaces to sensor networks.

1997\*

SICLE: a scripting environment (combining the essence of SIDE with Tcl) for rapid prototyping of reactive servers and controllers.

1996-present\*

SMURPH/SIDE a specification/simulation package for communication protocols (including wireless networks) and reactive systems.

1994-1996

TeleSim project: designed and implemented an ATM simulator in SMURPH, participated in the design of a time-warp-based, parallel simulator for ATM networks.

1993\*

Designed and implemented a simulator of a Low Probability of Interception (LPI) radio network for Lockheed Missiles and Space Company (now Lockheed Martin).

1992

Designed and implemented a simulator of MNA networks (Multigrid Network Architecture) intended for space applications (project supported in part by Lockheed Missiles and Space Company).

1990-1995\*

Designed and implemented SMURPH: a specification and simulation system for communication protocols. SMURPH/SIDE (see above) has been a continuation of that project.

1987-1989

LANSF: the Local Area Network Simulation Facility. LANSF, designed together with P. Rudnicki, was a predecessor of SMURPH.

1984-1986\*

Miscellaneous simulators for performance studies in Local and Metropolitan Area Networks (MAC-level protocols) and virtual memory systems (distributed simulation).

## **Operating systems:**

2007-present\*

Designed and implemented VUEE,<sup>5</sup> an authoritative, SIDE-based emulator of complete wireless networked applications programmed in PicOS.

2001-present\*

Designed and implemented PicOS: a tiny operating system for embedded applications.

1999-2000\*

Ported Linux to custom single-board computers based on ARM and PowerPC CPUs. Wrote a number of device drivers (serial ports, NIC, flash memory) for Linux on those boards.

1996-1999\*

A number of case studies and examples illustrating the organization of the Linux kernel and TCP/IP protocol stack for a Systems Programming course taught at the UofA.

1991\*

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<sup>4</sup> Independent Living Inconspicuous Anomaly Detector.

<sup>5</sup> Virtual Underlay Execution Engine.

Developed SERDEL,<sup>6</sup> a precursor for contemporary containers, i.e., software for running distributed, coordinated, collections of simulation experiments in SMURPH and LANSF over a local network of possibly diverse workstations (cycle stealing, load balancing, migration).

1986-1987\*

VSOS: a simple multiprogramming operating system running on IBM-370 (under VM) used for teaching Systems Programming at the University of Alberta.

1978-1984

OOPS: an Object-Oriented Parallel System for MERA-400 designed and implemented together with P. Findeisen; a general-purpose operating system for SMP machines with shared memory facilitating multithreaded programs.

1979-1984\*

Maintained SOM-3 (the production operating system for MERA-400; rewrote about 50% of kernel code, programmed numerous device drivers (disks, graphic terminals, custom control equipment).

1977-1980

Co-maintained SCOPE 3 for CDC-6400 at Cyfronet (Institute for Nuclear Research, Swierk, Poland); in particular, revised and adapted for local needs various parts of INTERCOM (telecommunication system), memory management, and accounting.

### **Compilers:**

2010-present\*

Devised a dialect of C for programming PicOS praxes and implemented picomp, a compiler of that language into C/C++, as part of PIP: the unified SDK for Wireless Sensor Networks.

1986\*

ASC: a bytecode, stack-based machine used for teaching an advanced Compiler Design course at the UofA.

1984

A portable version of the LOGLAN compiler/interpreter, designed and implemented together with A. Litwiniuk, for SIEMENS-7760 under BS-2000.

1977-1984

Co-authored LOGLAN: an object-oriented programming language with classes, inheritance, methods, safe object deallocation, garbage collection, etc. Designed and implemented various parts of the compiler.

1979-1982\*

Designed and implemented a number of compiler-related utilities for OOPS (also for SOM-3) including the assembler (GASS), linker, text editor, debugger, etc.

### **Miscellaneous:**

2019-present\*

Designed a data collection device for monitoring the well-being of dogs (a collaborative project with a group at SGGW, Animal Sciences).

2010-present\*

Designed and developed PIP: a unified SDK for developing complete wireless applications in PicOS.

2016-2017\*

Designed and implemented a data collection device for collecting accelerometer data from sheep (a collaborative project with a group at SGGW, Animal Sciences).

2009-2011

DSP software controlling a prototype pedoscope used for advanced diagnosis of ailments and pathologies of feet and related problems.

2002-2004\*

Designed and implemented an industrial-grade system for DTMF tone recognition used to control

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<sup>6</sup> A System for Executing Remote Distributed Experiments on a LAN.

automated telephone transactions in a major bank.

2002-2006\*

SFM: a mail service system facilitating total spam avoidance via mail channels.

