

Mohammad Abu Alsheikh

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Work Experience

- **CSAIL, Massachusetts Institute of Technology** Cambridge, Massachusetts, USA
Postdoctoral Associate
May 2017 - Present
 - Machine learning in wireless sensing
- **CONNECT Centre, Trinity College Dublin** Dublin, Republic of Ireland
Visiting Researcher
June - September 2015
 - Activity recognition models using deep learning
- **gSoft Technology Solutions** Ramallah, Palestine
Software Engineer
July 2011 - August 2012
 - Ajax-based web components and smartphone applications (Android, iOS, and BlackBerry)
 - My duties included design, coding, documentation and testing tasks
 - Scrum software development
- **Cisco Systems through Exalt Technologies** Ramallah, Palestine
Software Engineer
September 2010 - June 2011
 - Network management system
 - Using the Dojo Toolkit to develop interactive graphical user interfaces

Education

- **Nanyang Technological University** 50 Nanyang Ave, Singapore
Ph.D., School of Computer Science and Engineering
January 2013 - April 2017
- **Birzeit University** Ramallah, Palestine
B.Eng., Computer Systems Engineering
September 2006 - January 2011

Research Interests

- The long-term goal of my research is to deepen and broaden the way that we can instrument the physical world, perform insightful data analytics at scale, provide people-centric services, and build sensing systems to facilitate people's smarter lifestyle
- **Keywords:** machine learning, big data analytics, people-centric and mobile sensing, Internet of things (IoT)

Publications

• Journals and Magazines

- J7 M. Abu Alsheikh, D. Niyato, D. Leong, P. Wang, and Z. Han, "Privacy management and optimal pricing in people-centric sensing," *IEEE Journal on Selected Areas in Communications*, vol. 35, no. 4, pp. 1-15, April 2017 (IF=3.672)
- J6 M. Abu Alsheikh, Y. Jiao, D. Niyato, P. Wang, D. Leong, and Z. Han, "The accuracy-privacy tradeoff of mobile crowdsensing," *IEEE Communications Magazine*, April 2017 (IF=5.125)
- J5 M. Abu Alsheikh, D. Niyato, S. Lin, H. P. Tan, and D. I. Kim, "Fast adaptation of activity sensing policies in mobile devices," *IEEE Transactions on Vehicular Technology*, 2016, accepted (IF=2.243)
- J4 M. Abu Alsheikh, D. Niyato, S. Lin, H. p. Tan, and Z. Han, "Mobile big data analytics using deep learning and Apache Spark," in *IEEE Network*, vol. 30, no. 3, pp. 22-29, May-June 2016 (IF=2.899)
- J3 M. Abu Alsheikh, S. Lin, D. Niyato, and H. P. Tan, "Rate-distortion balanced data compression for wireless sensor networks," in *IEEE Sensors Journal*, vol. 16, no. 12, pp. 5072-5083, June15, 2016 (IF=1.889)

- J2 M. Abu Alsheikh, D. T. Hoang, D. Niyato, H. P. Tan, and S. Lin, "Markov decision processes with applications in wireless sensor networks: A survey," in IEEE Communications Surveys & Tutorials, vol. 17, no. 3, pp. 1239-1267, thirdquarter 2015 (IF=9.22)
- J1 M. Abu Alsheikh, S. Lin, D. Niyato, and H. P. Tan, "Machine learning in wireless sensor networks: Algorithms, strategies, and applications," in IEEE Communications Surveys & Tutorials, vol. 16, no. 4, pp. 1996-2018, Fourthquarter 2014 (IF=9.22)

