Saad Ahmad Khan

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HIGHLIGHTS

- Experienced software developer with diverse experience in large projects, using agile methodologies, object-oriented programming and popular scripting languages
- Excellent analytical skills, self-motivated and adapts to diverse teams and multiple projects.
- Design and implementation of backend services for a distributed and cloud agnostic orchestration system.
- Applied machine learning in diverse applications in multi-agent systems, robotics, natural language processing, information retrieval and wireless sensor networks
  - ML Problems: Classification, Time series prediction, NLP, Recommender Systems
  - Supervised Learning: Evolutionary Neural Networks (NEAT), Genetic Algorithms, Support Vector Machines (SVM), Reinforcement Learning (RL), Ensemble Methods, Bayesian networks
  - Unsupervised Learning: Principal Component Analysis (PCA), Clustering
- Technical Skills
  - Languages: Java, JavaScript, Python, MATLAB, YAML, XML, JavaCC
  - Development tools: Eclipse, IntelliJ IDEA, JUnit, Maven, Git, Subversion
  - Cloud technologies: AWS ecosystem, Docker, Openstack, Kafka, Zookeeper, Node-RED, etc.
  - Methodologies: Agile, Scrum, Test Driven Development.
  - Database platforms: Neo4j, MySQL, Cassandra etc.

EXPERIENCE

Member of Technical Staff **July 2015 – Present**
COMPOSURE.AI - formerly MosaixSoft Inc *LOS ALTOS, CA*

Composure.ai builds infrastructure software to enable multi-cloud computing for enterprises

- Designed and developed core components for Multi-Cloud Optimizer (MCO) microservices including:
  - RESTful API in Java for the distributed NoSQL database (Neo4j)
  - Implementation for concurrent control and transactional support for in-memory database
  - Java API with Cypher (declarative query language) hook supporting algorithms for database projections
  - Multi-threaded data pipeline for handling high volumes of data from distributed message bus system
  - Kafka event-based listener and filter using JavaCC and lambda expressions
  - Java based API for service resolver used by various application resolvers
- Semantic search API for QA system (Standford CoreNLP + Python NLTK).
- DevOps for multi-tier applications (IBM Daytrader, SmartParkingFinder-IoT) running across hybrid Docker clusters in AWS.

Research Assistant **Aug 09 – May 15**
University of Central Florida *Orlando, FL*

- Developed evolutionary and Bayesian learning models for decision making in human-robot interaction.
- Developed a game theoretic model for robot movement in dense human crowds.
- Implemented a learning from demonstration (LfD) framework in the YAES simulator framework and the Open Wonderland virtual world.

Research Associate **Aug 07 – May 09**
Al-Khawarizmi Institute of Computer Sciences *Lahore, Pakistan*

- Implemented APIs for GSM-GPRS based Automated Meter Reading (AMR).
- Implemented HANs equipped with Chipcon ZigBee Devices and crossbow motes.

EDUCATION

Ph.D. Electrical Engineering — **Dec 2015**
University of Central Florida — *Orlando, FL*

- Dissertation: Towards Improving Human-Robot Interaction For Social Robots

M.Sc Computer Engineering — **May 2013**
University of Central Florida — *Orlando, FL*

M.Sc Electrical Engineering — **Jan 2014**
University of Engineering and Technology Lahore — *Lahore, Pakistan*

- Thesis: Multi-path routing strategy for enhancing QoS in wireless multimedia sensor networks

B.Sc of Electrical Engineering — **Aug 2007**
University of Engineering and Technology Lahore — *Lahore, Pakistan*

Patents

- **Khan, S. A.**, Prakash, G., Mihai, N. "Systems and methods for generating projection of a knowledge-base" Attorney Docket Number 36660-00003 Application Number 62/533,976

Selected Publications

- **Khan, S. A.**, Bölöni, L. & Turgut, D. "Bridge protection algorithms - a technique for fault-tolerance in sensor networks". In *Ad Hoc Networks 24 (2015): 186-199*
- **Khan, S. A.**, Thakore, V., Behal, A., Bölöni, L. & Hickman, J. J. "Comparative analysis of system identification techniques for nonlinear modeling of the neuron-microelectrode junction". In *Journal of Computational and Theoretical Nanoscience Vol. 10, pp. 573-580*
- **Khan, S. A.**, Arshad, S. A., "QoS Provisioning Using Hybrid FSO RF Based Hierarchical Model for Wireless Multimedia Sensor Networks". In *International Journal of Computer Science and Information Security, IJCIS Arxiv Preprint arXiv:0909.0571*
- **Khan, S. A.**, Arif, S. & Bölöni, L. "Towards learning movement in dense crowds for a socially-aware mobile robot". In *Adaptive Learning Agent (ALA-14), workshops at AAMAS-14*
- **Khan, S. A.**, Arif, S. & Bölöni, L. "Emulating the consistency of human behavior with an autonomous robot in a market scenario". In *Plan, Activity, and Intent Recognition (PAIR-13), workshops at the 27th AAAI Conference on Artificial Intelligence, 2013*
- **Khan, S. A.**, Streater, J., Bhattia, T. S., Fiore, S. & Bölöni, L. "Learning social calculus with genetic programing". In *26th Int'l Conf. of FLAIRS, Proc. of FLAIRS-26, May 2013*
- **Khan, S. A.**, Bhattia, T. S., & Bölöni, L. "Soldiers, robots and local population - modeling cross-cultural values in a peacekeeping scenario". In *21st Annual Conf. on Behavior Representation In Modeling & Simulation, Proc. of BRIMS-21, March 2012*
- **Khan, S. A.**, Bhattia, T. S., Parker, S., & Bölöni, L. " Modeling the interaction between mixed teams of humans and robots and local population for a market patrol task". In *25th Int'l Conf. of FLAIRS, Proc. of FLAIRS-25, May 2012*
- **Khan, S. A.**, & Bölöni, L. "Agent-based modeling of a price information trading business". In *Computer and Information Sciences, Proc. of ISCIS-26, 2011, pp. 257-262*
- **Khan, S. A.**, & Khan, F. A., " Performance analysis of a zigbee beacon enabled cluster tree network". In *IEEE Int'l Conf. of Electrical Engineering, Proc. of ICEE'09, pp. 1-6*
- **Khan, S. A.**, Khan, F. A., Shahid, A., & Khan, Z. A., " Zigbee based reconfigurable clustered home area network". In *Sensor Technologies and Applications, Proc. of SENSORCOMM'09, pp. 32-39*
- **Khan, S. A.**, Khan, F. A., Shahid, A., & Khan, Z. A., "Load Balanced Clustering Algorithm For Energy Efficient Home Area Networking. In *IEEE Sensors Application Symposium, Proc of IEEE SAS 2009, pp. 314-319*
- **Khan, S. A.**, Aziz, H., Maqsood, S., & Faisal, S. "Clustered Home Area Network: A Beacon Enabled IEEE 802.15.4 Approach". In *IEEE Int'l Conf. on Emerging Technologies, Proc. of IEEE ICET 2008, pp. 193-198, Oct 19-18 2008*