Cheng Lyu

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Education

Duke University, Pratt School of Engineering Expected Graduation May 2019

- **Major 1:** B.S. in Computer Science **GPA 3.5/4**
- **Major 2:** B.S. in Statistical Science
- **Major 3:** B.S.E. in Electrical Computer Engineering
- **Minor:** Mathematics

Relevant Courses: Data Structures, Algorithms, Database Structures, Computer Architecture, Software Engineering, Operating System, Computer Vision, Artificial Intelligence, Fundamental of Microelectronic Circuits, Digital Systems

Technical Skills

Python, Java, C++, JavaScript, Linux, Android Studio, OpenCV, Keras, TensorFlow, HTML, CSS, PHP, SQL, Matlab, Arduino, R, SAS

Research Experiences

Drone Autonomous Flight, Program Manager (Duke University) **Aug2017 - Present**

- Designed autonomous flight program in Python for a big drone with diameter of 1 meter. Coded the done to fly to target positions with GPS. The drone aims to fly above the open sea to drop and pick up a topographic detecter of 1 kilogram.
- Developed Vision System with a camera, which let the drone autonomously track an IR light source on the ground and land on it.
- Developed module with Raspberry Pi which sends PWM signal to autonomously fine-tune the done by mimicking RC signal.

Deep Learning on Cancer Diagnosis, Researcher (Shanghai Jiao Tong University) **Jun2017 - Aug2017**

- Co-designed a Deep Learning Network for rectal cancer detection based on Caffe framework.
- Trained the network with 4000 pairs of patients' MRI image and label on the tumor area.
- The network detects rectal tumor and its position with accuracy of 95.22% and speed of 15 pages per second. This deep learning network beat experienced human doctor in the cancer detecting competition on 2017 China Medical Tech&Equipment Seminar.

User Interphase for CST Output Editing, Researcher (Duke University) **Sep2016 - Dec2016**

- Designed algorithms in Matlab and Java to simplify the editing process of CST, a system that tracks epithelial cells movement.
- The algorithms generate the mathematical model of edge(spline) and automatically fit the edge to the shape of bright pixels representing a curve in an noisy background image with Newton Optimization.
- The system assists CST to automatically correct its model for ground truth and thus save huge amount of human labor.

Data+ Research Program, Software Engineer (Duke University) **May2016 - Jul2016**

- Designed a GUI for Cell-Sheet-Tracking algorithm which tracks the shape of epithelial cells as they move through space and time in an image sequence.
- The GUI automatically generates ground truth of the input picture and the corresponding B-spline model. It allows users to edit the B-splines by drawing on the edge and endpoints of a spline.

Research Science Institute Summer Program, Researcher (Media Lab, MIT) **Jun2014 - Aug2014**

- Interned in an Engineering project called "Fitsocket" at Bio-mechatronic Department.
- Built a tilt-angle tracker with Arduino to adjust the position of "Fitsockt" machine.

Technical Projects

Android App Development for Tutor Program **Jan2017 - May2017**

- Designed an Android APP called *TutorMe* to match tutors and tutees.
- Allows users to sign up and login as either tutor or tutee. The app matches tutor and tutee based on their subjects, time and locations.
- Equipped the App with chatting and mapping function to help tutor and tutee get in touch.
- Allows tutees to rate and comment their tutors in this App.

Answer Sheet Auto-grading Application **Mar2017 - Apr2017**

- Designed a grading application using Python and OpenCV. The application takes the picture of a completed answer sheet as input and detects the student's answer for each question.
- If it is given the answer key and credits for each question, the application can output the score of this answer sheet.

Leadership Experience

Shanghai High School Volunteer Union **Jan2013 - Jun2015**

- Co-funded Shanghai the Union, Collaborated with Shanghai Youth Volunteer Association & Shanghai Government.
- Recruited over 500 volunteers from 17 High schools and raised 10k USD through student charity events with 1000 participants.

Extracurricular Activities

Battery Switching Parallel Robot **Jan2018 - Present**

- Designed a CNC robot able to take out used battery from and put in new battery in other machines without turning them off.
- Designed special battery case for lithium battery that constantly support power during battery switching with SolidWorks.
- Designed battery feeder with timing belt and hopper to continuously feed new battery to the battery case on the robot.
- Designing computer vision python algorithm to let the robot find where the battery case is in 2D space.

Languages

English, Chinese, German