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Education

D.Sc. Systems Science and Mathematics – August 2001
WASHINGTON UNIVERSITY, Saint Louis, MO
Dissertation: *Signal Processing, Computation and Estimation in Biological Neural Networks*
Advisor: Professor Bijoy K. Ghosh

M.S. Systems Science and Mathematics – May 1998
WASHINGTON UNIVERSITY, Saint Louis, MO

Diploma Control Engineering – May 1995
UNIVERSITY OF BELGRADE, Belgrade, Serbia and Montenegro
Thesis: *On Stability of Linear Systems With Delayed State Defined Over Finite Time Interval*
Advisor: Professor Dragutin Debeljkovic

Professional Experience

DIVISION OF ENGINEERING AND APPLIED SCIENCE
CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena, CA
Postdoctoral Fellow, October 2001 - present

CENTER FOR BIOCYBERNETICS AND INTELLIGENT SYSTEMS
WASHINGTON UNIVERSITY, Saint Louis, MO
Research Assistant, October 1999 - October 2001

SEVER INSTITUTE OF TECHNOLOGY
WASHINGTON UNIVERSITY, Saint Louis, MO
Research Assistant, August 1996 - August 2001

DEPARTMENT OF SYSTEMS SCIENCE AND MATHEMATICS
WASHINGTON UNIVERSITY, Saint Louis, MO
Instructor, January 2000 - August 2001

Research Interests

Signal processing and control in biosystems, including
- control algorithms for movable neuro-probes
- information decoding from neural data
- modeling and parameter estimation in biological systems
- brain machine interfaces

Teaching Experience	**WASHINGTON UNIVERSITY**, Saint Louis, MO
Instructor	SSM†326 **Probability and Statistics for Engineers** (SU00 SU01) SSM 490A **Systems Engineering Laboratory** (SP01) SSM 202 **Introduction to Systems Science and Mathematics** (FL00) SSM 581 **Instruments and Components for Automatic Control** (SP00) Duties included organizing and preparing lecture notes, teaching, assigning homeworks, projects and exams.
Supervised Students	Ka-Ling Chan, Masters Thesis, and Sheilah B. Gleason, Senior Design Project, both at Department of Systems Science and Mathematics.
Teaching Assistant	EE‡431 **Control Systems I** (SP98 SP99 FL99 FL00) SSM 502 **Mathematics of Modern Engineering II** (SP98 SP99 SP00) EE 551 **Probability and Stochastic Processes** (FL98 FL99) SSM 501 **Mathematics of Modern Engineering I** (FL97 FL98 FL99) SSM 326 **Probability and Statistics for Engineering** (SU98 SU99) Duties included grading homework assignments, organizing and conducting help sessions and proctoring exams.
Consultant	EE431 **Control Systems I** (SP00)
	† Department of Systems Science and Mathematics ‡ Department of Electrical Engineering
Awards and Fellowships	**Research Assistantship**, Washington University, Department of Systems Science and Mathematics, 1996 - 2001 **Research Fellowship**, Republic of Serbia, Ministry of Science and Technology, 1995 - 1996 **Outstanding Student Award**, University of Belgrade, School of Mechanical Engineering, 1995
Refereeing Activity	IEEE Transactions on Biomedical Engineering
Professional Membership	Institute of Electrical and Electronics Engineers The Mathematical Association of America Society for Neuroscience
Immigration Status	Permanent Resident of the United States of America

Publications

Dissertations

1. Z. Nenadic. *Signal Processing, Computation and Estimation in Biological Neural Networks.* D.Sc. Dissertation, Washington University, St. Louis, MO, 2001.

2. Z. Nenadic. *On Stability of Linear Systems With Delayed State Defined Over Finite Time Interval.* Diploma Thesis, University of Belgrade, Belgrade, Serbia and Montenegro, 1995.

Journal Articles

1. Z. Nenadic and J.W. Burdick, "Autonomous electrode positioning for optimization of extracellular recordings," *IEEE Trans. Biomed. Eng.*, submitted.

2. J. G. Cham, E. A. Branchaud, Z. Nenadic, B. Greger, R. A. Andersen, and J. W. Burdick, "Semi-chronic motorized microdrive and control algorithm for autonomously isolating, optimizing and maintaining extracellular action potential," *J. Neurophysiol.*, vol. 93, pp. 570–579, 2005.

3. Z. Nenadic and J.W. Burdick, "Spike detection using the continuous wavelet transform," *IEEE Trans. Biomed. Eng.*, vol. 52, pp. 74–87, 2005.

4. Z. Nenadic and B. Ghosh, "Encoding and decoding of analog signals with a population of neurons," *Math. Comput. Modelling*, vol. 39(2-3), pp. 181–196, 2004.

