

Curriculum Vitae

Eduard S. Sazonov

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RESEARCH INTERESTS

Ambient Intelligent Systems:

- Wearable devices, embedded computers
- Biomedical sensors, signal processing and pattern recognition
- Biometrics
- Sensor networks and wireless devices
- Energy harvesting and self-powered sensors
- Structural health monitoring

EDUCATION

West Virginia University, Morgantown, WV

Ph.D. in Computer Engineering

2002

Dissertation "An Automated Damage Detection System for Armored Vehicle Launched Bridge"

West Virginia University, Morgantown, WV

M.S. in Electrical Engineering

1999

Major in Computer Engineering, Minor in Software Engineering

Khabarovsk State University of Technology

Systems Engineer

1993

5-year program, Major in Automation and Control in Technical Systems
Graduated with honors

AWARDS AND RECOGNITION

Refereed conference paper "Reliable Determination of Sleep Versus Wake from Heart Rate Variability Using Neural Networks":

2005

- Best student paper IJCNN 2005 (A. Lewicke)

Journal paper "Activity-based sleep-wake identification in infants":

2004

- *Physiological Measurements* journal highlights for 2004.
- Top 3% of most downloaded papers of all Institute of Physics journals in 2005.
- Included in IOP Select

Journal papers "Non-baseline detection of small damages from changes in strain energy mode shapes" and "Fuzzy logic expert system for automated damage detection from changes in strain energy mode shapes":

2002

- Top 10 most popular papers for *Non-destructive testing and evaluation* in volume 18

Dean's Fellowship, West Virginia University

2002-2003

Student Travel Awards, West Virginia University

2001 – 2003

Various Fellowships, Khabarovsk State University of Technology

1988 – 1993

PROFESSIONAL EXPERIENCE

<i>Clarkson University, Potsdam, NY</i> Department of Electrical and Computer Engineering Associate Professor (tenured) Assistant Professor	2008-present 2003-2008
<i>West Virginia University, Morgantown, WV</i> Department of Computer Science and Electrical Engineering Lecturer Teaching Assistant Research Assistant	2002 1997, 2001, 2002 1997-2001
<i>Joint venture R-Style, Khabarovsk, Russia</i> Lead specialist of the computer service group (4 engineers)	1995-1996
<i>Khabarovsk State University of Technology, Khabarovsk, Russia</i> Lecturer	1993-1995
<i>Research Institute of Computer Technology, Khabarovsk, Russia</i> Electronics engineer	1992-1993

EDUCATIONAL ACTIVITIES

Clarkson University	
EE360: Microprocessors The class in 2003-2007 was based on Intel80x86 architecture. Assembly language was taught on a series of homeworks in which students had to program a graphical computer game. The class was completely redesigned starting the Spring of 2008. Personal computer hardware has become too complex to cover in a one-semester class. The programmer is separated from hardware by several levels of abstraction. To provide a hand-on experience in programming of real computer hardware the class was moved to the Dragon-12+ single board computer based on Freescale HCS12 processors. Practical experience of working with the HCS12 reinforced the theoretical concepts taught in class.	2003-2008
EE363: Generic Programming and Data Structures The class has been reworked both in 2005 and 2006. Curriculum in 2005 was focused on inner working of abstract data types from the Standard Template Library and their use in MFC-based Windows applications. Students had to program a series of small projects, each one incrementally building on another. In 2006, the coverage of the data types was extended and the class moved to .NET platform. Students had to learn particularities of combining managed and unmanaged code, and program a wider variety of applications.	2005-2006
EE211: Sophomore EE lab Two new laboratory experiments (Sequential circuits, DAC-ADC) were designed that are still in use.	2003

EE509: Fuzzy logic and applications (graduate) 2003-2007

A new graduate course for Clarkson University. Covers theoretical aspects of fuzzy logic and fuzzy logic application areas: fuzzy control, fuzzy pattern recognition, fuzzy decision making, evolving fuzzy systems, neuro-fuzzy systems. Students apply fuzzy logic theory in developing small example applications using SciLab and sciFLT toolbox.

EE562: Knowledge-based systems (graduate) 2004

The class deals with classical logic, inexact and uncertain reasoning and expert systems. Students are expected to build a small expert system as an integral part of the course.

PH634/CM890: Advances in nanobioscience (graduate) 2008-2009

The class is co-taught by multiple faculty members based on the cutting edge research. I present materials on application of intelligent system techniques to analysis of physiological signals.

