Robotics and deep learning Internship

Focus

The program is focused on providing engineers with:

- Latest industry tools to train, optimize and deploy models on embedded / cloud platforms.
- Working with cloud GPU instances and containers
- Working with IoT platforms

Requirements

Candidate must poses a software/ computer / electric engineering degree and a few deep learning vision courses such as stanford 231n and Coursera deeplearning.ai

- Good understanding of python programing, OOP and data cleaning
- Understanding of network programming and training process
- Ability to explain concepts of classifier detector segmentor and box detector
- Control of basic OpenCV, Numpy and pandas functions

Syllabus

Mandatory

part 1 – python and DL completion (if required)

- Intro to linux bash commands
- Scripting with python: OOP, Data cleaning and exploration
- Basic DL networks: classifier / BBOX detector / Segmentation network

Part 2 – Image, Sensors, Video

- 2D Camera
- stereo camera, projectors
- Lidar
- image & video formats compression
- Streaming protocols

Part 3 - Docker & cloud

- Introduction to AWS
- IAM, S3, EC2, Instance types

Part4 - NVIDIA basic SDKs

- Gstreamer - programming gstreamer pipe
- Nvidia DeepStream video processing course
- Cloud academy – docker course + image build
- Basic projects with NVIDIA SDKS: DeepStream on Jetson Nano

Topics from the list below according to industrial project:

Video Analytics specializing

- NVIDIA TensorRT optimization
- NVIDIA TLT – Transfer Learning
- Advance video analytics projects
    a. Parking lot
    b. people counting
    c. virtual lines
    d. Secondary inference

Robotics / autonomous cars specializing

- ROS
- Gazibo and simulations
- ISAAC
- Robotic arm programming
- SLAM
- Robotic Car

MLOps specializing

AWS & MLOps

- Setting up NVIDIA instance running NGC docker
- ECS and Kubernetes
- Working with MQTT and Kafka
- Triton and REST APIs
- Lambda functions