Eric (Ehsan) Qasemi

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Research Interest

Knowledge Graph | Machine Learning | Natural Language Processing

Education

PHD. in Computer Science (GPA 3.48/4): University of Southern California (2018-)

MSC. in Computer Science (GPA 3.56/4): University of Wisconsin-Madison (2015-18)

MSC. in Computer Engineering (GPA 3.56/4): University of Wisconsin-Madison (2015-18)

BSC. in Electrical Engineering (GPA 16.12/20): University of Tehran (2010-15)

Honors & Awards

- 4-Year Research **Scholarship Recipient** from University of Southern California 2018-2022
- 1'st place in National Digital System Design Competition, HW/SW Co-design League, Iran 2013
- 1'st place in 2D Soccer Simulation Competition, Iran 2008
- Ranked as 57 among ≈500,000 students in National Universities Entrance Exam, Iran 2010

Research

Center on Knowledge Graphs — Information Sciences Institute at USC

PHD Student under Prof. P. Szekely *Jun 2018 – present*

Machine Common-Sense:

- Study on neural-symbolic common sense reasoning based on a mixture of Language models and common sense knowledge graphs.
- CoreQuisite: Study on Boundaries of common sense reasoning depending on the context in time, location, and status.

Table Understanding:

- Study on **Knowledge Graph Embedding** approaches for Knowledge extraction from tables
- T2WML: an annotation scheme to simplify knowledge extraction from tabular data

Meta-Learning:

- Study on **Meta-learning** approaches for E2E-AutoML with focus on **data-preparation**
- Study public domain codes to formulate state-of-the-art **data-cleaning** methods

End-to-End AutoML:

- **DSBox**: End-to-End Automated Machine Learning (E2E-AutoML) system
- Supports high dimensional structured datasets (image, text, video, etc.)
- Beats state-of-the-art E2E-AutoML systems and human baseline on D^3M's datasets.

Persepolis Research Group — University of Wisconsin-Madison

Research Assistant under Prof. A. H. Assadi *2016-18*

- Research and development in big heterogeneous spatiotemporal and structured high-dim data
- Novel clustering for discovery of Autism Spectrum Disorder (ASD) personalized therapy
- Propose an architecture based on deep LSTM and its implementation for ASD classification
- Proposed Entropy methods in ASD feature discovery, and pattern classification

Design, Verification, and Debug of Embedded Systems Lab — University of Tehran

Research Assistant under Prof. B. Alizadeh *2012-14*

- HW/SW co-design of highly parallel Blokus-Duo Solver based on Monte Carlo Tree Search (MCTS) Engine.
- Research on a Monte-Carlo Tree Search(MCTS) Based Scheduling algorithm.

Teaching Experience

- [UW-Madison] CS 354: Machine Organization and Programming (J. Skrentny) Spring 2018
- [UW-Madison] CS 552: Introduction to Computer Architecture (Prof. Yu H. Hu) Fall 2016
- [UW-Madison] CS 352: Digital System Fundamentals (K. Morrow, X. Zhang) Spring 2016
- [UW-Madison] CS 252: Introduction to Computer Engineering (K. Morrow, M. Morrow) Spring 2016
- [UW-Madison] ECE 344: Electrical Circuits (L. Shhet) Summer 2017
- [UW-Madison] LCA 601,563: Advanced Persian Language (E. Barnard) Fall 2016
- [UW-Madison] LCA 602,564: Advanced Persian Language (E. Barnard) (L. Shhet) Spring 2017
- [U-Tehran] ECE 615: Electronic System Level Design (B. Alizadeh) Spring 2015
- [U-Tehran] ICEEP: Embedded Linux Workshop (Z. Navabi) Summer 2014
- [U-Tehran] ECE 367: Digital Logic Design lab (Z. Navabi) Summer 2014
- [U-Tehran] ECE 367: Digital Logic Design lab (Z. Navabi) Fall 2013
- [U-Tehran] ECE 367: Digital Logic Design lab (Z. Navabi) Spring 2013
- [U-Tehran] ECE 367: Digital Logic Design lab (Z. Navabi) Summer 2014
- [U-Tehran] ECE 532: Object-Oriented Simulation of Electronic Systems (Z. Navabi) Spring 2014
- [U-Tehran] ECE 532: Object-Oriented Simulation of Electronic Systems (Z. Navabi) Spring 2013
- [U-Tehran] ECE 642: FPGA Base Embedded System Design (B. Alizadeh) Fall 2014
- [U-Tehran] ECE 642: FPGA Base Embedded System Design (B. Alizadeh) Fall 2013

