

# Shengchen Liu

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## EDUCATION

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### Georgia Institute of Technology

Atlanta, GA

*M.S. in Computer Science*

*Expected May 2020*

- Relevant coursework: Computer Vision, Reinforcement Learning, Machine Learning for Trading

### Northeastern University

Boston, MA

*Ph.D. in Mechanical and Industrial Engineering*

*Expected Dec. 2019*

- Relevant coursework: Machine Learning, Engineering Probs and Stats, Big-Data Sys Engr Using Scala

### Nanjing University of Aeronautics and Astronautics

Nanjing, China

*B.S. in Mechanical and Automation*

*Sept. 2009 – May. 2013*

## EXPERIENCE

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### Research Assistant - Northeastern University

Boston, MA

*Object Detection and Path Planning for 3D Printed quadcopters*

*Aug. 2017 - Present*

- Speech control with voice recognition: Controlled quadcopter's motion by connecting with Amazon's Alexa. Voice-prompted commands were recognized to achieve actions including "take off", "land" and "go forward".
- Object detection: Image classification models based on Tensorflow Object Detection API were embedded on the quadcopter to achieve real-time object detection.
- 3D printing: Designed 3D models using Solidworks and printed models with plastic materials such as PLA and PETG.

### Internship - Shanxi Cloud Era Technology Company LTD.

Taiyuan, China

*Big Data Engineer*

*June 2017 - Aug. 2017*

- MapReduce: Implement article sentiment analysis on Hadoop Distributed File System (HDFS)
- Spark: Implement recommender system for ecommerce shopping website with Spark

## PROJECTS

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### Advanced Path Planning for Self-Driving

- Detected lane boundaries and curvatures in videos using Python and OpenCV functions including Canny detection, Hough line transform and perspective transform.
- Developed a pipeline to reliably detect cars given a video from a roof-mounted camera with SSD deep network using Keras.
- Implemented Deep Q Net, a reinforcement learning algorithm to optimize the driving path for the vehicle.

### Behavioral Cloning for Self-Driving Car

- Used Udacity's Self-Driving Car Simulator to collect data of good driving behavior.
- Built a convolution neural network in Keras that predicts steering angles from images.
- Test that the agent successfully drives around track in autonomous mode without leaving the road.

### Kaggle competition: The 2nd YouTube-8M Video Understanding Challenge

Silver Medal

*Team Rank:49/312*

- Used Tensorflow to build a machine learning pipeline on Google Cloud Machine Learnign Engine. Ensembled three state-of-the-art models (NetVLAD, FVNeT and RNN) for audio and video feautres multi-label classification.
- Trained models on 1.53TB frame-based audio and video features provided by YouTube. The Global Average Precision (GAP) reached to 0.86083 on test dataset.

## PROGRAMMING SKILLS

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- **Languages:** Scala, Python, Javascript, C++, SQL, Java