- **Conferences**

- C3 D. Niyato, M. Abu Alsheikh, P. Wang, D. I. Kim, and Z. Han, "Market model and optimal pricing scheme of big data and Internet of things (IoT)," in Proceedings of the IEEE International Conference on Communications (ICC), Kuala Lumpur, Malaysia, 2016, pp. 1-6
- C2 M. Abu Alsheikh, S. Lin, H. P. Tan, and D. Niyato, "Toward a robust sparse data representation for wireless sensor networks," in Proceedings of the 40th IEEE International Conference on Local Computer Networks (LCN), Clearwater Beach, FL, 2015, pp. 117-124
- C1 M. Abu Alsheikh, P. K. Poh, S. Lin, H. P. Tan, and D. Niyato, "Efficient data compression with error bound guarantee in wireless sensor networks," in Proceedings of the 17th ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM), Montreal, Canada, 2014, pp. 307-311

- **Workshops and Posters**

- W1 M. Abu Alsheikh, A. Selim, D. Niyato, L. Doyle, S. Lin, and H. P. Tan, "Deep activity recognition models with triaxial accelerometers," in Workshops at the 30th AAAI Conference on Artificial Intelligence, Phoenix, AZ, USA, 2016.
- P1 M. Abu Alsheikh, S. Lin, H. P. Tan, and D. Niyato, "Area coverage under low sensor density," in Proceedings of the 11th IEEE International Conference on Sensing, Communication, and Networking (SECON), Singapore, 2014, pp. 173-175.

Research Interest & Skills

- **Machine Learning & Convex Optimization:**

- **Deep Learning:** Deep belief networks and stacked autoencoders
- **Big Data Analytics:** Distributed deep learning, MapReduce, Apache Spark
- **Temporal Modeling:** Markov chain and decision processes
- **Compressive Sensing and Sparse Coding**

- **Mobile Sensing & Internet of Things (IoT):**

- **Mobile Crowdsensing & People-Centric Sensing:** Privacy preserving data mining, activity detection, and duty cycle management
- **Wireless Sensor Networks:** Data compression, area coverage, and duty cycle management
- **Data Economics:** Profit maximization and optimal data pricing

- **Programming Experience:**

- **Programming Languages:** Python, Java, Matlab, C, C++, PHP, .NET, and Objective-C
- **Data Bases Systems:** MySQL and SQL Server
- **Mobile Phone Development:** Android, IOS, Blackberry, Nokia/J2ME, and Windows Phone
- **Build & Automation:** Maven, Hudson, and Bugzilla
- **Web Services:** Apache CXF, Jersey, WampServer, Apache Tomcat

Teaching Experience "Learning by Teaching"

- **CE1012-CZ1012: Engineering Mathematics II** Nanyang Technological University, Singapore
Teaching Assistant 2014, 2015, and 2016
- **CE1006-CZ1006: Computer Organization & Architecture** Nanyang Technological University, Singapore
Teaching Assistant 2014

Professional Service

- **External Reviewer:** I regularly review (mainly machine learning-related papers) for a number of international journals including IEEE Transactions on Vehicular Technology, IEEE Transactions on Wireless Communications, IEEE Transactions on Communications, IEEE Journal on Selected Areas in Communications, IEEE Transactions on Instrumentation and Measurement, IEEE Transactions on Mobile Computing, IEEE Network Magazine, IEEE Wireless Communications Magazine, and Elsevier Computer Networks
- **TPC Member:** ICCAAD (2015), ISSNIP (2015), ICNC (2017)

References

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<i>Nanyang Technological University, Singapore</i> | Professor of Computer Science and Engineering
<i>Email: dnyato@ntu.edu.sg, Tel: +65 67904121</i> |
| • Hwee-Pink Tan, Ph.D.
<i>Singapore Management University, Singapore</i> | Professor of Information Systems (Practice)
<i>Email: hptan@smu.edu.sg, Tel: +65 68085266</i> |
| • Derek Leong, Ph.D.
<i>Agency for Science, Technology and Research, Singapore</i> | Scientist at Institute for Infocomm Research
<i>Email: dleong@izra-star.edu.sg, Tel: +65 64082283</i> |
| • Shaowei Lin, Ph.D.
<i>Singapore University of Technology and Design, Singapore</i> | Professor of Engineering Systems and Design Pillar
<i>Email: shaowei_lin@sutd.edu.sg, Tel: +65 64997467</i> |