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Self Driving Car

Term 1

- **Course 1**
  - Introduction
  - Workspaces

- **Course 2** — Computer Vision
  - Fundamentals
    - Finding Lane Lines on a Road
    - Project 1
      - Identify lanes in the road using image and series of images
  - Advanced — Advanced Lane Finding
    - Project 2
      - Software pipeline to identify the lane boundaries
      - Use front facing camera on a car

- **Course 3** — Deep Learning
  - Neural Networks
  - TensorFlow
  - Deep Neural Network
  - Convolutional Neural Networks
  - Project 3 — Traffic sign classifier
    - Classify different traffic sign
    - Deep neural networks and convolutional neural networks
  - Keras
  - Transfer Learning
  - Behavioral Cloning
  - Project 4
    - Train a deep neural network

- **Course 4** — Sensor Fusion
  - Sensors
  - Kalman Filters
  - C++ Check points
  - Extended Kalman Filters
  - Project 5 — Extended Kalman Filters
    - Implementing an extended Kalman Filter in C++

Term 2

- **Course 8** — System Integration
  - Packages and Catkin Workspaces
  - Autonomous Vehicle Architecture
  - Introduction to ROS
  - Writing ROS Nodes
  - Programming a real Self-Driving car
  - Project 11
    - Run your code on Carla, Udacity's Autonomous vehicle

- **Course 5** — Localization
  - Implementation of a Particle filter
  - Motion Models
  - Introduction to Localization
  - Markov Localization
  - Particle Filters
  - Project 6 — Kidnapped vehicle
    - Build a particle filter
    - Combine it with real map to localize vehicle

- **Course 6** — Path Planning
  - Behavior Planning
  - Search
  - Prediction
  - Trajectory Generation
  - Project 7 — Highway Driving
    - Drive a car down a highway with other cars using your own path planner

- **Course 7** — Control
  - PID Control
  - Project 8 — PID Controller
    - Maneuver the vehicle around the track
    - Revisit the race track in behavioral cloning
    - Implement PID controller in C++
  - Project 9 — LinkedIn
  - Project 10 — GitHub