

Veljko Pejovic

CONTACT INFORMATION

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INTERESTS

Wireless networks, software defined radio, energy efficient protocols, technology and society

EDUCATION

University of California Santa Barbara, CA, USA

Ph.D., Computer Science Department (expected June 2012)

- Dissertation title: *Adaptive and Resource-Efficient Rural Area Wireless Networks*.
- Advisor: Dr. Elizabeth M. Belding.

Ph.D. emphasis, Technology and Society, (expected June 2012)

- Interdisciplinary program on the relationships between new media and society (www.cits.ucsb.edu).

Certificate in College and University Teaching, (expected June 2012)

- Training in teaching and planning a course, use of instructional technologies and application of research, theory, models, and/or principles of student learning.

School of Electrical Engineering, Belgrade, Serbia

B.S., Computer Science and Engineering, June, 2006

- Diploma Thesis: "Location Determination in 802.11 Wireless Network".
- GPA: 9.29/10.00

HONORS AND AWARDS

James D. Kline Fellowship for work that promotes international understanding, 2009-2010

President's Work-Study Award for 2008-2009, 2009-2010, and 2010-2011, UCSB

Research and Teaching Assistantship and Tuition Fellowship for 2006-2011, CS department, UCSB

Young Talents Fund Fellowship, 2010-2011, Republic of Serbia

Fellowship from the Ministry of Education, 2003-2006, Republic of Serbia

RESEARCH EXPERIENCE

University of California Santa Barbara, Santa Barbara, CA, USA

Research Assistant

Winter, 2008 - present

Research projects:

- Flexible wireless communication in white spaces for rural areas (supervised by: prof. Elizabeth M. Belding)

Software defined radios and license free white space spectrum have the potential to redefine wireless connectivity in rural areas of the developing world. I designed and implemented two physical/MAC layer protocols for such networks operating in the white space spectrum. I participated in building a GNU-radio testbed in Pretoria, South Africa, and deployed and evaluated my solutions in that testbed. Further, I investigated Internet usage and problems of connectivity in rural Africa: analyzed network traces from Macha, Zambia and conducted on-site interviews with the local population. I co-authored and presented four conference papers related to this project.

- Energy flow modeling for self powered rural area networks (supervised by: prof. Elizabeth M. Belding and prof. Mahesh Marina)

Energy shortage is the key problem in rural area wireless networks. I monitored energy usage in Tegola, a rural wireless network in Scotland, and based on the findings devised an energy flow model for wireless routers powered by wind and solar energy. I published one paper and one extended abstract, and presented the findings at two conferences.

- Exploiting locality of interest in online social networks (supervised by: prof. Ben Y. Zhao and prof. Kevin Almeroth)

I participated in a research team that analyzed an extensive real-world OSN trace and pointed out the locality of user interactions. We proposed a distributed OSN architecture that improves performance for geographically dispersed users. The results of our improved architecture were published in a conference paper. The project also got a press coverage in IEEE Spectrum.

Meraka Institute, CSIR, Pretoria, South Africa
Visiting Researcher **Summer, 2010**
Research project:

- Practicality of white space communication in rural Africa (supervised by: prof. Ntsibane Ntlatlapa)
A part of *Flexible wireless communication in white spaces for rural areas* explained above.

University of Cambridge, UK
Visiting Researcher **Summer, 2009**
Research project:

- Flutrack: tracking human behavior patterns in the case of pandemics (supervised by: prof. Jon Crowcroft)
I collaborated on the design and implemented a cell phone Java ME application that monitors disease spread and human interactions (through cell phone Bluetooth contacts and GPS location). I deployed the application on twenty cell phones and tested the application.

University of Edinburgh, UK
Visiting Researcher **Summer, 2008**
Research project:

- Energy and performance monitoring in a rural area network (supervised by: prof. Mahesh Marina)
A part of *Energy flow modeling for self powered rural area networks* explained above

University College Cork, Ireland
Visiting Researcher **Summer, 2007**
Research project:

- Wireless sensor network performance debugging system (supervised by: prof. Cormac Sreenan)
I developed a low-overhead performance monitoring and debugging system for wireless sensor networks, and implemented the solution in TOSSIM simulator. The concept was presented at EWSN'09 conference.

Technion, Haifa, Israel
Visiting Researcher **Summer, 2005**
Research project:

- Location determination in wireless networks using PocketPC (supervised by: Yoram Yihyie)
I developed a PocketPC application that triangulates user's coordinates from the relative signal strength observed in a network. The location is then shown on the user's device in real-time.