1998-2004\*

GAPS: the Graduate Applications Processing System; a web database for handling graduate applicants to the Computing Science Department at the UofA. In use until 2017.

1998-2000\*

RabidFire: a spam filter and killer.

1982\*

GPR: a general-purpose theorem proving system in predicate calculus programmed in LOGLAN.

1980

A system for processing the output of a Mößbauer spectroscope (together with A. Kreczmar).

1975-1977\*

A resolution-based, general purpose, theorem proving system for predicate calculus (the M.Sc. project).

## Selected consulting projects

- MAC-level protocol design for low-cost RF networks for Valert, Ottawa, 2000-2001.
- Consulting for TELUS Corporation on real-time operating systems, 1999.
- Consulting for EdFund, Rancho Cordova, California, on Web-based high-performance transaction systems, 1998.
- SDS network interfacing and simulation/specification of reactive systems for Tools for Sensors and Honeywell, 1996-1997.
- Simulation of ATM networks for the TeleSim project, 1994-1996.
- Simulation of LPI (Low Probability of Interception) radio networks for military applications contracted by Lockheed Missiles and Space Company (now Lockheed Martin), Palo Alto, California, 1993.
- Consulting on modeling fast networks and protocols and software development for Lockheed Missiles and Space Company (now Lockheed Martin), Palo Alto, California, 1989-1992.
- A one-week course on Real-Time Operating Systems for Mobile Data Communications, Edmonton, Alberta, 1990.
- Consulting on telephone network simulation for Alberta Government Telephones, Edmonton, Alberta, 1989.
- A one-week course on the C programming for Alberta Government Telephones, Edmonton, Alberta, 1989.
- LAN security consulting for Internal Audit, Edmonton, Alberta, 1988-1989.
- Numerous contracts from Polish industry and academia, mainly related to software development and consulting (see Software), 1974-1984.

## Selected slide shows

The slides are available in the [OneDrive folder](#).

- On reliable wireless streaming of real-time sensor data. September 2021. A presentation at CS&P'21, Berlin, Germany.
- On the resistance of WSNs to attacks. June 2020. A seminar at Vistula in Polish. A PowerPoint show with animations produced with VUEE.

- Ad-hoc networks for Independent Living (value added sensing). May 2017. ETCMOS 2017 presentation.
- A WSN-based, RSS-driven, Real-time Location Tracking System for Independent Living Facilities. August 2016. ICETE 2016 presentation.
- Fighting the reliability problem, or who cares about routing in WSN! November 2009.
- On fair bandwidth allocation in connection-less networks (with B. Behsaz and M. MacGregor). ICC 2009 presentation.
- A scheme for indoor localization through RF profiling. June 2009.
- Talks from the summer school on wireless sensing networks at the UofA (with W. Olesinski), July 2009: part 1: applications, Part 2: hardware, part 3: ad-hoc networking, part 4: software, part 5: kitchen view.
- EcoNet: a wireless sensor network for environmental monitoring. May 2009.
- Ad-hoc networking with low-cost devices: how to do it right (with W. Olesinski). November 2008.
- From simulation to execution: on a certain programming paradigm for reactive systems. IMCSIT 2006 presentation.
- Spam Free Mail: a friendly implementation of the challenge-response paradigm for spam elimination. June 2006.
- Wireless Ad-Hoc Networks: Routing and Forwarding Techniques. SPECTS'06 tutorial. August 2006.

## Publications

**Note:** the titles of those papers that I consider particularly important or interesting are marked with \*. Most of those papers can be found in the [OneDrive folder](#).

### Unpublished (including submitted, to be submitted, never to be submitted):

1. \*P. Gburzynski and A. Salwicki. "A New Algorithm for Generating Permutations without Swapping Elements." 2021.
2. P. Gburzynski. "A Sample-Driven Channel Model for Developing and Testing Practical WSN Applications." 2016.
3. F. Li, M.H. Hsieh, P. Gburzynski. "The Community Behavior of Spammers." 2010.
4. P. Gburzynski and I. Nikolaidis. "Towards Unified Specification, Implementation, and Testing of Distributed Reactive Applications." 2008.
5. Olsonet Communications (P. Gburzynski). "SIDE/SMURPH: a Modeling Environment for Reactive Telecommunication Systems." Version 3.0 manual, 2008.
6. \*P. Gburzynski. "SFM: a Friendly and Reliable Implementation of Mail Channels for Total Spam Avoidance." 2005.

### Books:

1. P. Gburzynski. "Modeling Communication Networks and Protocols." Springer, 2019.
2. P. Gburzynski. "Protocol Design for Local and Metropolitan Area Networks." Prentice Hall, 1996.
3. W.M. Bartol, P. Gburzynski, et al. "Report on the Loglan-82 Programming Language." PWN Lodz, Poland, 1983.

