# Kunal T. Shah

4819 N. Winthrop Ave., Unit 3, Chicago, IL 60640 • (325) 370-5285 • kunaltshah@gmail.com

## *EDUCATION*

**Georgia Institute of Technology**, Online                                                  August 2019 – Present
- *Master of Science in Computer Science*
- Relevant Courses Completed: Artificial Intelligence for Robotics, Machine Learning for Trading, Machine Learning, Data and Visual Analytics, High Dimensional Data Analytics, Computer Vision, Deep Learning
- Cumulative GPA: 3.88/4.00

**Texas A&M University**, College Station, TX                                                       May 2017
- *Bachelor of Science in Biomedical Engineering, Minor in Electrical Engineering* (3.86/4.00 GPA)

## *PROFESSIONAL EXPERIENCE*

**Center for Bionic Medicine**, Shirley Ryan AbilityLab, Chicago, IL                  September 2020 – Present
*Research Engineer II, Biomedical/Electrical*
- Refining deployment and reliability of video processing pipeline using tools like Docker and Anaconda
- Implementing QR detection module in the video pipeline using OpenCV and DataJoint to improve bounding box and keypoint detection in videos of ambulating research subjects
- Automated data input and validation for video pipeline by consolidating code and eliminating manual processes with Jupyter, Google Firebase, DataJoint, and custom Python packages
- Streamlined video collection from 14 GigE cameras by updating the user interface and reducing write-to-disk time by almost 100% with OpenCV and multithreading
- Created data processing pipeline to wrangle raw ambulation data (>70 GB collected from 22 mechanical sensor channels, at a sampling rate of 1000 Hz, from 6 able-bodied subjects and 9 transfemoral amputee subjects)
- Deployed and maintained intent recognition algorithm and classifier models on a Linux-based embedded controller to make ambulation decisions in real-time for able-bodied and amputee subjects
- Developed suite of Python scripts from scratch to pool, sample, analyze, and visualize processed ambulation data to evaluate offline model performance prior to online testing
- Performed feature selection analysis in Python using regularization and tree-based methods to determine most relevant features for lower limb pattern recognition classifier
- Delivered an offline adaptive algorithm for the lower limb pattern recognition classifier that learns as new ambulation data is introduced to the original classifier model
- Trained 9 new team members in lab standards for Git, software implementation, and software documentation

**Center for Bionic Medicine**, Shirley Ryan AbilityLab, Chicago, IL                  April 2018 – September 2020
*Research Engineer I, Biomedical*
- Developed 3 modular Python packages to perform data processing, training, and real-time classification while supervising the timeline and workload for myself and a second engineer
- Researched the underlying methods (LDA, PCA, ULDA) for a lower limb pattern recognition classifier to aid in the development of a robust and efficient system

## *SKILLS*

**Programming**:
- Python (NumPy, matplotlib, pandas, scikit-learn, OpenCV, PyTorch), familiar with Bash, SQL/sqlite3, d3.js, C#

**Version Control/Project Management Tools:**
- Git (GitHub, Bitbucket), JIRA, Trello, Docker

**Machine Learning and Data Science**:
- Data wrangling, data visualization, classification, regression, supervised and unsupervised models, dimensionality reduction, familiar with regularization techniques, reinforcement learning, neural networks

**Professional Strengths:**
- Cross-disciplinary collaboration, flexible and creative problem-solving, excellent communication for any audience