TEACHING
EXPERIENCE

University of California Santa Barbara, CA, USA
Instructor, Computer Science Department **Summer, 2011**

- I taught, structured the syllabus, and designed lecture materials for CMPSC 8 Introduction to Computer Science course. I presented introductory computer science concepts such as variables and expressions, data and control structures, algorithms, debugging, program design, and documentation to fifty students with little or no programming experience.

Teaching Assistant, Computer Science Department **Fall, 2006 - Spring, 2008**

- I held discussion sections, implemented course programming materials and graded for the following courses: Network Security, Introduction to Computer Networks, Parallel Programming, Foundations of Computer Science, and Introduction to Computer Programming.

School of Electrical Engineering, Belgrade, Serbia
Lab Assistant, Computer Science and Engineering Department **Fall, 2003 - Spring, 2006**

PUBLICATIONS

D. L. Johnson, **V. Pejovic**, E. M. Belding and G. van Stam, *VillageShare: Facilitating content generation and sharing in rural networks*, To appear in ACM DEV'12, Atlanta, GA, March 2012.

A. Anand, **V. Pejovic** and E. M. Belding, *VillageCell: Cost Effective Cellular Connectivity in Rural Areas*, To appear in ICTD'12, Atlanta, GA, March 2012.

V. Pejovic and E. M. Belding, *A Context-aware Approach to Wireless Transmission Adaptation*, IEEE SECON, Salt Lake City, UT, June 2011.

D. L. Johnson, **V. Pejovic**, E. M. Belding and G. van Stam, *Traffic Characterization and Internet Usage in Rural Africa*, WWW, Hyderabad, India, March 2011.

M. P. Wittie, **V. Pejovic**, L. Deek, K. C. Almeroth and B. Y. Zhao *Exploiting Locality of Interest in Online Social Networks*, ACM CoNEXT'10, Philadelphia, PA, December 2010.

V. Pejovic and E. M. Belding, *Energy-Efficient Communication in Next Generation Rural-Area Wireless Networks*, The Second ACM SIGMOBILE Workshop on Cognitive Wireless Networking (CoRoNet), Chicago, Illinois, September 2010.

V. Pejovic, E. M. Belding and M. Marina, *An Energy-Flow Model for Self-Powered Routers and its Application for Energy-Aware Routing*. Networked Systems for Developing Regions (NSDR) Workshop, Big Sky, Montana, October 2009.

V. Pejovic, E. Varga and M. Stankovic, *On Client and Transaction Identification and Matching Problems* (best paper award), Tesla Neverending Story-IEEE International Student Paper Contest and Conference, Belgrade, Serbia, July 2006

POSTERS
PRESENTATIONS

A. Anand, **V. Pejovic** and E. M. Belding, *VillageCell: Cellular Connectivity in Rural Areas*, Graduate Student Workshop on Computing, UCSB, Santa Barbara, CA, October 2011.

D. L. Johnson, **V. Pejovic** and E. M. Belding, *VillageNet: Next generation networking for rural areas*, Engineering Insights, UCSB, Santa Barbara, CA, April 2011.

V. Pejovic, *Software Defined Radio for the Next Generation Wireless Networks*, Meraka Institute, Pretoria, South Africa, July 2010 and Macha, Zambia, August 2010.

M. P. Wittie, **V. Pejovic**, L. Deek, K. C. Almeroth E. M. Belding and B. Y. Zhao, *Exploiting Locality of Interest in Online Social Networks (presentation)*, Graduate Student Workshop on Computing, UCSB, Santa Barbara, CA, October 2009.

V. Pejovic, E. M. Belding and M. Marina, *An Energy-Flow Model for Self-Powered Routers and its Application for Energy-Aware Routing (position paper)*, ExtremeCom'09, Padjelanta National Park, Laponia, Sweden, August 2009.

V. Pejovic, C. Sreenan, *PerDB: Performance Debugging for Wireless Sensor Networks (poster)*, EWSN, Cork, Ireland, February 2009

PROFESSIONAL
SERVICES

Program committee member: ACM S3 Workshop, Chicago, IL, September 2010

Publicity chair: ACM WiNS-DR'08 Workshop, San Francisco, CA, September 2008

Reviewer: IEEE Transactions on Networking, IEEE Transactions on Vehicular Technology, IEEE Communication Letters, MobiCom 2011, SECON 2011, INFOCOM 2010, WiMob 2009, WiMob 2008

REFERENCES

Dissertation advisor

Prof. Elizabeth M. Belding
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Department of Computer Science
University of California
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Research internship supervisor

Prof. Jon Crowcroft
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Committee member and collaborator

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Research internship supervisor

Prof. Mahesh K. Marina
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Teaching mentor

Prof. Phill T. Conrad
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