### Refereed journals and book chapters:

1. A. Boruta, P. Gburzynski, E. Kuznicka. "A Protocol for Reliable Delivery of Streamed Sensor Data over a Low-bandwidth Wireless Channel." In *Concurrency, Specification and Programming*, H. Schlingloff, T. Vogel, A. Skowron editors, Springer, 2023, pp. 173-200.
2. \*P. Gburzynski and I. Nikolaidis. "Rule-Driven Forwarding for Resilient WSN Infrastructures." *Sensors*, vol. 22, no. 22, 2022, DOI: 10.3390/s22228708, ISSN (Online) 1424-8220.
3. P. Gburzynski. "A WSN Architecture for Building Resilient, Reactive, and Secure Wireless Sensing Systems." *TASK QUARTERLY*, vol. 25, no. 2, 2021, pp. 126–167.
4. P. Gburzynski and E. Kopciuszewska. "On rapid development of reactive wireless sensor systems." *System Safety: Human, Technical Facility, Environment*, vol. 1, issue 1, DOI: 10.2478/czoto-2019-

0073, 2019, pp. 574–582, ISSN (Online) 2657-5450.

5. E. Kuznicka and P. Gburzynski. "Automatic detection of suckling events in lamb through accelerometer data classification." *Computers and Electronics in Agriculture*, vol. 138, DOI: 10.1016/j.compag.2017.04.009, 2017, pp. 137-147.
6. \*R. Vogt, I. Nikolaidis, P. Gburzynski. "A Realistic Outdoor Urban Pedestrian Mobility Model." *Simulation Modelling Practice and Theory*, DOI: 10.1016/j.simpat.2012.04.006, 2012.
7. \*N. Boers, I. Nikolaidis, P. Gburzynski. "Sampling and Classifying Interference Patterns in a Wireless Sensor Network." *ACM Transactions on Sensor Networks*, no. 2, vol. 9, DOI: 10.1145/2379799.2379801, 2012.
8. N. Boers, D. Chodos, P. Gburzynski, L. Guirguis, J. Huang, R. Lederer, L. Liu, I. Nikolaidis, C. Sadowski, E. Stroulia. "The Smart Condo Project: Services for Independent Living." In *E-Health, Assistive Technologies and Applications for Assisted Living: Challenges and Solutions*, C. Roecker and M. Ziefle, Editors, IGI Global, 2011, pp. 289-314.
9. Rahman, M.E. Hoque, F. Rahman, S. K. Kundu, and P. Gburzynski. "Enhanced Partial Dominant Pruning (EPDP) Based Broadcasting in Ad hoc Wireless Networks." *Journal of Networks*, vol. 4, no. 9, 2009, pp. 895-904.
10. \*N. Boers, P. Gburzynski, I. Nikolaidis, W. Olesinski. "Developing Wireless Sensor Network Applications in a Virtual Environment." *Telecommunication Systems*, DOI: 10.1007/s11235-009-9246-x, 2010.
11. \*P. Gburzynski, B. Kaminska, and A. Rahman. "On Reliable Transmission of Data over Simple Wireless Channels." *Journal of Computer Systems, Networks, and Communications*, vol. 2009, Article ID 409853, 2009, DOI: 10.1155/2009/409853, 2009.
12. \*B. Behsaz, P. Gburzynski, and M. MacGregor. "Transport Independent Fairness." *Computer Networks*, vol. 53, no. 14, 2009, pp. 2444-2457.
13. F. Yu, B. Kaminska, and P. Gburzynski. "A Wireless Sensor-based Driving Assistant for Automobiles." *International Journal on Automatic Control and System Engineering*, no. II, vol. 8, 2008, pp. 23-33.
14. \*P. Gburzynski and W. Olesinski. "On a Practical Approach to Low-cost Ad hoc Wireless Networking." *Journal of Telecommunications and Information Technology*, no. 1, 2008, pp. 29-42.
15. A. Rahman and P. Gburzynski. "MAC-Assisted Topology Control for Ad-Hoc Wireless Networks." *International Journal of Communication Systems*, vol. 19, no. 9, 2006, pp. 955-976.
16. \*W. Shi, M. H. MacGregor, and P. Gburzynski. "An Adaptive Load Balancer for Multiprocessor Routers." *Simulation*, Vol. 82, No. 3, 2006, pp. 173-192.
17. W. Shi, M. H. MacGregor, and P. Gburzynski. "Load Balancing for Parallel Forwarding." *IEEE/ACM Transactions on Networking*, vol. 13, no. 4, 2005, pp. 790-801.
18. Y. Jia, I. Nikolaidis, and P. Gburzynski. "On the Effectiveness of Alternative Paths in QoS Routing." *International Journal of Communication Systems*, vol. 17, no. 1, 2004, pp. 1-26.
19. \*P. Gburzynski and J. Maitan. "Fighting the Spam Wars: A Remailer Approach with Restrictive Aliasing." *ACM Transactions on Internet Technology*, vol. 4, no. 1, 2004, pp. 1-30.
20. W. Shi, M. H. MacGregor, and P. Gburzynski. "On Temporal Locality in IP Address Sequences." *IEICE Transactions on Communications*, vol. E86-B, no. 11, 2003, pp. 3352-3354.
21. W. Shi, M. H. MacGregor, and P. Gburzynski. "Traffic Locality Characteristics in a Parallel Forwarding System." *International Journal of Communication Systems*, vol. 16, 2003, pp. 823-839.
22. H. Zhang and P. Gburzynski. "A Variable Slot Length TDMA Protocol for Personal Communication Systems." *Wireless Personal Communications*, 22, 2002, pp. 409-432.
23. H. Zhang and P. Gburzynski. "A Slotted Multicode CDMA Protocol for Efficient Integration of Voice and Data in Cellular Networks." *International Journal of Communication Systems*, 15, 2002, pp. 479-494.
24. S. Ramaswamy and P. Gburzynski. "A Dynamic Call Admission Scheme for VBR Traffic in ATM Networks." *Telecommunication Systems*, 11, 1999, pp. 373-394.
25. S. Ramaswamy and P. Gburzynski. "A Neural Network Approach to Effective Bandwidth Characterization in ATM Networks." *Performance Analysis of ATM Networks, IFIP vol. 4*, Demetres Kouvatsos, editor, Kluwer Academic Publishers, 1999.