EE508: Introduction to Machine Learning (graduate) 2008

In this class students are presented with basic concepts and practical applications of machine learning in classification and regression. Theoretical concepts are then applied to solution of practical engineering tasks. Students are provided with hands-on experience through a series of homeworks that require MATLAB programming and processing of real-world datasets. Throughout the semester each student has to make presentation on a number of research papers related to the lecture topics.

EE509: Computational Intelligence (graduate) 2009

This class replaces the class on Fuzzy Logic by broadening the scope of the material and deepening the introductions into Artificial Neural Networks, Swarm Optimization and Evolutionary and Genetic algorithms. An introduction to Fuzzy Logic remains a part of the course. Students learn how to apply these methods to solve practical problems in pattern recognition, optimization and control through hands-on homework assignments.

West Virginia University

CPE313: Microcontroller Interfacing Lab 2002

CPE271: Introduction to Digital Design 2002

CPE311: Microprocessors Lab 1997,2001

RESEARCH GRANTS

External grants	Total funds (personal share)
1. 2009 – 2011 (PI) Footwear based posture allocation and physical activity monitor, Physical Activity Innovations LLC/National Institutes of Health	\$48,851 (100%)
2. 2009 – 2011 (coPI) A telemedicine device for rehabilitation of lower extremity impairment after stroke, National Institutes of Health	\$222,509 (50%)
3. 2009 (coPI) Identifying Postural Allocations in People with Stroke Using a Novel Shoe Based Sensor, New York Physical Therapy Association	\$5,000 (50%)
4. 2008-2009 (PI on Clarkson side) Development of shoe-based physical activity monitor for effective weight management, University of Colorado Denver	\$19,479 (100%)

5. **2008-2009 (coPI)** ITR: Collaborative research: Biometrics – performance, security and social impact, National Science Foundation \$208,563 (50%)
6. **2008 (coPI)** Transdermal drug delivery system, Phase I, New World Pharmaceuticals \$28,651 (20%)
7. **2005-2009 (PI)** Detection of chewing and swallowing to estimate eating patterns and energy intake, National Institutes of Health \$436,941 (50%)
8. **2005-2008 (PI, coPI)** Wireless Intelligent Sensor and Actuator Network for Transportation Infrastructure (Phase III), New York State Energy Research and Development Authority \$250,000 (34%)
9. **2005 (coPI)** - Acquisition of a laser vibrometer for smart structure research, National Science Foundation \$214,645 (15%)
10. **2005-2007 (PI)** Self-powered sensors and actuators, National Academies of Science \$75,000 (50%)
11. **2005 - (PI)** Wireless Intelligent Sensor and Actuator Network for Transportation Infrastructure (Phase II), New York State Energy Research and Development Authority \$122,268 (40%)
12. **2004 - (PI)** Wireless Intelligent Sensor and Actuator Network for Transportation Infrastructure, New York State Energy Research and Development Authority \$80,985 (50%)

Internal grants

1. **2005-2008 (PI)** Cost-sharing funding for NYSERDA project, Center for Advanced Materials Processing \$25,000
2. **2006 (PI)** Acquisition of plantar pressure mapping system, Clarkson Center for Health Sciences, Center for Rehabilitation Engineering Science and Technology and Coulter school of Engineering \$18,600
3. **2003 (coPI)** Coulter Foundation funds: Development of a Biomedical Research Program 110,000 (25%)

PUBLICATIONS

JOURNAL PUBLICATIONS

(italic font indicates my student advisees)

1. **The energetics of obesity: a review**, E.Sazonov and S. Schuckers, to appear in January/February 2010 issue of IEEE Engineering in Medicine and Biology Magazine.
2. **Automatic detection of swallowing events by acoustical means for applications of monitoring of ingestive behavior**, Sazonov, E.S., *Makeyev, O.*, Schuckers, S.A.C., *Lopez-Meyer, P.*, Melanson, E.L., Neuman, M.R., accepted for publication to IEEE Transactions on Biomedical Engineering, 2009.
3. **Algorithm for haplotype resolution and block partitioning for partial XOR-genotype data**, N. Sazonova, E. Sazonov and J. Harner, accepted for publication in Journal of Biomedical Informatics, 2009.
4. **Periodic Disturbance Cancellation using a Generalized Phase-Locked Loop**, R. J. Schilling, A. K. Ziarani, E. S. Sazonov, and A. F. Al-Ajlouni, accepted for publication in Control and Intelligent Systems, 2009.
5. **Bandwidth optimization in CSMA-CA networks through evolutionary slot assignment**, *V. Krishnamurthy* and E.Sazonov, Int. J. Communications, Network and System Sciences, 2009, 6, 518-527.

