Sarah Alnegheimish

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Education

2019 - Present | Dual S.M. in Computer Science & Computational Science and Engineering
Department of Electrical Engineering and Computer Science
Center for Computational Science and Engineering
MIT, Cambridge | **G**PA: 5.0/5.0

2013 - 2017 | B.Sc. in Computer Science
Valedictorian
Computer Science Department
College of Computer and Information Sciences
King Saud University, Riyadh | **G**PA: 5.0/5.0

Experience

Sept 2019 - Present | Research Assistant
Massachusetts Institute of Technology (MIT)
Cambridge, MA, USA.

Dec 2017 - Aug 2019 | Research Affiliate
Massachusetts Institute of Technology (MIT)
Cambridge, MA, USA.

Dec 2017 - Aug 2019 | Research Specialist
Center for Complex Engineering Systems at KACST and MIT (CCES)
Riyadh, Saudi Arabia.

May 2017 - Dec 2017 | Data Analyst
Mozn
Riyadh, Saudi Arabia.

Sep 2016 - Feb 2017 | Junior Teaching Assistant
Programming I, College of Computer and Information Sciences
King Saud University, Riyadh, Saudi Arabia.

May 2016 - July 2016 | Internship
Healthcare Information Technology Affairs
King Faisal Specialist Hospital and Research Center, Riyadh, Saudi Arabia.

Publications

- Alhasoun, F., **Alnegheimish, S.**, Probabilistic Programming Bots in Intuitive Physics Game Play. *35th AAAI Conference on Artificial Intelligence*. AAAI, 2021.
- Geiger, A., Liu, D., **Alnegheimish, S.**, Cuesta-Infante, A., Veeramachaneni, K., TadGAN: Time Series Anomaly Detection Using Generative Adversarial Networks. *2020 IEEE International Conference on Big Data*. IEEE, 2020.
- **Al-Negheimish, S.**, Alrashed, N., Aleissa, F., Althobaiti, S., Liu, D., Alsaleh, M., Veeramachaneni, K., Cardea: An Open Automated Machine Learning Framework for Electronic Health Records. *2020 IEEE 7th International Conference on Data Science and Advanced Analytics (DSAA)*. IEEE, 2020.
- **Al-Negheimish, S.**, Alnuhait, F., Albrahim, H., Al-Mogherah, S., Alrajhi, M. and Hosny, M. (2018). An Intelligent Bio-Inspired Algorithm for the Faculty Scheduling Problem. *International Journal of Advanced Computer Science and Applications*, 9(5).

Honors & Awards

- Graduate Scholarship, King Abdulaziz City for Science and Technology (KACST), 2019 - 2022.
- Graduate Fellow, MiSK, 2019 - 2022.
- Graduated with a B.Sc. with First Class Honors, 2017.
- Valedictorian of College of Computer and Information Sciences, 2017.
- Best Capstone Project in College of Computer and Information Sciences, 2017.
- Dean's list for outstanding students at KSU during the academic year of 2015 & 2016.
- Qualified to the final stage of the International Mathematical Olympiad in 2012.

Research Projects

Orion September 2019 - Present
MIT
Supervised by Dr. Kalyan Veeramachaneni

- Built a generative model to reconstruct time series data.
- Designed an anomaly score method to classify if a segment of time series is considered anomalous.
- Gauged the parameters of the model using signal-specific approaches.

Programming Languages & Tools: Python.

Cardea Sept 2018 - Present
Center for Complex Engineering Systems & MIT
Supervised by Dr. Kalyan Veeramachaneni & Dr. Mansour Alsaleh

- Developed an automated machine learning library that operates as an end-to-end system that enable users to solve prediction problems in regards to the health domain.
- Integrated Hl7's *Fast Healthcare Interoperability Resources* standard as a representation for electronic health records and hospital data.
- Manipulated data representation with the implementation of graph theory to eliminate relationship complexities.
- Automated the data ingestion, organization, and featurization components of the framework.

Programming Languages & Tools: Python.

Job & Skill Space Dec 2017 - May 2019
Center for Complex Engineering Systems
Supervised by Dr. Ahmad Alabdulkareem, Dr. Hotham Altwaijry, and Dr. Iyad Rahwan

- Analyzed national data to understand the relationship between skills by relying on their co-occurance within occupations.
- Developed a network that represents the relationship between occupations by adhering to their underlying skills, duties, work nature, and experience.
- Tested the functionality of traversing the constructed graph by comparing it to real-life job transitions of employees within the private sector.
- Analyzed the dynamics between various cities from an occupation perspective in terms of their corresponding wage, experience, specialization, and set of skills.

Programming Languages & Tools: Python, Matlab, & JavaScript.

Optimizing Faculty Schedules Sep 2016 - May, 2017
King Saud University
Bachelor's graduation project supervised by Dr. Manar Hosny

- Designed an algorithm to schedule courses and course sections to faculty members to obtain the most optimal solution.
- Proposed the hybridization of the bees' algorithm with the demon algorithm & hill climbing.
- Tested the feasibility of the algorithm and verified its ability to be deployed.

Programming Languages & Tools: Python.

Professional Projects

Fraud and Anomoly Detection Oct, 2017 - Dec, 2017
Mozn

- Developed a model to detect fraud within transactions and imports for a governmental entity.
- Deployed the product to enhance fraud detection methods and improve inspection speed.

Programming Languages & Tools: Python & Spark.

Optical Character Recognition Aug, 2017 - Oct, 2017
Mozn

- Developed a model for Arabic and English character recognition within street images.
- Trained and tuned CNN, R-CNN, and faster R-CNN models and compared the results.
- Integrated the model to obtain vehicle number plates in real-time.

Programming Languages & Tools: Tensorflow.

Public Policy Analysis May, 2017 - June, 2017
Mozn

- Audited the application of policies for Citizen's Account, a national governmental product.
- Analyzed national data to recommend proper changes to the business requirements of product.
- Tested the validity of their current implementation of the product.

Programming Languages & Tools: Python, Tableau, & Alteryx.

Presentations & Workshops

- **Cadea Platform for Smart Health Analytics** 30th Nov, 2018
  MIT Hacking Medicine, Riyadh, Saudi Arabia.
- **S^3: Saudi Skill Space** 14th Nov, 2018
  Misk Global Forum, Riyadh, Saudi Arabia.
- **Deep Learning for Image Recognition Workshop** 5th Mar, 2018
  Women in Data Science (WIDS), Riyadh, Saudi Arabia.

Courses

2017 | Data Analyst, *Udacity*

2016 | Machine Learning, *Coursera*

2012 | Exploring Engineering, *Brown University*

Skills

Programming | Python, R, Java, C, SQL, MATLAB, HTML, JavaScript, and LaTeX

Languages | Arabic, English