Reza Sadeghi

CV updated on Jan 2020

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Personal Statement

I am a Ph.D. candidate of computer science at Wright State University, where I am working as a graduate research assistant in the Data Science for Healthcare Lab. During my graduate studies, I investigated applied machine learning in the fields of healthcare, web mining, and learning analytics. My research in the healthcare domain spans the gamut of different clinical decision support systems in dementia management and sleep quality prediction. To expand my knowledge in the medical domain, especially in sleep quality assessment, I have joined the division of Sleep and Circadian Disorders at Brigham and Women's Hospital, Harvard Medical School (HMS) as a research trainee. I am on track to graduate with my Ph.D. in May 2020 and am a U.S. work authorization card holder.

Education

Ph. D., Computer Science (GPA:4.0) May 2017 – May 2020
Wright State University, Department of Computer Science and Engineering, Dayton, Ohio, USA
Dissertation: Predicting Subjective Sleep Quality Using Objective Measurements in Older Adults

M.S., Computer Engineering- Software (GPA:4.0) Sep 2013 – Sep 2015
International University of Imam Reza, Department of Computer and Information Technology, Mashhad, Iran
Thesis: Strengthening Support Vector Classifiers against Outliers using Fuzzy Rough Set and Evolutionary Methods

B.S., Computer Engineering- Software Sep 2008 – Jul 2012
Isfahan University of Technology, Department of Electrical and Computer Engineering, Isfahan, Iran
Project: Designing & implementation of online library management website in IUT High School

Research Interests

- Information retrieval from online medical literatures and social media
- Design and implementation of expert systems with the aim of outlier detection
- Modeling complex systems using probabilistic graphical models, deep learning, and Fuzzy Logic
- Creating personalized clinical decision support systems by machine learning and signal processing techniques

Research Experience

Research Trainee May 2019 – Present
Division of Sleep and Circadian Disorders, Brigham and Women's Hospital, Harvard Medical School, MA, USA
- Investigation on novel sleep apnea biomarkers
- Assessment of sleep apnea physiology using analytical techniques

Graduate Research Assistant May 2017 – Present
Wright State University, Dayton, OH, USA
- Sleep quality prediction in elderly people using physiological signals
- Applying probabilistic graphical model to discover students' learning progress
- Using signal processing and soft computing to predict the early hospital mortality
- Detecting changes in behavior and activity patterns of dementia caregivers by analyzing their vital signals

Graduate Research Assistant Nov 2013 – Sep 2015
International University of Imam Reza, Department of Computer and Information Technology, Mashhad, Iran
- Nurse scheduling based on stochastic programming
- Strengthening support vector classifiers against outliers
- Feature reduction and selection based on fuzzy rough set

Teaching interest

Undergraduate level: Computer programming, software engineering, basic optimization, and web technologies
Advanced topics: Big data analysis, parallel programming, time series analysis, and statistical data analysis

Teaching Experience

Graduate Teaching Assistant Sep 2014 – May 2015
International University of Imam Reza, Department of Computer and Information Technology, Mashhad, Iran

- Advanced mathematics in computer engineering: The applications of fuzzy logic by MATLAB Fuzzy toolbox
- Multimedia systems: Creating dynamic website using HTML 5, CSS, and Java Script
- Advanced computer programming & computer programming: Basic concepts of C and C++

Executive manager and computer trainer Sep 2011 – Aug 2016
Soheil Education Complex, Tehran, Iran

- Organizing student information
- Training multimedia creation by Microsoft Power Point and Autoplay software

Technical Strengths

Database: PostgreSQL, Oracle, Microsoft SQL Server
Programming language: R, MATLAB, Python, HTML5, CSS, JavaScript, ASP.NET, C#, C++, C
Packages: bnlearn, RPostgreSQL, Rmatlab, caret, Scikit-learn, igraph, network, RCrawler, Keras, TenseorFlow, Isa, NLPre, OpenNLP, Rcmdr

Journal Publications

- **R. Sadeghi**, T. Banerjee, J. C. Hughes, & L. W. Lawhorne (2019), "Predicting sleep quality of caregivers using physiological signals", *Computers in Biology and Medicine*,110, 276-288. (Impact factor: 2.115)

- **R. Sadeghi**, T. Banerjee, W. Romine (2018), "Early Hospital Mortality Prediction using Vital Signals", *Smart Health*, 9, 265-274.

- J. Hamidzadeh, M. Zabihimayvan, **R. Sadeghi** (2018), "Detection of Web site visitors based on fuzzy rough sets", *Soft Computing*, 22(7), 147-158, April 2018. (Impact factor: 2.367)

- **R. Sadeghi**, J. Hamidzadeh (2018), "Automatic support vector data description", *Soft Computing*, 22(1), 147-158, January 2018. (Impact factor: 2.367)

- M. Zabihimayvan, **R. Sadeghi**, H. Nathan Rude, D. Doran (2017), "A soft computing approach for benign and malicious web robot detection", *Expert Systems with Applications*, 87, 129-140, November 2017. (Impact factor: 3.768)

- J. Hamidzadeh, **R. Sadeghi**, Neda Namaei (2017), "Weighted support vector data description based on chaotic bat algorithm", *Applied Soft Computing*, 60, 540-551, November 2017. (Impact factor: 3.907)

- Gholinezhad Devin, K. Abedzadeh Ghuchani, **R. Sadeghi**, H. Koosha (2015), "Dynamic Facility Location with Stochastic Demand", *Shiraz Journal of System Management*, 3:3, 77-90, Fall 2015.