26. S. Ramaswamy, T. Ono-Tesfaye, W. W. Armstrong and P. Gburzynski. "Equivalent Bandwidth Characterization for Real-time CAC in ATM Networks." *Journal of High Speed Networks*, 7, 1998, pp. 1-25.
27. \*W. Dobosiewicz and P. Gburzynski. "Protocol Design in SMURPH." In *State-of-the-art in Performance Modeling and Simulation Vol. 1: Computer and Communication Networks*, J. Walrand and K. Bagchi editors, Gordon and Breach, 1997, pp. 255-274.
28. \*W. Dobosiewicz and P. Gburzynski. "The Spiral Ring." *Computer Communications*, (20)6, 1997, pp. 449-461.
29. \*C. Baransel, W. Dobosiewicz and P. Gburzynski. "Routing in Multi-hop Switching Networks: Gbps Challenge." Chosen as the "reprint of the quarter." *IEEE Network Magazine*, 3, 1995, pp. 38-61.
30. W. Dobosiewicz and P. Gburzynski. "On a MAC Protocol Based on Distributed Cycles." *Journal of High Speed Networks*, 4, 1995, pp. 275-286.
31. W. Dobosiewicz and P. Gburzynski. "On two Modified Ethernets." (Click here to get the figures.) *Computer Networks and ISDN Systems*, 27, 1995, pp. 1545-1564.
32. \*W. Dobosiewicz and P. Gburzynski. "An Alternative to FDDI: DPMA and the Pretzel Ring." *IEEE Transactions on Communications*, 42, 1994, pp. 1076-1083.
33. \*P. Gburzynski and J. Maitan. "Deflection Routing in Regular MNA Topologies." *Journal of High Speed Networks*, 2, 1993, pp. 99-131.
34. C. Baransel, W. Dobosiewicz and P. Gburzynski. "CBRMA++/SR: On the Design of a MAN/WAN Protocol for High-Speed Networks" *IEEE Journal on Selected Areas in Communication*, 11, 1993, pp. 1268-1277.
35. P. Gburzynski and X. Zhou. "Ethernet for Short Packets." *International Journal of Modelling and Simulation*, 13, 1993, pp. 62-66.
36. W. Dobosiewicz, P. Gburzynski, and P. Rudnicki. "On two Collision Protocols for High Speed Bus LANs." *Computer Networks and ISDN Systems*, 25, 1993, pp. 1205-1225.
37. W. Dobosiewicz, P. Gburzynski, and V. Maciejewski. "A Classification of Fairness Measures for Local and Metropolitan Area Networks." *Computer Communications*, 15, 1992, pp. 295-304.
38. W. Dobosiewicz, P. Gburzynski, and P. Rudnicki. "Dynamic Recognition of the Configuration of Bus Networks." *Computer Communications*, 14, 1991, pp. 216-222.
39. \*P. Gburzynski and P. Rudnicki. "LANSF: A Protocol Modelling Environment and its Implementation." *Software Practice and Experience*, 21, 1991, pp. 51-76.
40. P. Gburzynski and P. Rudnicki. "LANSF--A Modular System for Modelling Communication Protocols." In *Techniques and Tools for Computer Performance Evaluation*, November 1989, Plenum Press, pp. 77-93.
41. P. Gburzynski and P. Rudnicki. "On Executable Specifications, Validation, and Testing of MAC-level Protocols." In *Proceedings of the IFIP WG 6.1 Ninth International Symposium on Protocol Specification, Testing, and Verification*, North-Holland, The Netherlands, 1989, pp. 261-273.
42. P. Gburzynski and P. Rudnicki. "A Note on the Performance of ENET-II." *IEEE Journal on Selected Areas in Communication*, 7, 1989, pp. 424-427.
43. P. Gburzynski and P. Rudnicki. "A Virtual Token Protocol for Bus-type Networks: Correctness and Performance." *Infor*, 26, 1988, pp. 365-393.

