Veljko Pejovic,

Assistant Professor of Computer Science

CONTACT INFORMATION

Room 3.15, Faculty of Computer and
Information Science
University of Ljubljana
Ljubljana 1000
Slovenia

Phone: +386(0)14798257
E-mail: Veljko.Pejovic@fri.uni-lj.si
WWW: http://lrss.fri.uni-lj.si/Veljko

INTERESTS

Mobile sensing, wireless networks, ubiquitous computing, technology and society

EDUCATION

University of California Santa Barbara, CA, USA

Ph.D., Computer Science Department (September 2012)

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

Ph.D. emphasis, Technology and Society, (September 2012)

- Interdisciplinary program on the relationships between new media and society.

Summer Teaching Institute For Associates, (June 2011)

- 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

Best paper nominee, Ubicomp'14, with M. Musolesi for paper *InterruptMe: Designing Intelligent Prompting Mechanisms for Pervasive Applications*, Seattle, WA, September 2014

Best paper award, Data for development (D4D) challenge, with A. Lima, M. De Domenico and M. Musolesi for paper *Exploiting Cellular Data for Disease Containment and Information Campaigns Strategies in Country-Wide Epidemics*, Boston, MA, May 2013

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 2006-2012, CS department, UCSB

Young Talents Fund Fellowship, 2010-2011, and 2011-2012 Republic of Serbia

Best paper award with E. Varga and M. Stankovic for *On Client and Transaction Identification and Matching Problems* at Tesla Neverending Story-IEEE International Student Paper Contest and Conference, Belgrade, Serbia, July 2006

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

RESEARCH EXPERIENCE

University of Ljubljana, Slovenia
Assistant Professor **January, 2015 –**

University of Birmingham, UK
Research Fellow **September, 2012 - November 2014**
Research project:

- UBhave: ubiquitous and social computing for positive behaviour change
  (supervised by: Dr. Mirco Musolesi)

  In UBhave project we investigated the opportunities and challenges related to using mobile phones for behaviour change interventions. This involved measuring multiple aspects of human behaviour through power-limited mobile phones, devising relationships between the observed context and human behaviour, and integration with data gathered through online social networks. My work included both theoretical investigation of machine learning models that can be employed for successful behaviour modelling, as well as of designing and building real-world mobile systems. In addition, I designed experiments, deployed

mobile applications, gathered and analysed the data. The work has been published in one book chapter, two journal papers, and three conference papers.

University of California Santa Barbara, Santa Barbara, CA, USA
Research Assistant **January, 2008 - August 2012**
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 three 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 the Internet usage and problems of connectivity in rural Africa: analysed network traces from Macha, Zambia and conducted on-site interviews with the local population. I co-authored a book chapter, two journal papers and six conference papers related to this project.

- Energy flow modeling for self powered rural area networks
  (supervised by: prof. Elizabeth M. Belding and Dr. 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 analysed 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: Dr. 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 behaviour 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: Dr. 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 the TOSSIM simulator. The concept was presented at the EWSN'09 conference.

Teaching Experience

University of Ljubljana, Slovenia
Instructor, Faculty of Computer and Information Science **Winter, 2015 – ongoing**

- I revised the syllabus, created new teaching materials, and am currently teaching a master-level course on algorithms. The topics include computational complexity, advanced data structures, computational geometry, and metaheuristics. I also included a practical project as a part of the coursework.

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

A. Mehrotra, M. Musolesi, R. Hendley and **V. Pejovic**, *Designing Content-driven Intelligent Notification Mechanisms for Mobile Applications*, UbiComp'15, Osaka, Japan, September 2015.

A. Mehrotra, J. Vermeulen, **V. Pejovic** and M. Musolesi, *Ask, Don't Interrupt: The Case for Interruptibility-Aware Mobile Experience Sampling*, Mobile Systems for Computational Social Science Workshop (with UbiComp'15), Osaka, Japan, September 2015.

V. Pejovic, A. Mehrotra and M. Musolesi, *Investigating The Role of Task Engagement in Mobile Interruptibility*, Smarttention, Please! Intelligent Attention Management on Mobile Devices Workshop (with MobileHCI'15), Copenhagen, Denmark, August 2015.

A. Lima, M. De Domenico, **V. Pejovic** and M. Musolesi, *Disease Containment Strategies based on Mobility and Information Dissemination*, Nature Scientific Reports, 10650; doi: 10.1038/srep10650 (2015).

V. Pejovic and M. Musolesi, *Anticipatory Mobile Computing: A Survey of the State of the Art and Research Challenges*, ACM Computing Surveys (CSUR) 47.3 (2015)

A. Mehrotra, **V. Pejovic**, M. Musolesi, *SenSocial: A Middleware for Integrating Online Social Networks and Mobile Sensing Data Streams*, ACM/IFIP/USENIX Middleware'14, Bordeaux, France, December 2014.

