



2024 Silicon Valley AI, Robotics and Computer Vision Camp

<https://www.deneb-design.com>

Hands-on class at Sunnyvale, CA. Programming Nvidia's Jetson Nano to run AI models and perform robotics control

Why should we learn AI

Artificial Intelligence (AI) influences almost every aspect of our lives. This exciting technology is used across a wide range of industries, and the need for AI specialists is growing at a fast pace.

Studying an Artificial Intelligence degree could be your first step towards a successful career

Equipment used in the camp



“JetMax robotic system”



“Jetson Orin Nano by Nvidia”

Why computer vision and robotics:

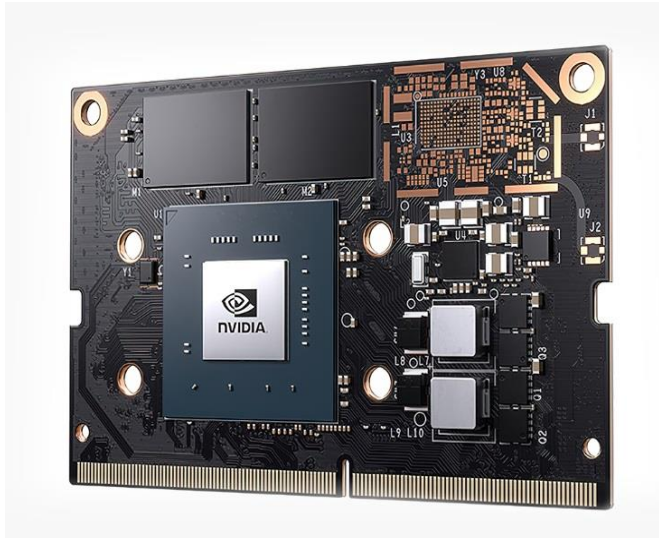
AI-powered modern computer vision and robotics are widely used in factory automation, autonomous driving, healthcare and digital home.

**GAIN EXPERIENCE PROGRAMMING A SINGLE BOARD COMPUTER
RUNNING AI APPLICATIONS INTERACTIVELY IN REAL TIME**

Course agenda

1. Intro to AI, neural networks and computer vision. Tutorial Linux and Python on a single board computer
2. Introduction to Robotics with ROS. Basic robot inverse kinematics. Setup Nvidia Jetson Nano Systems.
3. Deep dive to computer vision. Traditional (e.g. OpenCV) and AI-powered computer vision. Tutorial on image filtering, color space, feature detections and object identification.
4. Introduction to convolutional neural network and its application in object recognition. Introduction to AI frameworks such as TensorFlow or PyTorch.
5. Implement convolution neural model in Jetson Nano with PyTorch or TensorFlow. Testing convolution neural net in real time to guide robotics pick and place control
6. Custom training of AI models with custom image data. Make robots learn to perform new tasks through training.
7. Advanced computer vision tasks: Depth from stereo, scale invariant feature detection (SIFT) and Homography. Advanced robotics control based on detection of object orientation and key-points etc.
8. Reviews of selected topics based on student feedback. Guest speakers presentations

About Nvidia Jetson Platform



NVIDIA® Jetson Nano™ makes it possible to bring incredible new capabilities to millions of small, power-efficient AI systems. It opens new worlds of embedded IoT applications, including entry-level Network Video Recorders (NVRs), home robots, and intelligent gateways with full analytics capabilities.



Course format

Location – Deneb Design, LLC Sunnyvale office: 525 West Remington Drive, Sunnyvale, CA

Time – 6:00pm to 8:00pm each Saturday starting 10/05/2024

Class size: TBD

Format: First 45 minutes lecture with Q and A: Second 60 minutes: Hands-on programming and tutorial

Pre-requisite: Some programming experience in any computer language (e.g. c/c++/Java, Python). We will use Python for most of exercises and will teach basic Python programming.

Equipment: All required equipment are provided. You are welcome to bring your own laptop, but that is not required. There will be 4-5 sets of equipment stations. Students are expected to pair into 2-person groups

Food and refreshment: We will provide some snacks and bottled water.

about Deneb robotics initiative

Fully automated
molecular testing
station.

Based on our portable
qPCR platform

Using vision-guided
robot to perform
sample preparation



Contact and registration

To register go to https://www.deneb-design.com/contact.html#training_scroll

For questions call [408-666-3198](tel:408-666-3198)

Fill out contact form and specify “AI Camp”

8 Weekends Every Saturday starting October 5, 2024. Time: 6:00pm to 8:00pm