- Gholinezhad Devin, K. Abedzadeh Ghuchani, **R. Sadeghi** (2013), "Stochastic Facilities location Model by Using Stochastic Programming", *Shiraz Journal of System Management*, 1:4, 59-71, October 2013

Conference Publications

- **R. Sadeghi**, M. Younes, S. Sands, L. Taranto-Montemurro, S. Bertisch, A. Wellman, S. Redline, T. Banerjee, A. Azarbarzin (2020), "Sleep Propensity And Sleep Apnea-specific Hypoxia Are Associated With Excessive Daytime Sleepiness", Accepted in *Annals of the American Thoracic Society* (ATS2020)

- **R. Sadeghi**, T. Banerjee, J. Hughes (2020), "Predicting sleep quality using heart rate variability", Submitted to 42nd *Annual International Conference of the IEEE Engineering in Medicine and Biology Society* (*EMBC*2020)

- W. Romine, N. Schroeder, F. Yang, **R. Sadeghi**, M. Zabihimayvan, D. Kadariya, T. Banerjee (2020), "Tracking Students' Mental Workload with a Wearable Device: Development of the Educational Fitness (EduFit) Tracker*", Submitted to 42nd *Annual International Conference of the IEEE Engineering in Medicine and Biology Society* (*EMBC*2020)

- M. Zabihimayvan, **R. Sadeghi**, D. Doran, M. Allahyari (2019), "A Broad Evaluation of the Tor English Content Ecosystem", *The 10th ACM Conference on Web Science* (*WebSci19*), Jun 2019

- **R. Sadeghi**, J. Hamidzadeh (2015), "SVDD based on Rough fuzzy set", *20th National Conference of Iranian computer committee* (*CSICC2015*), March 3, 2015 (In Persian)

- **R. Sadeghi**, A. Shaeen, H. Abbasi, J. Hamidzadeh (2014) ,"Inducing intuitionistic fuzzy decision tree based on maximum ambiguity in big data", *Second International Conference on Intelligent Information Networks and Complex Systems* (*IINCS2014*), November 26, 2014 (In Persian)

- J. Arefi, J. Hamidzadeh, A. Gholinezhad Devin, **R. Sadeghi**, S. Fayaz (2014), "Balancing time, cost, quality and network resources by considering time value of money and extended Fuzzy Logic", *Fourteenth Iranian Conference on Fuzzy Systems* (*ICFS2014*), August 19, 2014 (In Persian)

- **R. Sadeghi**, A. Shaeen, M. Vafaijahan (2014), "Improving fast Distance Vector convergence Protocol using enhanced Hidden Markov Model", *First National Conference on Computer Engineering and Information Technology Management* (*CEITM2014*), May 29, 2014 (In Persian)

- J. Hamidzadeh, A. Shaeen, **R. Sadeghi** (2014), "Using Fuzzy Logic to Solving Worm Hole Attack", *First National Conference on Computer Engineering and Information Technology Management* (*CEITM2014*), May 29, 2014 (In Persian)

- Gholinezhad Devin, **R. Sadeghi**, M. Hasan Nejat, J. Hamidzadeh (2014), "Project scheduling with resource constraints using fuzzy model extension", *Seventh International conference of Iranian Operations Research Society* (*OR2014*), May 14, 2014 (In Persian)

- Gholinezhad Devin, K. Abedzadeh Ghuchani, **R. Sadeghi**, J. Hamidzadeh (2014), "Dynamic Stochastic facility location using random scheduling", *Seventh International conference of Iranian Operations Research Society* (*OR2014*), May 14, 2014 (In Persian)

- V. Fazelinia, A. Ebrahimi Moghaddam, **R. Sadeghi**, J. Hamidzadeh (2014),"Robot routing with hybrid fuzzy logic and HMM", *First National Conference on ECSS* (*Moj 2014*), May 10, 2014 (In Persian)

Leadership and Service Activities

- The program committee of IntelliSys, Computing conference, FUZZ-IEEE, ICACR conference (2020)
- The program committee of IntelliSys, Computing conference, FUZZ-IEEE, ICACR, and Web Intelligence conference (2019)
- The program committee of WWW, ICACR , and Biomedical Research (2018)
- The reviewer of IEEE Transactions on Fuzzy Systems (Feb 2018- Present), Journal of Medical Internet Research (Aug 2018- Present), International Journal of Science and Business (Jun 2018- Present), IEEE Big Data 2018, Knowledge-Based Systems (Feb 2019- Present), International Journal of Environmental Research and Public Health (Apr 2019- Present), Journal of Big Data (Apr 2019- Present), Pattern Recognition (May 2019- Present)
- The editorial board member of Mathematics and Computer Science (2018- 2020)
- Academic outreach coordinator of Biomedical Research and Technology Association (Feb 2018- Sep 2018)
- SIGIR conference student volunteer, Ann Arbor, MI (2018)

Honors and Awards

- Accepted into the ATS2020 Student Scholars Program, Philadelphia, PA, 2020
- Received NSF travel award for IEEE/ACM CHASE2018, Washington, D.C., 2018
- Best paper award for publishing "Detection of Web site visitors based on fuzzy rough sets", 2017
- Best paper award for publishing "Automatic support vector data description", 2016
- Top researcher at International University of Imam Reza, 2016