

# Carroll Vance

*Machine Learning Engineer*

## Education

2018–Current **B.S. Computer Science**, *University of Houston*, 3.83.  
Expected Graduation Fall 2020 with Minor in Mathematics

2016–2018 **Computer Science**, *Houston Community College*, 4.0.

## Experience

### Vocational

2019–Current **Data Science Intern**, *Medical Metrics, Inc.*, Houston.  
Responsible for short term R&D initiatives related to AI development, training data cleanup, AI deployment, documentation of scientific experiments, and other tasks pertaining to machine learning.

2009–2016 **Software Engineer**, *Wildcat Development*, Spring.  
Designed, implemented, and tested embedded software for companies such as Baker Hughes, Hewlett Packard Enterprise, and National Oilwell Varco

2008–2009 **Systems Validation Tester**, *Wailua Technology*, Houston.  
Executed test plan for flash memory technology created by Spansion and Virident Systems

### Miscellaneous

2019–Current **AP Computer Science Tutor**, *Self-Employed*, Houston.

## Software skills

|               |                      |              |                              |
|---------------|----------------------|--------------|------------------------------|
| Software Engi | Python, C/C++        | VCS          | Git, SVN, Branching, Merging |
| Keras         | CNN, RNN             | Scikit-Learn | Data Preprocessing           |
| TensorRT      | Inference Deployment | OpenCV       | Image Preprocessing          |

## Interests

|                  |  |
|------------------|--|
| Computer Vision  | Object Detection, Semantic Segmentation, Convolutional Neural Networks   |
| Machine Learning | Inference Optimization, Preprocessing/Pipelining, Time Series Prediction |

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🌐 <https://csvance.github.io>

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## Leadership

- 2019–Current **Makers Codirector, IEEE UH.**  
Coordinating prototypes for demonstration at ECE Conferences involving companies and other institutions to showcase potential of students. Responsible for hosting Build-a-Bot, Makers' Arcade, and Makers' Showcase, as well as securing company sponsorship for events.
- 2018–2019 **Workshop Coordinator, IEEE UH Makers.**  
Coordinating educational workshops involving embedded systems, computer vision and machine learning. Working on group projects such as indoor autonomous drones and robotic arms.

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## Projects

- 2019 **Keras MobileDetectnet.**  
MobileDetectNet is an object detector which uses MobileNet feature extractor to predict bounding boxes. It was designed to be computationally efficient for deployment on embedded systems and easy to train with limited data. It was inspired by the simple yet effective design of DetectNet and enhanced with the anchor system from Faster R-CNN. It includes online data augmentation capabilities utilizing multiprocessing with generators.  
Github: <https://github.com/csvance/keras-mobile-detectnet>
- 2018 **Jetson TensorRT.**  
Created a series of ROS nodes for executing optimized deep learning object detection and classification inferences on nVidia's Jetson platform. 100% GPU preprocessing pipeline for minimal inference latency. Utilized ImageNet and OpenImages datasets to train object detector. Currently being used to develop a system to keep squirrels from taking fresh produce from gardens using blasts of water.  
Github: [https://github.com/csvance/jetson\\_tensorrt](https://github.com/csvance/jetson_tensorrt)
- 2017 **Deep Connect Four.**  
Created a Deep Q Network that learned to play connect four purely by self play. Tuning reward levels and replay buffer to stabilize training and increase convergence speed.  
Github: <https://github.com/csvance/deep-connect-four>
- 2016 **Embedded Linux Board Bringup.**  
Conducted board bringup on a custom PCB based on NXP IMX6 reference design. Changes to device tree to support custom hardware and sensors. Creating custom Linux distribution with Yocto Project. Developing kernel patches to address issues with PCIe. Used kernel debugger along with logic analyzer to diagnose software and hardware issues.