#### Conference proceedings:

1. Boruta, P. Gburzynski, E. Kuznicka, "On Reliable Wireless Streaming of Real-time Sensor Data." *Proceedings of CS&P 2021*, Berlin, Germany, September 2021.
2. P. Gburzynski, W. Olesinski, J. Van Vooren, "A WSN-based, RSS-driven, Real-time Location Tracking System for Independent Living Facilities." *Proceedings of ICETE 2016*, Lisbon, Portugal, July 2016.
3. N. M. Boers, I. Nikolaidis, P. Gburzynski, "Impulsive Interference Avoidance in Dense Wireless Sensor Networks"<sup>7</sup> *Proceedings of Ad Hoc Now 2012*, Belgrade, Serbia, July 2012.
4. N. M. Boers, I. Nikolaidis, P. Gburzynski, W. Olesinski, "PICOS & VNETI: Enabling Real Life Layer-Less WSN Applications." *Proceedings of Sensornets 2012*, Rome, Italy, February 2012.
5. Shimony, I. Nikolaidis, P. Gburzynski, E. Stroulia, "On Coordination Tools in the PicOS Tuples

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<sup>7</sup> Best paper presentation award.



- System." *Proceedings of ICSE 2011*, Waikiki, Honolulu, Hawaii, May 2011.
6. \*N. M. Boers, I. Nikolaidis, P. Gburzynski, "Patterns in the RSSI Traces from an Urban Environment." *Proceedings of CAMAD 2010*, Miami, FL., December 2010.
  7. Shimony, I. Nikolaidis, P. Gburzynski, E. Stroulia, "PicOS Tuples: Easing Event Based Programming in Tiny Pervasive Systems." *Proceedings of MOMPES 2010*, Antwerp, Belgium, September 2010.
  8. de Souza, I. Nikolaidis, and P. Gburzynski, "A New Aggregate Local Mobility (ALM) Clustering Algorithm for VANETs." *Proceedings of ICC 2010*, Cape Town, South Africa, May 2010.
  9. \*M. Ghanbarinejad, C. Schlegel, and P. Gburzynski, "Adaptive Probabilistic Medium Access in MPR-Capable Ad-hoc Wireless Networks." *Proceedings of GLOBECOM 2009*, Honolulu, Hawaii, December 2009.
  10. B. Shimony, I. Nikolaidis, P. Gburzynski, and E. Stroulia, "Specification design method for reactive embedded systems: a case study." *Preprints of WRTP/RTS*, Mragowo, Poland, October 2009, pp. 173-180.
  11. Haque, I. Nikolaidis, and P. Gburzynski, "On the Impact of Node Placement and Profile Point Selection on Indoor Localization." *Proc. of the 2nd IFIP WG 6.8 Joint Conference on Wireless and Mobile Networking (WMNC 2009)*, Gdansk, Poland, September 9-11, 2009, pp. 220-231. (DOI: PAPERS/adhoc12.pdf10.1007/978-3-642-03841-9\_20)
  12. Haque, I. Nikolaidis, and P. Gburzynski, "Expected Path Length for Angle and Distance-based Localized Routing." *Proceedings of SPECTS 2009*, Istanbul, Turkey, July 2009, pp. 137-141.
  13. \*I. Haque, I. Nikolaidis, and P. Gburzynski, "A Scheme for Indoor Localization through RF Profiling." *Proceedings of ICC/SyCoLo 2009*, Dresden, Germany, June 2009.
  14. Haque, I. Nikolaidis, and P. Gburzynski, "On the Benefits of Nondeterminism in Location-based Forwarding." *Proceedings of ICC 2009*, Dresden, Germany, June 2009.
  15. \*B. Behsaz, P. Gburzynski, and M. MacGregor, "On Fair Bandwidth Allocation in Connection-less Networks." *Proceedings of ICC 2009*, Dresden, Germany, June 2009.
  16. Stroulia, D. Chodos, N. Boers, J. Huang, P. Gburzynski, and I. Nikolaidis. "Software Engineering for Health Education and Care Delivery Systems: The Smart Condo Project." *Proceedings of the 2009 ICSE Workshop on Software Engineering in Health Care (SEHC'09)*, Vancouver, BC, Canada, May 2009, pp. 20-28.
  17. N. Boers, D. Chodos, J. Huang, P. Gburzynski, I. Nikolaidis, and E. Stroulia. "The Smart Condo: Visualizing Independent Living Environments in a Virtual World." *Proceedings of the 3rd International Conference on Pervasive Health*, London, UK, April 2009.
  18. N. Boers, P. Gburzynski, I. Nikolaidis, and W. Olesinski, "Supporting Wireless Application Development via Virtual Execution." *Proceedings of the 2008 Workshop on Wireless and Unstructured Networking (WAHOC'08)*, Wisla, Poland, October 2008, pp. 853-860.
  19. P. Gburzynski, B. Kaminska, and A. Rahman, "Reliable Data Transmission over Simple Wireless Channels: a Case Study." *Proceedings of EUROMICRO 2008*, Parma, Italy, September 2008.
  20. \*P. Gburzynski and B. Kaminska, "Testing Real-time Properties of Embedded Systems." *Proceedings of ESA 2008*, Las Vegas, NV, July 2008.
  21. M.E. Hoque, F. Rahman, S. K. Kundu, A. Rahman, and P. Gburzynski, "Enhanced Partial Dominant Pruning (EPDP) Based Broadcasting in Ad hoc Wireless Networks." *Proceedings of SPECTS 2008*, Edinburgh, UK, June 2008.
  22. B. Kaminska and P. Gburzynski, "Sustainability of Self-Configuring Wireless Sensor Networks." *Proceedings of ICECS 2007*, Marrakech, Morocco, December 2007.
  23. Haque, I. Nikolaidis and P. Gburzynski, "On the Pitfalls of Directional Location-based Randomized Routing." *Proceedings of SPECTS 2007*, San Diego, CA, July 2007, pp. 41-48.
  24. Rahman, P. Gburzynski and B. Kaminska, "Enhanced Dominant Pruning-based Broadcasting in Untrusted Ad-hoc Wireless Networks." *Proceedings of IEEE ICC 2007*, Glasgow, Scotland, June 2007, pp. 3389-3394.
  25. Kaminska and P. Gburzynski, "Self-Communicating and Self-Configuring Wireless Sensor Environment for Independent Living Support." *Proceedings of FICCDAT/ICTA: the 2nd International Conference on Technology and Aging*, Toronto, Ontario, CANADA, June 2007, paper T0220.

