

# Keyuan Zhang

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## EDUCATION

**Cornell University**, Ithaca, New York *August 2017 – May 2018*  
*Master of Engineering in Electrical Engineering*

**Purdue University**, West Lafayette, Indiana *August 2013 – May 2017*  
*Bachelor of Science in Electrical Engineering*

**Honors:** Dean's List Honor (Top 1% in class); Semester Honor (Top 3% in college)

## WORK EXPERIENCE

**Juphoon System Software Co., Ltd** *Zhejiang, China*  
*Computer Vision Algorithm Engineer* *September 2019 – Present*

- **Real-Time Background Matting:** Advanced U-Net framework by replacing encoding and decoding blocks with the combination of lightweight convolution layers and linear bottleneck to largely reduce the size; re-designed loss function to fine edges. The MAD of proposed model was 13% higher than DeeplabV3 while keeping the size close.
- **Facial landmark detector:** Improved the speed of open-source face detection model around 70% with limited accuracy impairment through truncations and anchor setting tuning; optimized the accuracy of facial landmark model by 17% with advanced input preprocessing technique and replacing the loss function with Wing Loss.
- **Video Codecs:** Deployed AV1 focused RTC video transmission pipeline on multiple platforms; improved its performance in lossy transmission by solving blurred screen and high frequency FIR problems. Designing asymmetrical video RTC solution (H.263/H.264), which aims to reduce bandwidth consumption, on IoT devices for ASR and UNISOC.
- **Project available at** <https://kz42.github.io/>

**Purdue University** *West Lafayette, Indiana*  
*Teaching Assistant for Electronic Measurement Techniques* *August 2016 – December 2016*

- Enhanced students' learning by mentoring them in lab and office hours. Assisted monitoring lab operation.

## PROJECT EXPERIENCE

**Lung Nodules Detector in 3D CT Scans** *March 2018 – May 2018*

- Segmentation: Applied K-Means clustering and region growing to get rough lung mask; utilized morphological filters to remove blood vessels and air noise. Localization: selected possible nodules with LoG in sliced 2D images. Detection: applied the trained classifier to find positive nodules and their location.

**Moving Object Tracker based on Raspberry Pi** *March 2018 – May 2018*

- Tested and evaluated main tracking algorithms (TLD, Boosting and Template matching) on RPi. Designed own tracking algorithms due to RPi's limited computing capability: detect specified object by its unique color, draw its contour and remove noise by morphological operations; the proposed algorithm achieved stable real-time tracking on RPi.

**USB Audio Headphone Amplifier** *Purdue University*  
*Senior Design, Prof. Stanislaw H. Zak* *September 2016 – December 2016*

- Collaborated with team to develop an integrated audio system that would amplify USB digital audio to a wide variety of headphones.
- Designed, simulated and built prototype for amplifier control subsystem: the subsystem (DC Block + 3-tone control + volume control) was controlled by touch screen to adjust frequency range for random music signal.

## SKILLS

- Programming Languages: **Advanced in C/C++, Python.** Intermediate in Matlab, Objective C. Experienced in Java, JavaScript, R.
- Framework & Tools: **Advanced in Tensorflow, PyTorch, Keras, docker, Video Codec Tools (FFMpeg, AV1/H264 related, etc), Git (distributed version control).** Intermedia in CoreML, MXNet.
- Languages: Fluent in English, Chinese Mandarin.