Industry

IWIN Co. TEHRAN

Embedded Designer/Programmer/Verification Engineer *2014-15*

- FPGA-based Hardware Security Module (HSM) to provide a secure platform for bank applications such as money transactions, on SoC platform. (**Scala, Java, C++, RocksDB**)
- Manage a 4 member HW team to Design the FPGA-based hardware to implement wide range of cryptography algorithms in Chisel HDL (**RSA, AES, 3DES, ECC**)

Pardis Co. TEHRAN

Programmer/Embedded Engineer *2016*

- Embedded low cost web server to manage a secure network nodes (**C++, Python**)

S.T.Farabi Co. SANANDAJ

Programmer *2013-14*

- Real-time Genetic algorithm (GA) based robotic arm controller on FPGA platform.
- GA based high throughput facial recognition hardware on FPGA platform

Publication

- Ilievski F, Szekely P, Cheng J, Zhang F, Qasemi E. Consolidating Commonsense Knowledge. arXiv preprint arXiv:2006.06114. 2020 Jun 10.
- Thawani A, Hu M, Hu E, Zafar H, Divvala NT, Singh A, Qasemi E, Szekely PA, Pujara J. Entity Linking to Knowledge Graphs to Infer Column Types and Properties. InSemTab@ ISWC 2019 (pp. 25-32).
- Qasemi E, Stan S, Yao K, Shao R, Liu J, Liang M, Ferrer LJ, Szekely P, "DSBox: Data Scientist in a Box", ISI Graduate Student Symposium (GSS '19), Marina Del Rey, California, USA.
- Yu F, Thayer M, Qasemi E, Zhu K, Assadi A. Deep Learning Features in Atmospheric Chemistry: Prediction of Cancer Morbidity Due to Air Pollution. In2017 International Conference on Computational Science and Computational Intelligence (CSCI) 2017 Dec 14 (pp. 1764-1766). IEEE.
- Yuchen S, Qasemi E, Ardalan A, Gao H, Assadi AH. Deep Learning Art History from Data: Baroque Intellectual Influence on the Romantic Era Painting. In2017 International Conference on Computational Science and Computational Intelligence (CSCI) 2017 Dec 14 (pp. 391-393). IEEE.
- Han P, Qasemi E, Ardalan A, Gao H, Assadi AH. Deep Learning Empirical Topology for Classical Music Style Decision Making. In2017 International Conference on Computational Science and Computational Intelligence (CSCI) 2017 Dec 14 (pp. 394-395). IEEE.
- Biglari M, Qasemi E, Pourmohseni B. Maestro: A high performance AES encryption/decryption system. InThe 17th CSI International Symposium on Computer Architecture Digital Systems (CADS 2013) 2013 Oct 30 (pp. 145-148). IEEE.
- Qasemi E, Samadi A, Shadmehr MH, Azizian B, Mozaffari S, Shirian A, Alizadeh B. Highly scalable, shared-memory, Monte-Carlo tree search based Blokus Duo Solver on FPGA. In2014 International Conference on Field-Programmable Technology (FPT) 2014 Dec 10 (pp. 370-373). IEEE.
- Pasandi G, Qasemi E, Fakhraie SM. A new low-leakage T-Gate based 8T SRAM cell with improved write-ability in 90nm CMOS technology. In2014 22nd Iranian Conference on Electrical Engineering (ICEE) 2014 May 20 (pp. 382-386). IEEE.
- Pasandi G, Fakhraie SM, Qasemi E. A New Tri-State Based Static Random Access Memory (SRAM) with Improved Write-Ability and Read Stability. In2014 JCSE Vol. 10, No.2 4, Summer 2012 Winter 2013

Voluntary & Leadership

- President at Persian Student's Society of UW Madison (PSS) 2015-2017
- Team Leader @ ICFPT Design Competition 2014 and 2015
- Team Leader @ FPGASoC Design competition 2014