6. **Toward objective monitoring of ingestive behavior in free living population**, E.Sazonov, S.Schuckers, *P. Lopez-Meyer, O. Makeyev*, E. Melanson, M. Neuman and J. Hill, *Obesity* (2009) 17 10, 1971–1975.
7. **Reply to "Comment on 'Non-invasive monitoring of chewing and swallowing for objective quantification of ingestive behaviour'"**, Edward Sazonov, Stephanie Schuckers, *Paulo Lopez-Meyer, Oleksandr Makeyev*, Nadezhda Sazonova, Ed Melanson, and Michael Neuman, *Physiol. Meas.* 30 (2009) L5-L7.
8. **Self-powered sensors for monitoring of highway bridges**, E. Sazonov, *H. Li, D. Curry*, P. Pillay, *Sensors Journal, IEEE*, vol. 9, 2009, pp. 1422-1429. * **Our project was selected for the cover of the journal.**
9. **Effect of time synchronization of wireless sensors on modal analysis of structures** *V. Krishnamurthy*, K. Fowler and E.Sazonov, *Smart Mater. Struct.* 17 (2008) 055018.
10. **A Reservation-Based Protocol For Monitoring Applications Using IEEE802.15.4 Sensor Networks**, *V.Krishnamurthy* and E.Sazonov, Vo.4 No. 3 of *International Journal Of Sensor Networks*, 2008.
11. **Non-invasive monitoring of chewing and swallowing for objective quantification of ingestive behavior**, Edward Sazonov, Stephanie Schuckers, *Paulo Lopez-Meyer, Oleksandr Makeyev*, Nadezhda Sazonova, Ed Melanson, and Michael Neuman, *Physiol. Meas.* 29 (2008) 525-541.
12. **Limited receptive area neural classifier for texture recognition of mechanically treated metal surfaces**, *O. Makeyev*, E. Sazonov, T. Baidyk, A. Martin, *Neurocomputing*, March 2008, vol. 71 (7-9), pp 1413-1421.
13. **Sleep Versus Wake Classification from Heart Rate Variability Using Computational Intelligence: Consideration of Rejection in Classification Models**, *A.T. Lewicke*, E.S. Sazonov, M.J. Corwin, S.A.C. Schuckers, CHIME study group, *IEEE Transactions on Biomedical Engineering*, Volume 55, Issue 1, Jan. 2008 Page(s):108 – 118, Digital Object Id 10.1109/TBME.2007.900558.
14. **Optimal spatial sampling interval for damage detection by curvature or strain energy mode shapes**, E. Sazonov, P. Klinkhachorn, *Journal of Sound and Vibration*, Volume 285, Issue 4-5, p. 783-801, 08/2005.
15. **Activity-based sleep–wake identification in infants***, Edward Sazonov, Nadezhda Sazonova, Stephanie Schuckers, Michael Neuman and CHIME Study Group 2004 *Physiol. Meas.* 25 1291-1304 <http://stacks.iop.org/0967-334/25/1291> * **Top 3% downloads out of all Institute Of Physics journals in 2005. Included into IOP Highlights for 2004.**
16. **Non-baseline detection of small damages from changes in strain energy mode shapes***, E. S. Sazonov, P. Klinkhachorn, U. B. Halabe, H. V. S. GangaRao, *Non-Destructive Testing and Evaluation*, Taylor & Francis Publishing, Volume 18, Numbers 3-4 / July 2003, Pages: 91 – 107. * **One of 10 most popular articles in 2002 (volume 18)**
17. **Fuzzy logic expert system for automated damage detection from changes in strain energy mode shapes***, Edward S. Sazonov, Powsiri Klinkhachorn, Hota V.S. GangaRao, and Udaya B. Halabe. *Non-Destructive Testing and Evaluation*, Taylor & Francis Publishing, Volume 18, Number 1/2002, Pages 1 - 17. * **One of 10 most popular articles in 2002 (volume 18)**

BOOKS AND BOOK CHAPTERS

1. **Automated Damage Detection: A computerized damage detection system for Armoured Vehicle Launched Bridge**, E.Sazonov, LAP Lambert Academic Publishing, 208 pages, 2009. ISBN-10 3838323890, ISBN-13 978-3838323893.