26. \*P. Gburzynski, B. Kaminska and W. Olesinski, "A Tiny and Efficient Wireless Ad-hoc Protocol for Low-cost Sensor Networks." *Proceedings of Design Automation and Test in Europe (DATE'07)*, Nice, France, April 2007, pp. 1562-1567.
27. Yu, B. Kaminska and P. Gburzynski, "A New Driving Assistant for Automobiles." *Proceedings of CCECE 2007*, Vancouver, BC, DOI: 10.1109/CCECE.2007.306, April 2007.
28. \*W. Dobosiewicz and P. Gburzynski, "From Simulation to Execution: on a Certain Programming Paradigm for Reactive Systems." *Proceedings of the First International Multiconference on Computer Science and Information Technology (FIMCSIT'06)*, Wisla, Poland, November 2006, pp. 561-568.
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  104. P. Gburzynski and P. Rudnicki. "Modeling Low-level Communication Protocols: A Modular Approach." *4-th IFIP International Conference on Modelling Techniques and Tools for Computer Performance Evaluation*, Palma de Mallorca, Spain, September 1988, pp. 89-108.
  105. P. Gburzynski and P. Rudnicki. "Bounded Packet Delay Protocols for CSMA/CD bus: Modeling in LANSF." *19-th Annual Pittsburgh Conference on Modeling and Simulation*, May 1988, pp. 1185-1194.
  106. P. Gburzynski and J. Jaromczyk. "Comparison of two Algorithms Solving a Version of the Ham-Sandwich Problem." *Congressus Numerantium*, 61, 1988, pp. 249-258.

