Adrenaline Fueled Development: Racing With Autonomous Vehicles
Session: 23317

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The Program

Udacity launched the world’s only Self-Driving Car training program in November 2016 receiving over 15,000 applications for this Nanodegree program!

Build the Future, Today!

Welcome to the only program of its kind, where almost anyone in the world can learn to become a Self-Driving Car Engineer. We have partnered with the best companies in the field to offer world-class curriculum, expert instructors, and exclusive hiring opportunities. You'll even get to run code on an actual autonomous vehicle! Topics include:

- Deep Learning
- Computer Vision
- Sensor Fusion
- Controllers
- Vehicle Kinematics
- Automotive Hardware
The Challenge

Udacity teamed up with PolySync to sponsor a team to participate in the Self-Racing Cars event at Thunderhill Raceway, California on April 1-2, 2017.

The challenge was to send a Kia Soul, provided by PolySync, around Thunderhill Raceway autonomously using only a single camera and GPS as sensors.
The Team

A team of 17 Self-Driving Car students came together on February 15th to participate in the race and represent Udacity and PolySync.

The international team was represented 5 different countries from diverse backgrounds with two things in common: a love for learning and self-driving cars!
Development Phases

5 weeks to work as a team

4 days of on-site development, training, and integration

48 hours of adrenaline fueled racing and coding

Only possible with GPU computations powered by NVIDIA® GTX 1070
Preparation

- Build a simulator for the thunderhill race track
- Examined Polysync Car Sensor Samples
- Trained and Tested Neural Networks
- Discovered big difference between Real and Simulation Data
29th March – Meet & Greet
30th March Morning – First Day on the Track
30th March Evening – Turn, Baby, Turn!
31st March – Double Failure (Brakes and Steering)
31st March 4 p.m. – Testing the first models
1st April 9 a.m. - Race Day 1 Master One Turn
2nd April 9 a.m. - Race Day 2
Results

Made it around all turns autonomously! ...but not in one lap

- How to deploy a real end-to-end deep neural network on a car
- Integrating physical systems can be difficult
- Reality and simulation are completely different things
- Hybrid team from students and industry can benefit each other a lot!
- Nothing can replace the real-world experience
- Such events are the greatest networking opportunities
Path Forward - ROS Bridge and SegNet
Semantic Segmentation Utilising a U-Net and Feature Extraction from Yolov2 @Akka

The full story:

**Our Very Own Grand Challenge**

THANK YOU FOR YOUR ATTENTION

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