Andrew Kim

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Software Engineer for Autonomous Vehicle
Computer Vision | Robotics | Machine Learning

AT A GLANCE

- Rich experience with C++ / Python and Linux development
- Strong package development / optimization / implementation / Git version control skills
- Great team player, dedicated to the company, willing to take on challenging tasks with passion in self-driving technology

TECHNICAL SKILLS

- **Programming language**: Python, C++, C, Java, Javascript, Assembly, VBA
- **Libraries and Frameworks**: Jupyter Notebook, OpenCV, Tensorflow, Keras, Matplotlib, Numpy, Pandas, Scikit-Learn, CUDA
- **Operating Systems**: Linux – CentOS 8, Windows Servers 2012
- **DevOps Tools and Platforms**: VMware Workstation Pro 15, Github, Gitlab, Git, Docker

CERTIFICATIONS

- Linux Professional Institute Certification – 1(LPIC - 1)
- Cisco Certified Network Professional(CCNP) – Route
- Oracle Java Certified Programmer(OCJP)

EDUCATION

- **Bachelor of Science in Mathematics, the University of Texas at Austin (May 2021)**
  - Fulfilled various courses, incl. Advanced Calculus for its Applications 2, Applied Statistics, Probability, Stochastic Process, Software Engineering, Neural Network, Algorithm and Complexity
- **Bachelor of Science in Computer Science, the University at Albany(SUNY)**
  - Fulfilled various courses, incl. Introduction to Programming for Java, Data Structures, Computer Architecture

WORK EXPERIENCE

The Accelerated Research Initiative @ the UT Austin

The initiative in which undergraduate students work alongside scientists to make discoveries

Software Development Research Assistant 06/2019 – 12/2019

- Conducted Machine Learning (ML) project to define how an ML calculator effectively compute potential energy surfaces (PES) for an atom compared to other atom calculators with different optimized algorithms
- Trained and tested data in the ML calculator using libraries: Scikit-Learn, Matplotlib and Neural Network of Python in the research server of Linux Cluster
- Analyzed test results in histogram plots and presented to the research group to explain individual research progress

  Key Achievements
  - Independently conducted an analysis of ML algorithms and neural network, and applied methods to the atom calculators to predict PES efficiently

The Case Group LLC.

A manufacture corporation specialized in a large contract for customizing windows and doors to a corporation

Software Development Programmer 05/2018 – 08/2018

- Developed a software tool to check hardware stock in alphabetic order by Excel and Visual Basic Application (VBA)
- Designed a macro program to convert file extensions and transmit a blueprint to cutting machines and Computer-Aided Design (CAD) software for automation by VBA concisely and efficiently

  Key Achievements
  - Automated the processes of work between computer and cutting machine through the macro program

SELECTED PROJECT EXPERIENCE

Project: Autonomous Vehicle Sensor 01/2021 – 03/2021

- Created Kalman filter, essential for tracking a car to predict accurate location of the car by Python and C++
- Generated simulation data of the car and tracked its distance and velocity with Matplotlib for data visualization

  Key Achievements
  - Analyzed the simulation data measured by LiDAR(Light Detection and Ranging) sensor and Kalman filter plots and found Kalman filter is more accurate to predict the car's exact location and speed rather than LiDAR

Project: Traffic Light Detection 04/2021 – 06/2021

- Built a classifier to perceive an image from traffic light dataset and predict a color of traffic light among red, yellow, or green by Computer Vision library: OpenCV with Python in Jupyter Notebook

  Key Achievements
  - Accomplished 96.7% of 100% correctly to predict the color in random images on the premise that the classifier should not recognize green if the real traffic light in the images is red

Project: Detection for a Car lane 06/2021 – 08/2021

- Developed a pipeline to detect a car lane with Python and libraries: OpenCV, given image and video data
- Designed a Computer Vision algorithm to detect a boundary of car lane by means of RGB(Red, Green, Blue), HLS(Hue, Lightness Saturation) color and direction threshold to measure the curvature of lane

  Key Achievements
  - Tested the developed algorithm through the video data and achieved that it detects a car lane smoothly while a car drives in a road