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109. P. Gburzynski and P. Rudnicki. "Using Time to Synchronize a Token Ethernet." *CIPS Edmonton '87*, November 1987, pp. 280-288.
110. P. Gburzynski and M. McLeish. "An Efficient Heuristic Algorithm for a 3-Space n-Partitioning Problem Used in Polygon Retrieval and Non-parametric Statistics." *25-th Annual Allerton Conference on Communication, Control, and Computing*, September 1987, pp. 908-916.
111. P. Gburzynski and P. Rudnicki. "A Better-than-Token Protocol with Bounded Packet Delay Time for Ethernet-type LANs." *ACM/IEEE Symposium on the Simulation of Computer Networks*, Colorado Springs, August 1987, pp. 110-117.
112. P. Gburzynski and M. McLeish. "A Heuristic Approach to an N-Space Partitioning Problem." *Congressus Numerantium*, 52, 1986, pp. 153-167.
113. P. Gburzynski. "Case Study in Prefixing." *Summer School on Loglan*, Zaborow, Poland, 1983.
114. P. Gburzynski. "A Gentzen-like Method for Automated Theorem Proving Programmed in Loglan." *Summer School on Loglan*, Zaborow, Poland, 1983.
115. P. Findeisen, P. Gburzynski, E. Jezierska, and A. Ziemkiewicz. "A Proposal for a Minicomputer Architecture." (A report from work on the design of a new Polish minicomputer), IIUW reports, 1983.
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#### **Presentations at refereed workshops:**

1. W. Olesinski and P. Gburzynski. "Quality of Service in Deflection Networks." *Ninth IEEE Workshop On Local And Metropolitan Area Networks*, Banff, Canada, May 17-20, 1998.
2. S. Ramaswamy and P. Gburzynski. "A Neural Network Approach to Effective Bandwidth Characterization in ATM Networks." *Fifth IFIP Workshop on Performance, Modelling, and Evaluation of ATM Networks*, Ilkley, West Yorkshire, U.K., July 21-23, 1997.
3. S. Ramaswamy and P. Gburzynski. "An Adaptive Feedback Control Based Cell Scheduler for ATM Networks." *Workshop on Resource Allocation Problems in Multimedia Systems*, Washington, DC, December 3, 1996.
4. W. Dobosiewicz and P. Gburzynski. "MULTIRING: a possible post-ATM network architecture." *7-th IEEE Workshop on Local and Metropolitan Area Networks*, Marathon, Florida, March 26-29, 1995.
5. W. Dobosiewicz and P. Gburzynski. "Achieving METARING Performance Without Insertion Buffers." *6-th IEEE Workshop on Local and Metropolitan Area Networks*, San Diego, October 14-16, 1993.
6. W. Dobosiewicz and P. Gburzynski. "A Multiple Token Protocol for Very High Speed Ring Networks." *2-nd IEEE Workshop on High-Performance Communication Subsystems*, Williamsburg, Virginia, September 1-3, 1993.
7. W. Dobosiewicz and P. Gburzynski. "Fault Management in Spiral Ring Networks." *IEEE/IFIP International Workshop on Requirements and Techniques for Network Management*, Krakow, May 19-21, 1993.
8. W. Dobosiewicz and P. Gburzynski. "The Spiral Ring." *5-th IEEE Workshop on Local and Metropolitan Area Networks*, Taormina, Italy, May 11-13, 1992.
9. W. Dobosiewicz and P. Gburzynski. "A MAC-level Protocol for High-Speed Ring Networks." *IEEE Workshop on High Performance Communication Subsystems*, Tucson, Arizona, February 17-19, 1992.
10. P. Gburzynski. "Implementation Techniques for Resolution-based Theorem Provers." *Workshop on Automated Theorem Proving*, Salgotarjan, Hungary, September 1979.

### Selected technical reports and manuals:

1. P. Gburzynski. The DOGS praxis. Reference Manual, 2021.
2. P. Gburzynski. Documentation of PicOS and wireless interfaces available at Olsonet Communications, 2002-present.
3. P. Gburzynski. "The SICLE Control Package." Reference Manual, revisions since 1998.
4. P. Gburzynski. "The SIDE Modeling and Control Environment." Reference Manual, revisions since 1997.
5. P. Gburzynski. "An Overview of SMURPH: an Object-oriented Configurable Simulator for Low-level Communication Protocols." 1991.
6. P. Gburzynski and P. Rudnicki. "The LANSF Protocol Modelling Environment, version 2.0." TR 89-19, University of Alberta, 1989.
7. P. Gburzynski and P. Rudnicki. "LANSF--A Configurable System for Modelling Communication Networks, version 1.4." TR 88-19, University of Alberta, 1988.
8. P. Gburzynski and P. Rudnicki. "LANSF--A Structural System for Simulating Bus-type Local Area Networks. TR 87-13, University of Alberta, 1987.
9. P. Gburzynski, J.C. Majithia, and T.C. Wilson. "An Improved Backoff Algorithm for Ethernet-type Local Area Networks." TR 87-9, University of Alberta, 1987.
10. W. Dobosiewicz and P. Gburzynski. "On the Properties of two Modified Ethernets." TR 86-16, University of Alberta, 1986.
11. P. Gburzynski. "EDM: MERA-400 Text Editor Reference Manual." *IUW reports*, Warsaw, Poland, 1980.
12. P. Findeisen and P. Gburzynski. "GASS: MERA-400 Assembly Language Reference Manual." *IUW reports*, Warsaw, Poland, 1980.