5. Z. Nenadic, B.K. Ghosh, and P. Ulinski, "Propagating waves in visual cortex: A large-scale model of turtle visual cortex," *J. Comp. Neurosci.*, vol. 14, pp. 161–184, 2003.

6. Z. Nenadic, B.K. Ghosh, and P.S. Ulinski, "Modeling and estimation problems in the turtle visual cortex," *IEEE Trans. Biomed. Eng.*, vol. 49, pp. 753–762, 2002.

7. Z. Nenadic, C.H. Anderson, and B. Ghosh, "Control of arm movement using population of neurons," *Math. Comput. Modelling*, vol. 35, pp. 1261–1269, 2002.

8. Z. Nenadic, B. Ghosh, and P. Ulinski, "Propagating waves in visual cortex: A large scale model of turtle visual cortex," *Math. Comput. Modelling*, vol. 35, pp. 743–749, 2002.

9. Z. Nenadic and B. K. Ghosh, "Signal processing and control problems in the brain," *IEEE Control Systems Magazine*, vol. 21, pp. 28–41, 2001.

10. M.P. Lazarevic, D.L. Debeljkovic, Z.L. Nenadic, and S.A. Milinkovic, "Finite-time stability of delayed systems," *IMA J. Math. Control Inform.*, vol. 17, pp. 101–109, 2000.

Refereed Conference Papers

1. Z. Nenadic, D.S. Rizzuto, R.A. Andersen, and J.W. Burdick, "Discriminat based feature selection with information theoretic objective," in *NIPS 2005*, submitted.

2. R.A. Andersen, J.W. Burdick, S. Musallam, H. Scherberger, B. Pesaran, D. Meeker, B.D. Corneil, I. Fineman, Z. Nenadic, E. Branchaud, J.G. Cham, B. Greger, Y.C. Tai, and M.M. Mojarradi, "Recording advances for neural prosthetics," in *Proc. of the 26th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, pp. 5352–5355, 2004.

3. B.K. Ghosh and Z. Nenadic, "Position and velocity estimation in the visual cortex," in *Proc. of the 15th IFAC World Congress on Automatic Control*, pp. 2361–2366, 2002.

4. Z. Nenadic, B.K. Ghosh, and P.S. Ulinski, "Large scale simulation for velocity prediction in the turtle visual cortex," in *Proc. of the 40th IEEE Conference on Decision and Control*, vol. 1, pp. 405–410, 2001.

5. Z. Nenadic and B.K. Ghosh, "Computation with biological neurons," in *Proc. of the 2001 American Control Conference*, vol. 1, pp. 257–262, 2001.

6. A.D. Polpitiya, Z. Nenadic, and B.K. Ghosh, "Optimal filtering in biological neural networks," in *Proc. of the 2001 American Control Conference*, vol. 5, pp. 3539–3542, 2001.

7. Z. Nenadic and B.K. Ghosh, "Control of arm movement using population of neurons," in *Proc. of the 39th IEEE Conference on Decision and Control*, vol. 2, pp. 1776–1781, 2000.

8. Z. Nenadic, B. Ghosh, and P. Ulinski, "Spatiotemporal dynamics in a model of turtle visual cortex," *Neurocomputing*, vol. 32-33, pp. 479–486, 2000.

9. Z. Nenadic and B.K. Ghosh, "Dynamic-control problems with on/off cells," in *Proc. of the 38th IEEE Conference on Decision and Control*, vol. 1, pp. 399–404, 1999.

10. D.Lj. Debeljkovic, Z.Lj. Nenadic, S.A. Milinkovic, and M.B. Jovanovic, "On the stability of linear systems with delayed state defined over finite time interval," in *Proc. 36th IEEE Conference on Decision and Control*, vol.3, pp. 2771–2772, 1997.

11. D.Lj. Debeljkovic, Z.Lj. Nenadic, Dj. Koruga, and S.A. Milinkovic, "On practical stability of time delay systems: New results," in *Proc. of the 2nd Asian Control Conference*, vol III. pp. 543–546, 1997.

12. Z.Lj. Nenadic, D.Lj. Debeljkovic, and S.A. Milinkovic, "On practical stability of time delay systems," in *Proc. of the 1997 American Control Conference*, vol. 5, pp. 3235–3236, 1997.

Abstracts

1. Z. Nenadic and J.W. Burdick, "Robust unsupervised detection of action potentials using the wavelet transform," *Soc. Neurosci. Abstr. 33: 279.1*, 2003.

2. E.A. Branchaud, Z. Nenadic, D. Meeker, J. Cham, R.A. Andersen, and J.W. Burdick, "Movable electrodes for autonomous cell isolation and tracking: algorithm, experiments and hardware," *Soc. Neurosci. Abstr. 33: 607.16*, 2003.

References

Primary References

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Secondary References

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