2. ***Multiplex channels with concurrent data exchange and power delivery for distributed measurement systems***, Chie En Un, Simakov S.R, Paderin A.I. Khabarovsk, Khabarovsk State University of Technology, 1995, 219 pages. Sections 7.1-7.4 written by Sazonov E.S. (In Russian)

JOURNAL PUBLICATIONS UNDER REVIEW

(italic font indicates my student advisees)

1. **Using Sensors to Measure Activity in People with Stroke**, G. D. Fulk and E. Sazonov, submitted to Topics in Stroke Rehabilitation.
2. **A novel wearable sensor for monitoring of posture allocations and activities**, E. Sazonov, R. Browning, G. Fulk, Y. Schutz and J. Hill, submitted to IEEE Transaction on Biomedical Engineering.
3. **Damage sensitivity and detection threshold in curvature-based methods**, *Vidya Krishnamurthy*, Edward Sazonov, submitted to Journal of Sound and Vibration.
4. **Detection of food intake from swallowing sequences by supervised and unsupervised methods**, *Paulo Lopez-Meyer*, *Oleksandr Makeyev*, Stephanie Schuckers, Edward L. Melanson, Michael R. Neuman and Edward Sazonov, submitted to Annals of Biomedical Engineering.
5. **Wireless Intelligent Sensor and Actuator Network (WISAN) – a scalable platform for time-synchronous applications of structural health monitoring**, E. Sazonov, *V. Krishnamurthy* and R. Schilling, submitted to Structural Health Monitoring.
6. **Hybrid evolutionary algorithm for micro screw thread parameter estimation**, *O. Makeyev*, E.Sazonov, *P. Lopez-Meyer*, submitted to Engineering Applications of Artificial Intelligence.

REFEREED CONFERENCE PAPERS

(italic font indicates my student advisees)

1. ***Automatic Recognition of Postures and Activities in Stroke Patients***, Edward S. Sazonov, George Fulk, Nadezhda Sazonova and Stephanie Schuckers, 31st Annual International Conference of the IEEE EMBS, Minneapolis, Minnesota, USA, September 2-6, 2009, pp.2200-2203.
2. ***Recognition of Swallowing Sounds Using Time-Frequency Decomposition and Limited Receptive Area Neural Classifier***, *O.Makeyev*, E.Sazonov, S.Schuckers, *P.Lopez-Meyer*, T.Baidyk, E.Melanson, M.Neuman, in Applications and Innovations in Intelligent Systems XVI: Proceedings of AI-2008, The Twenty-eighth SGAI International Conference on Innovative Techniques and Applications of Artificial Intelligence, Springer, ISBN: 978-1-84882-214-6, Cambridge, UK, December 9-11, 2008, pp. 33-46.
3. ***Automatic recognition of postural allocations***, Edward Sazonov, *Vidya Krishnamurthy*, *Oleksandr Makeyev*, Ray Browning, James Hill, Yves Schutz, in Proc. 29th Annual International Conference of the IEEE Engineering in Medicine and Biology Society 2007, Lyon, France, August 23-26, 2007, pp. 4993-4996.
4. ***Limited receptive area neural classifier for recognition of swallowing sounds using continuous wavelet transform***, *Oleksandr Makeyev*, Edward Sazonov, Stephanie Schuckers, *Paulo Lopez-Meyer*, Ed Melanson, Michael Neuman, in Proc. 29th Annual International Conference of the IEEE Engineering in Medicine and Biology Society EMBC 2007, Lyon, France, 2007, pp. 3128-3131.

5. ***Limited receptive area neural classifier for recognition of swallowing sounds using short-time Fourier transform***, Oleksandr Makeyev, Edward Sazonov, Stephanie Schuckers, Ed Melanson and Michael Neuman, in Proc. International Joint Conference on Neural Networks IJCNN 2007, Orlando, USA, August 12-17, 2007, pp. 1417.1-1417.6.
6. **Sleep State Scoring in Infants from Respiratory and Activity Measurements**, N.A. Sazonova, E. Sazonov, B. Tan, S. Schuckers, Engineering in Medicine and Biology Society, 2006. EMBS '06. 28th Annual International Conference of the IEEE Aug. 2006 Page(s):2462 – 2465
7. ***Reliable Determination of Sleep Versus Wake from Heart Rate Variability Using Neural Networks****, Aaron Lewicke, Edward Sazonov, Michael Corwin and Stephanie Schuckers, Proceedings of International Joint Conference on Neural Networks, Montreal, 2005. * **Best student paper**
8. ***Identification of gait types from plantar pressure and heel acceleration data***, Sazonov ES, *Bumpus T*, Zeigler S, Marocco S, Proceedings of International Joint Conference on Neural Networks, Montreal, 2005.
9. ***Sleep-Wake Identification in Infants: Heart Rate Variability Compared to Actigraphy***. Lewicke, Aaron T.; Sazonov, Edward S.; Schuckers, Stephanie A. C. Proceedings of 2004 IEEE Engineering in Medicine and Biology Conference. San-Francisco, September 2004.