V. Pejovic, D. L. Johnson, M. Zheleva, and E. M. Belding, *VillageLink: A Channel Allocation Technique for Wide-Area White Space Networks*, a chapter in *Roadmap to White Space Communication: Advances, Developments and Engineering Challenges*, Springer 2014.

V. Pejovic and M. Musolesi, *Anticipatory Mobile Computing for Behaviour Change Interventions*, Mobile Systems for Computational Social Science Workshop (with UbiComp'14), Seattle, WA, USA, September 2014. (**Best paper nominee (4% top submissions)**)

V. Pejovic and M. Musolesi, *InterruptMe: Designing Intelligent Prompting Mechanisms for Pervasive Applications*, UbiComp'14, Seattle, WA, USA, September 2014.

V. Pejovic, D. L. Johnson, M. Zheleva, and E. M. Belding, *VillageLink: Wide-Area Wireless Coverage*, invited paper, IEEE COMSNETS'14, Bangalore, India, January, 2014.

V. Pejovic and E. M. Belding, *WhiteRate: Context-Aware Approach to Wireless Transmission*

Adaptation, IEEE Transactions on Mobile Computing 13(4):921-934 2014.

N. Lathia, **V. Pejovic**, K. Rachuri, C. Mascolo, M. Musolesi and P. J. Rentfrow, *Smartphones for Large-scale Behaviour Change Interventions*, IEEE Pervasive Computing 12(3), July 2013.

A. Lima, M. De Domenico, **V. Pejovic** and M. Musolesi, *Exploiting Cellular Data for Disease Containment and Information Campaigns Strategies in Country-Wide Epidemics*, Third International Conference on the Analysis of Mobile Phone Datasets (NETMOB'13). Boston, MA, USA, May 2013. (**Winner of the Data for Development Challenge Best Overall Prize**)

V. Pejovic, D. L. Johnson, M. Zheleva, E. M. Belding, L. Parks and G. van Stam, *The Bandwidth Divide: Obstacles to Efficient Broadband Adoption in Rural Sub-Saharan Africa*, The International Journal of Communication, Vol 6 (2012).

D. L. Johnson, **V. Pejovic**, E. M. Belding and G. van Stam, *VillageShare: Facilitating Content Generation and Sharing in Rural Networks*, ACM DEV'12, Atlanta, GA, March 2012.

A.Anand, **V. Pejovic** and E. M. Belding, *VillageCell: Cost Effective Cellular Connectivity in Rural Areas*, 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'11, 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) at MobiCom'10, 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 at SOSP'09, 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

C. Hargood, **V. Pejovic**, L. Morrison, D. Michaelides, M. Musolesi, L. Yardley, and M. Weal, *The UBhave Framework: Developing Dynamic Mobile Applications for Digital Behavioural Interventions* Mobiquitous'14, London, UK, December 2014.

G. van Stam, D. L. Johnson, **V. Pejovic**, C. Mudenda, A. Sinzala, D. van Greunen *Constraints for Information and Communications Technologies Implementation in Rural Zambia*, Africomm'12, Yaounde, Cameroon, November 2012.

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

Poster session chair: ACM DEV conference, London, UK, November 2015

TPC Member: IEEE UIC conference, Beijing, China, August 2015

TPC Member: WWW conference (poster session), Florence, Italy, May 2015

TPC Member: Mobile Systems for Computational Social Science Workshop (MSCSS) at UbiComp'13, Zurich, Switzerland, September 2013

TPC Member: ACM S3 Workshop, Chicago, IL, September 2010

Co-chair: 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, Elsevier Pervasive and Mobile Computing, The Encyclopedia of Computer Science, MobiCom, SECON, INFOCOM, WiMob, SAC, MUM, WCNC, Social Informatics, Pervasive Health, Mobile HCI, Mobiquitous

References

Dissertation advisor
Prof. Elizabeth M. Belding
Professor and Vice Chair
Department of Computer Science
University of California
Santa Barbara, CA 93106-5110, USA
ebelding@cs.ucsb.edu

Research supervisor
Dr. Mirco Musolesi
Reader
School of Computer Science
University of Birmingham
Rm 114, Computer Science Building
Edgbaston B15 2TT, UK
m.musolesi@cs.bham.ac.uk

Research internship supervisor
Prof. Jon Crowcroft
Professor
University of Cambridge
William Gates Building
15 JJ Thomson Ave.,
Cambridge CB3 0FD, UK
Jon.Crowcroft@cl.cam.ac.uk

Committee member and collaborator
Prof. Kevin C. Almeroth
Professor
Department of Computer Science
University of California
Santa Barbara, CA 93106-5110, USA
almeroth@cs.ucsb.edu

Teaching mentor
Dr. Phill T. Conrad
Lecturer
Department of Computer Science
University of California
Santa Barbara, CA 93106-5110, USA
pconrad@cs.ucsb.edu

Research internship supervisor
Dr. Mahesh K. Marina
Reader
School of Informatics
University of Edinburgh
10 Crichton Street,
Edinburgh, EH8 9AB, UK
mahesh@ed.ac.uk