## Selected invited presentations

- SGGW. *Nostalgiczna Krowa, czyli Długoterminowe Monitorowanie Zwierząt przy pomocy Efemerycznych Sieci Czujników*, 2014.
- Second NSERC DIVA Workshop, University of Ottawa, Ottawa, ON, Canada. *PANDA: Practical Ad-hoc Networking Development Apparatus*, 2012.
- National Institute of Telecommunications, Miedzeszyn, Poland. *O symulacji i programowaniu systemów reaktywnych*, 2009 (in Polish).
- Faculty of Mathematics, Informatics, and Mechanics, University of Warsaw, Warsaw, Poland. *Bezprzewodowe sieci ad-hoc, tanie, skuteczne, na wszelkie okazje*, 2008 (in Polish).
- Simon Fraser University, School of Engineering Science, Burnaby, BC. *Taking ad-hoc literally: route-less routing in ad-hoc wireless networks*, 2006.
- Rochester Institute of Technology, Rochester, NY. *Routing in large networks: quality without certainty*, 2001.
- NASA AMES, Sunnyvale, Ca. *Bandwidth allocation issues in long-haul satellite networks*, 1997.
- Rochester Institute of Technology, Rochester, NY. *High-level emulation of low-level communication protocols*, 1996.
- University of Warsaw, Poland. *Four lectures on high-speed local and metropolitan area networking*, 1993.
- University of Warsaw, Poland. *Performance of Deflection Networks*, 1992.
- University of Warsaw, Poland. *Modelling Communication Protocols*, 1992.
- University of Genoa, Italy. *The Spiral Ring* (with W. Dobosiewicz), 1992.
- University of Paderborn, Germany. *The Spiral Ring* (with W. Dobosiewicz), 1992.
- Failure Analysis Associates, Palo Alto, California. *Networking requirements for the SEED project* (with W. Dobosiewicz), 1990.

- GMD Research Center for Open Communication Systems (FOKUS), Berlin. *SMURPH: an object-oriented specification system for networks and protocols*, 1990.
- Hildesheim University, Hildesheim, Germany. *Specifying reactive systems in SMURPH*, 1990.
- Queens University, Kingston, Ontario. *On the "big-a" problem*, 1990.
- University of California at Davis, Davis, CA. *Protocols for fast and long networks* (with W. Dobosiewicz), 1989.
- Lockheed Missiles and Space Company (now Lockheed Martin), Palo Alto, CA. *An object-oriented approach to simulating low-level communication protocols*, 1989.
- University of Ottawa, Ottawa, Ontario; BNR, Ottawa, Ontario; CRIM, Montreal, Quebec. *LANSF - an executable specification system for MAC-level protocols*, 1988.
- Rochester Institute of Technology, Rochester, NY. *On backoff algorithms for CSMA/CD protocols*, 1986.
- Humboldt University, Berlin, Germany. *Models of Computations in Algorithmic Logic*, 1978.

## PhD students

- Nicholas Boers, 2011, Wireless sensor network development for urban environments (Associate Professor, Department of Computer Science, MacEwan University).
- Israat Tanzeena Haque, 2011, Location-based routing and indoor location estimation in mobile ad hoc networks (Associate Professor, Faculty of Computer Science, Dalhousie University).
- Ashikur Rahman, 2006, A Controlled Flooding Approach to Efficient Routing in Ad-Hoc Wireless Networks (Professor, Department of Computer Science, Bangladesh University of Engineering and Technology).
- M. Rasit Eskicioglu, 2004, Software Distributed Shared Memory: Issues and a Case Study (Associate Professor, Department of Computer Science, University of Manitoba).
- Yanxia Jia, 2003, Scalable Quality of Service Routing (Associate Professor and Chair, Department of Computer Science, Arcadia University).
- Weiguang Shi, 2003, Workload Modeling and Performance Evaluation for Internet Forwarding Systems.
- Hongjun Zhang, 2002, On Multiple Access and Bandwidth Efficiency in Wireless Communication Systems.
- Theodore Ono-Tesfaye, 2000, Simulation and Probabilistic Validation of Communication Protocols.
- Władysław Olesiński, 1999, Connection-Less Paradigm in High-Speed Networking (Senior Software Engineer, Google, Mountain View)
- Srinivasan Ramaswamy, 1997, Dynamic Call Admission Control and Quality of Service in ATM Networks.
- Cesur Baransel, 1994, Mac-Level and Routing Protocols for High-Speed Networks.

## Hobby:

Music (bass player).