CONFERENCE PAPERS

(italic font indicates my student advisees)

1. ***A methodology for assessing risk of falling based on data from wearable sensors***, E.Sazonov, S. Zeigler and G.Fulk, to be presented at the 3rd International Congress on Gait & Mental Function, Washington, D.C., USA, February 26-28, 2010.
2. ***Identifying different functional postures in people with stroke using pressure and acceleration data from a shoe based sensor***, G.Fulk and E.Sazonov, to be presented at the 3rd International Congress on Gait & Mental Function, Washington, D.C., USA, February 26-28, 2010.
3. ***Objective prediction of ingested food mass using support vector regression***, Edward Sazonov, *Paulo Lopez-Meyer*, Stephanie Schuckers, Oleksandr Makeyev, Edward Melanson and Michael Neuman, The Obesity Societys 2009 Annual Scientific Meeting, Washington, DC, October 2009.
4. ***Development of a novel shoe based sensor to identify postural allocations in people with stroke***, George Fulk, Edward Sazonov, 2009 APTA Combined Sections Meeting in Las Vegas, NV February 9-12, 2009.
5. ***Performance Testing of Wireless Intelligent Sensor and Actuator Network (WISAN) on a Pre-Stressed Concrete Bridge***, M. F. M. Zain, *V. Krishnamurthy*, E. Sazonov, M. Jamil, and I.M. Taib, Proceedings of the 10th WSEAS International Conference on MATHEMATICAL METHODS, COMPUTATIONAL TECHNIQUES and INTELLIGENT SYSTEMS (MAMECTIS '08), Corfu, Greece, October 26-28, 2008, ISBN: 978-960-474-012-3, pp.390-395.
6. ***Wireless Intelligent Sensor and Actuator Network (WISAN): a scalable ultra-low-power platform for structural health monitoring***, Edward Sazonov, Ratneshwar Jha, Kerop Janoyan, *Vidya Krishnamurthy*, Michael Fuchs, Kevin Cross, Proceedings of SPIE's Annual International Symposium on Smart Structures and Materials, San Diego, CA, 2006.

7. ***Environmental Testing of Wireless Sensor System for Structural Health Monitoring of Civil Infrastructure***, Michael P. Fuchs, Kerop D. Janoyan, Edward S. Sazonov, *Vidya Krishnamurthy*, Ratan Jha, Kevin Cross, Proceedings of SPIE's Annual International Symposium on Smart Structures and Materials, San Diego, CA, 2006.
8. ***Experimental evaluation of instantaneous phase based index for structural health monitoring***, Ratneshwar Jha, Kevin Cross, Kerop Janoyan, Edward Sazonov, Michael Fuchs, and *Vidya Krishnamurthy*, Proceedings of SPIE's Annual International Symposium on Smart Structures and Materials, San Diego, CA, 2006.
9. ***Signal processing and power issues in acquisition of vibration data by MEMS accelerometers***, Sazonov ES, Janoyan K, Jha R, Nelson R, *Krishnamurthy V, Gao Z, Fuch M*, Proceedings of the 5th International Workshop on Structural Health Monitoring, Stanford, 2005.
10. ***Sensor network application framework for autonomous structural health monitoring of bridges***, Sazonov E, Janoyan K, Jha R. Proceedings of Structural Materials Technology (SMT): NDE/NDT for Highways and Bridges 2004. Buffalo, NY.
11. ***Wireless Intelligent Sensor Network for Autonomous Structural Health Monitoring*** Sazonov, E., K. Janoyan, and R. Jha, Proceedings of SPIE's Annual International Symposium on Smart Structures and Materials, San Diego, CA, 2004.
12. ***Hybrid LQG-Neural Controller for Inverted Pendulum System***, E.S. Sazonov, P. Klinkhachorn and R. L. Klein, Proceedings of 35th Southeastern Symposium on System Theory (SSST), Morgantown, WV, March 2003.
13. ***Activity-based sleep-wake identification in infants***, Nadezhda Sazonova, Edward Sazonov and Stephanie Schuckers, The 29th Annual Conference of Computers in Cardiology, Memphis, Tennessee, September 22-25, 2002.
14. ***Automated Laser Sensor System***, Srinivas Aluri, Eduard Sazonov, Hota V. S. GangaRao, Samer H. Petro, Powsiri Klinkhachorn, Structural Materials Technology Conference: NDE/NDT for Highways and Bridges Topical, September 10-13, 2002, Cincinnati, Ohio.
15. ***Non-baseline damage detection from changes in strain energy mode shapes. Experiments on Armored Vehicle Launched Bridge***, Edward S. Sazonov, Powsiri Klinkhachorn, Hota V.S. GangaRao, Udaya B. Halabe. Proceedings of 29th Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE). July 2002, Bellingham, WA.
16. ***Failure-Free Genetic Algorithm Optimization of a System Controller Using SAFE/LEARNING Controllers in Tandem***, E.S. Sazonov, D. Del Gobbo, P. Klinkhachorn and R. L. Klein, Proceedings of 34th Southeastern Symposium on System Theory (SSST), Huntsville, AL, March 2002, pp.287-292
17. ***Genetic Algorithms-Based Parameter Optimization of a Non-Destructive Damage Detection Method***, E.S. Sazonov, P. Klinkhachorn and U.B. Halabe, Proceedings of 34th Southeastern Symposium on System Theory (SSST), Huntsville, Alabama, March 2002, pp.152-156.
18. ***Enhancing accuracy of data acquired by a laser vibrometer in a field setting*** Edward S. Sazonov, Powsiri Klinkhachorn, Hota V.S. GangaRao, Udaya B. Halabe. Proceedings of 28th Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE). August 2001, Brunswick, Maine.
19. ***An automated damage detection system for AVL B***, Edward S. Sazonov, Powsiri Klinkhachorn, Hota V.S. GangaRao, Udaya B. Halabe. Proceedings of 28th Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE). August 2001, Brunswick, Maine.

