

Yizhou Xu

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EDUCATION

Udacity

Artificial Intelligence Nanodegree Program and Self-Driving Car Engineer Nanodegree Program

San Francisco, CA

May.2017 - present

Columbia University, School of Engineering and Applied Science

New York, NY

M.S. in Operations Research (GPA 3.80/4.00)

Jan. 2015 - May 2016

Relevant Coursework: Machine Learning, Python-based data analytics, Probability & Statistics, Simulation

Columbia University, School of Engineering and Applied Science

New York, NY

M.S. in Electrical Engineering (GPA 4.00/4.00)

Sep. 2013–Dec.2014

Relevant Coursework: Computer Networks, Analysis of Algorithm, Information Theory, Applied Integer Programming

Fudan University, School of Information Science and Technology

Shanghai, China

B.S. in Electrical Engineering and Automation (GPA: 3.63/4.00)

Sep. 2009 - Jun. 2013

TECHNICAL SKILLS

- Programming languages and software: Python, C/C++, Java, R, MATLAB, MS Office, AMPL
- Operation System: Windows, Mac OS, Linux/Unix

SELECTED PROJECT

Udacity

San Francisco, CA

Dog Breed Classifier

Sep 2017

- Built two dog breed classifiers with Keras to distinguish images of human beings from images of dog and identify canine breed given an image of a dog by designing a 6-layer convolutional neural network from scratch and implementing transfer learning that utilized bottleneck features from pre-trained VGG-19 model
- Detected certain dog breed from 133 dog categories with over 43% and 70% accuracy respectively on test data

Sign Language Recognizer

Aug 2017

- Built a system that could recognize words communicated using the American Sign Language (ASL) by training a set of Hidden Markov Models (HMMs) using part of a preprocessed dataset of tracked hand and nose positions extracted from video
- Experimented with model selection techniques including BIC, DIC, and K-fold Cross Validation, chose Discriminative Information Criterion (DIC) as the model selector and achieved nearly 50% accuracy

Highway Lane Lines and Vehicle Detector

Aug 2017

- Designed a highway lane lines detector that could identify the curvature of the lane and vehicle position with respect to center in real time using distortion correction, image rectification, color transforms, and gradient thresholding
- Created a vehicles detection and tracking pipeline by performing Histogram of Oriented Gradients feature extraction on a labeled training set of images including both car and non-car images and training a SVM classifier with these features
- Optimized and evaluated the model on video data from an automotive front-facing camera taken during highway driving and overcame environmental challenges such as shadows and pavement changes

Traffic Sign Classification

Jul 2017

- Built a traffic sign recognition classifier by designing the LeNet-5 convolutional neural network from scratch with Tensorflow and trained it on AWS EC2 with German Traffic Sign Dataset
- Performed image pre-processing and validation to guard against overfitting, achieved 93.6% accuracy on the test set and over 90% accuracy on images randomly downloaded from Google Images

Columbia University

New York, NY

Simple Client-Server program and TCP-like transport-layer protocol

Fall 2013

- Designed a simple Client-Server network where users could log in using client terminal and server was able to respond to some commands from logged-in user as well as broadcast messages.
- Built a TCP-like transport-layer protocol that provided reliable, in order delivery of a stream of bytes. It allowed logged-in users to transfer files in different format with other logged-in users, and could recover from in-network package loss, package corruption, package duplication, package reordering and cope with dynamic network delays

Distributed Bellman-Ford Algorithm

Fall 2013

- Implemented a simple version of the distributed Bellman-Ford algorithm that operate using a set of distributed client processes, which performed the distributed distance computation
- Provided a command line interface to users that allowed users to destroy an existing link and restore it afterwards

WORKING EXPERIENCE

CICC US Securities

New York, NY

Research Analyst Intern

Mar 2016 – Apr 2017

- Conducted thematic research reports and weekly reports focusing on the U.S. technology sector, with topics such as artificial intelligence, autonomous vehicle, virtual reality, etc.
- Screened and conducted research case studies of leading private companies in terms of their business model, funding information, development strategy, financial performance, and risks