20. ***Nondestructive Evaluation of FRP Composite Bridge Components Using Infrared Thermography***, Udaya B. Halabe, Hota V. S. GangaRao, Powsiri Klinkhachorn and Edward Sazonov. Proceedings of 28th Annual Review of Progress in Quantitative Nondestructive Evaluation (QNDE). August 2001, Brunswick, Maine.
21. ***Current state and future development of Fieldbus networks***, E. Sazonov, A. Paderin, Chie En Un. Methods of information processing. v.7, Khabarovsk State University of Technology, 1999. (In Russian)

TECHNICAL REPORTS

1. ***Self-powered sensors and Actuators for bridges***, E.Sazonov, P.Pillay, technical report submitted to Transportation Research Board of National Academies, 2008.
2. ***Failure-Free Genetic Algorithm Optimization of a System Controller Using SAFE/LEARNING Controllers in Tandem***, E. Sazonov, D. Del Gobbo, R. Klein, P. Klinkhachorn, technical report submitted to Allegheny Power, 2002
3. ***Damage and remaining life assessment for AVL B***. US Army Grant No: DAAE07-96-C-x226. Hota V.S. GangaRao, Powsiri Klinkhachorn, Edward Sazonov, et al. Submitted to U.S. Army Tank-Automotive and Armaments Command Acquisition Center (AMSTA-AQ-DS), Warren, MI 48397-5000
4. ***Measurement methods and systems for data acquisition and processing***. (Annual report), Chie En Un, Simakov S.R, Levenets A.V, Sazonov E.S, Paderin A.I. Khabarovsk, Khabarovsk State University of Technology, Research Institute of Computer Technology, 1993, state registration # 01.9.20 016040, 157 pages.
5. ***Measurement methods and systems for data acquisition and processing***. (Annual report), Chie En Un, Simakov S.R, Levenets A.V, Sazonov E.S, Paderin A.I. Khabarovsk, Khabarovsk State University of Technology, Research Institute of Computer Technology, 1992, state registration # 01.9.20 016040, 132 pages.

INVITED TALKS

1. ***Wearable devices for monitoring of food intake and energy expenditure***, Columbia University, New York, NY, January 2010.
2. ***Wearable devices for monitoring of food intake and energy expenditure***, National Institute of Diabetes & Digestive & Kidney Diseases, Phoenix, AZ, December 2009.
3. ***Wireless and Self-Powered Sensors for Structural Health Monitoring***, a workshop conducted at National University of Malaysia (UNIVERSITI KEBANGSAAN MALAYSIA), May 2008.
4. ***Self-powered sensors and actuators for bridges***, invited poster presentation at 87th annual meeting of the Transportation Research Board of the National Academies, Washington, DC, January 2008.
5. ***Ambient Intelligence in Bioengineering***, Center of Applied Science and Technological Development, UNAM (National Autonomous University of Mexico), Mexico City, Mexico, June 2007.
6. ***Detection of chewing and swallowing to estimate eating patterns and energy intake***, Joint NSF/NIH workshop Engineering Approaches to Energy Balance and Obesity: Opportunities for Novel Collaborations and Research, Sheraton National Hotel in Pentagon City, Arlington County, VA, 6-7 June 2006.

7. **Energy harvesting for structural health monitoring sensor networks**, invitation-only workshop, Los Alamos National Laboratory, June 2005, Report: LA-14314-MS
8. **Computation Intelligence for Service Level Management**, Ingenium Technology, Milan, Italy, 2004.

TRADE PUBLICATIONS

Self-powered wireless sensors for monitoring applications, E. Sazonov and S. Leschin, Industrial Embedded Systems, June 2006, http://www.industrial-embedded.com/articles/sazonov_and_leschin/

PUBLICATIONS ABOUT MY WORK

(selected publications)

1. **High-tech bridge safety**, PC Magazine, February 2008.
2. **Car-powered bridge monitor**, Mechanical Engineering, February 2008.
3. **Feel the vibration**, Materials World, February 2008.
4. **New Wireless Bridge Sensors Powered by Passing Traffic**, Science Daily, October 2007.

PATENTS

1. **Footwear-based System and Method for Monitoring Body Weight, Postural Allocation, and Energy Expenditure**, Raymond Browning, James Hill, Edward Sazonov and Yves Schutz. Provisional application submitted to USPTO February 2009.
2. **Integrated intra-dermal delivery, diagnostic and communication systems**, F. Sexton, I. Suni, C. Cetinkaya, S. Schuckers and E. Sazonov, full patent application submitted December 2008.
3. **Self-powered sensors and actuators**, E.Sazonov, P. Pillay, D. Curry, H. Li, full patent application submitted in January 2008.
A licensing agreement on this patent application with AmbioSystems LLC generated royalties to Clarkson University in 2007-2009.
4. **Method and apparatus for measuring energy intake**, E.Sazonov, S.Schuckers, E. Melanson, M. Neuman. Application number 11/827,384, submitted to USPTO 07/11/2007.
5. **Method of duplex data transmission**. Paderin A.I, Sazonov E.S, Simakov S.R, Chie En Un. Patent of Russian Federation #2138120 from October 14, 1994.

GRADUATE STUDENTS

Current students

1. Ph.D. – Oleksandr Makeyev (Spring 2006-present, Expected graduation Fall 2009), *Automatic recognition and quantification of deglutition*.
2. Ph.D. – Paulo Lopez Meyer (Spring 2007-present, Expected graduation Spring 2010), *Statistical determination of energy intake in free living individuals*.
3. M.S. – Yang Zou (Fall 2007 – present), *Automatic detection of mastication*
4. M.S. – Kaitlyn Tower (Fall 2008 - present), *"Band-aid" wearable sensors for swallowing detection*
5. M.S. – Tim Swyka (Fall 2009 – present) *Wearable shoe sensors*

Completed students

1. Ph.D. – Vidya Krishnamurthy (Spring 2008), *Wireless Sensor network for structural health monitoring*.
2. M.S. – Sun Zhi (Summer 2008), *A methodology for assessing risk of falling based on wearable sensor data*.
3. M.S. – Darrell Curry (Spring 2008), *Self-powered sensors and actuators for bridges*.
4. M.S. – Timothy Bumpus (Spring 2005), *Tracking Control of Nonlinear Systems using Variable Raised-cosine Radial Basis Function Neural Networks*.
5. M.S. – Vidya Krishnamurthy (Spring 2006), *A Reservation-Based Protocol For Monitoring Applications Using IEEE802.15.4 Sensor Networks*.
6. M.S. – Zhengsu Gao, (Summer 2005) *A low-latency preemptive operating system for sensor networks*.

Member of research committees

1. M.S. – Jing Xu, (Fall 2009) *A Phase-Locked Loop Model of the Human Posture Control System*, Chair: R. Schilling
2. M.S. – Brian DeCann, (Summer 2008) *A New Region Based Liveness Detection Algorithm for Biometric Fingerprint Scanners*, Chair: S.Schuckers
3. Ph.D. – Rakesh Pilkar, Chair: C. Robinson
4. Ph.D. - Viprali Bhatkar, Chair: C. Robinson
5. Ph.D. – Bozhao Tan, (Fall 2008) *Integration of lip movement for Lip/Voice recognition and liveness test*, Chair: S.Schuckers
6. Ph.D. – Haodong Li, (Spring 2008). *A linear generator for wireless sensors powered from bridge vibrations*, Chair: P.Pillay
7. Ph.D. – Aaron Lewicke, (Fall 2006) *Heart rate variability in infants for analysis of life-threatening events and sleep versus wake classification*, Chair: S.Schuckers
8. M.S. - Viprali Bhatkar, (Spring 2007) *Time Series Data Analysis to Study Human Postural Control and Movement Detection Strategies during Small Anterior Perturbations* Chair: C. Robinson
9. M.S. – Ram Kashyap, (Summer 2006) *Novel multi-hop, reliable, scalable transport layer scheme for wireless sensor and actuator network*, Chair: S. Kumar
10. M.S. – Piyush Raizada, (Summer 2005) *Study of Encryption Schemes for Compressed Video*, Chair: S.Kumar

UNDERGRADUATE RESEARCH

Undergraduate research assistants

1. Kenneth German (Computer Engineering, Summer 2003, McNair program) – design of a portable graphical interface.
2. Stephen Kofsky, (Computer Engineering, 2005-2008) – TCP/IP server for integrating data from distributed wireless networks, continuing to a M.S. or Ph.D. program at University of Illinois Urbana-Champaign.
3. Darrell Curry (Computer Engineering, Summer 2006) – electronics for signal capture and acquisition, graduated an M.S. student
4. Kate Bellor (Electrical Engineering, 2006-2007, Honors programs) – sleep state recognition in infants, co-advising with S. Schuckers, currently an M.S. student.
5. Shawn Mueller (Computer Engineering, Summer 2007-2008) – design of pressure sensitive insoles.

6. Jeff Birdsall (Computer Engineering, Summer 2007) – wireless sensor networks
7. William Chiaravalle (Computer Engineering, 2006-2008, honors program) – high-speed autonomous vehicle with adaptive motion control, co-advised with R. Meyer, J. Koplowitz
8. Matthew Lanahan (Computer Engineering, 2006-2008, honors program) – high-speed autonomous vehicle with adaptive motion control, co-advised with R. Meyer, J. Koplowitz
9. Zach Schilling (Computer Engineering, 2006-2008, honors program) – high-speed autonomous vehicle with adaptive motion control, co-advised with R. Meyer, J. Koplowitz
10. Brandon Petersen (Computer Engineering, 2008-2009) – design of pressure sensitive insoles
11. Michael DeMarchi (Computer Engineering, 2008-2009) – design of pressure sensitive insoles
12. Stephen Jones (Computer Engineering, 2008-2009) – assembly of sensor boards
13. Ryan Edgar (Software Engineering, 2009) – design of a wireless sensor interface to smartphone/PDA
14. Ryan Donnely (Computer Engineering, Summer 2009) – design of a capacitive sensor
15. Matthew Ladew (Computer Engineering, Honors program, 2009-present) – study of postures and activities in stroke patients
16. Phil Hart (Computer Engineering, Honors program, 2009-present) – study of postures and activities in stroke patients

SERVICES

Service to the profession

GRANT PANEL REVIEW

1. Proposal Reviewer for NSF: 2003, 2004, 2005, 2006, 2009

JOURNAL REFEREE AND REVIEW WORK

1. Reviewer *Soft Computing*
2. Reviewer *Journal of Sound and Vibration*
3. Reviewer *Journal of Engineering Mechanics*
4. Reviewer *Smart Materials and Structures*
5. Reviewer *Ultrasonics*
6. Reviewer *IEEE Transactions on Biomedical Engineering*
7. Reviewer *Engineering Structures*
8. Reviewer *Physiological Measurements*
9. Reviewer *IEEE Engineering in Medicine and Biology Magazine*
10. Reviewer *IEEE Sensors Journal*

BOOK REFEREE AND REVIEW WORK

1. Reviewer, **Neural Networks: A Comprehensive Foundation (3rd Edition)**, Simon Haykin, Prentice Hall.

CONFERENCE/WORKSHOP REFEREE AND REVIEW WORK

1. Reviewer, International Joint Conference on Neural Networks, 2005
2. Reviewer, International Joint Conference on Neural Networks, 2006

3. Reviewer, International Joint Conference on Neural Networks, 2007
4. Reviewer, Engineering in Medicine and Biology Conference, 2008
5. Reviewer, Engineering in Medicine and Biology Conference, 2009

CONFERENCE ORGANIZATION

1. Program Committee, P-BASICS² TECHNICAL CONFERENCE (Power, Biotechnology, Avionics, Security, Informatics, Computers, Software, Systems) 2008 IEEE REGION 5 TECHNICAL, PROFESSIONAL AND STUDENT CONFERENCE

Service to the University

1. Member, department Computer Engineering curriculum committee
2. Member, department Graduate Committee
3. Member, university Software Engineering faculty search committee
4. Participant, university Open Houses

PROFESSIONAL AND HONORARY ORGANIZATIONS

1. IEEE – Engineering in Medicine and Biology Society
2. IEEE - Computational Intelligence Society
3. IEEE – Computer Society
4. AAAS
5. Phi Kappa Phi
6. Sigma Xi

OTHER INFO

Citizenship: Russian Federation, Legal Permanent Resident in the US
Languages: English, Russian