Implementation of an autonomous driving system in simulation software

Applicative project - Computer Science – Big Data

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Introduction

- Passionate about AI
- Personal formations
- Sigma Group & AI Racing

Specifications

Technical Specifications

- The car has to :
  - Have 4 contacts points with the track
  - Be 30x25x25 cm
  - Weight 4kg max
  - Have a max total battery power 7800 mAh
  - Have 2 motors maximum
  - Have a circuit-cutter for emergency purpose
  - Be autonomously controllable

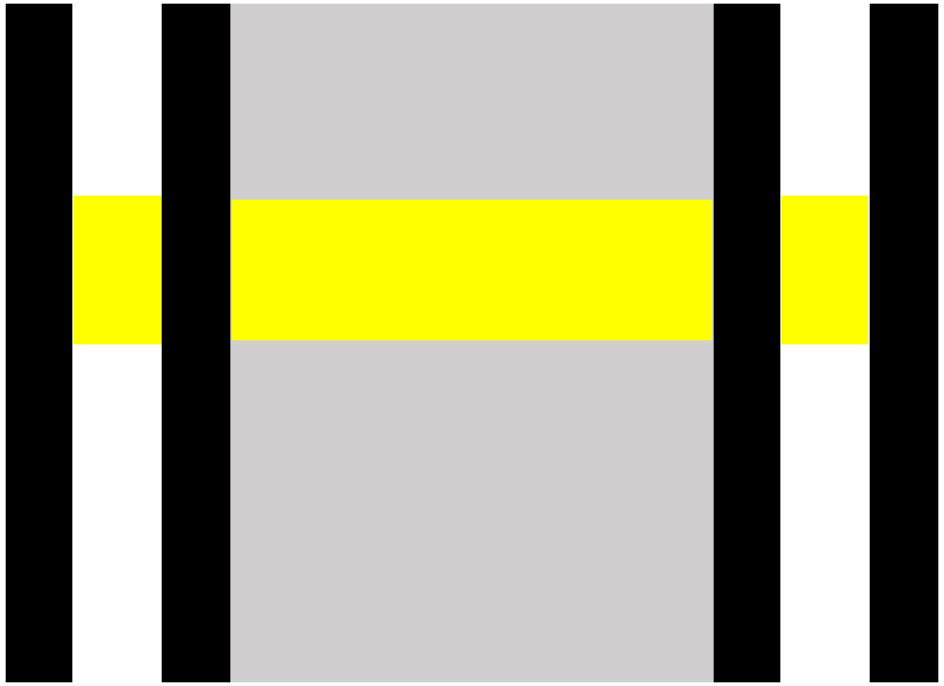
Specifications

Start & Finish

- Start :
  - Luminous countdown (red, yellow, green with 10x10 cm traffic light)
  - 2min max to start & false start will be penalysed
- Finish :
  - Car stop itself within 5s after crossing the finish line (15cm height yellow band accross the whole track width)

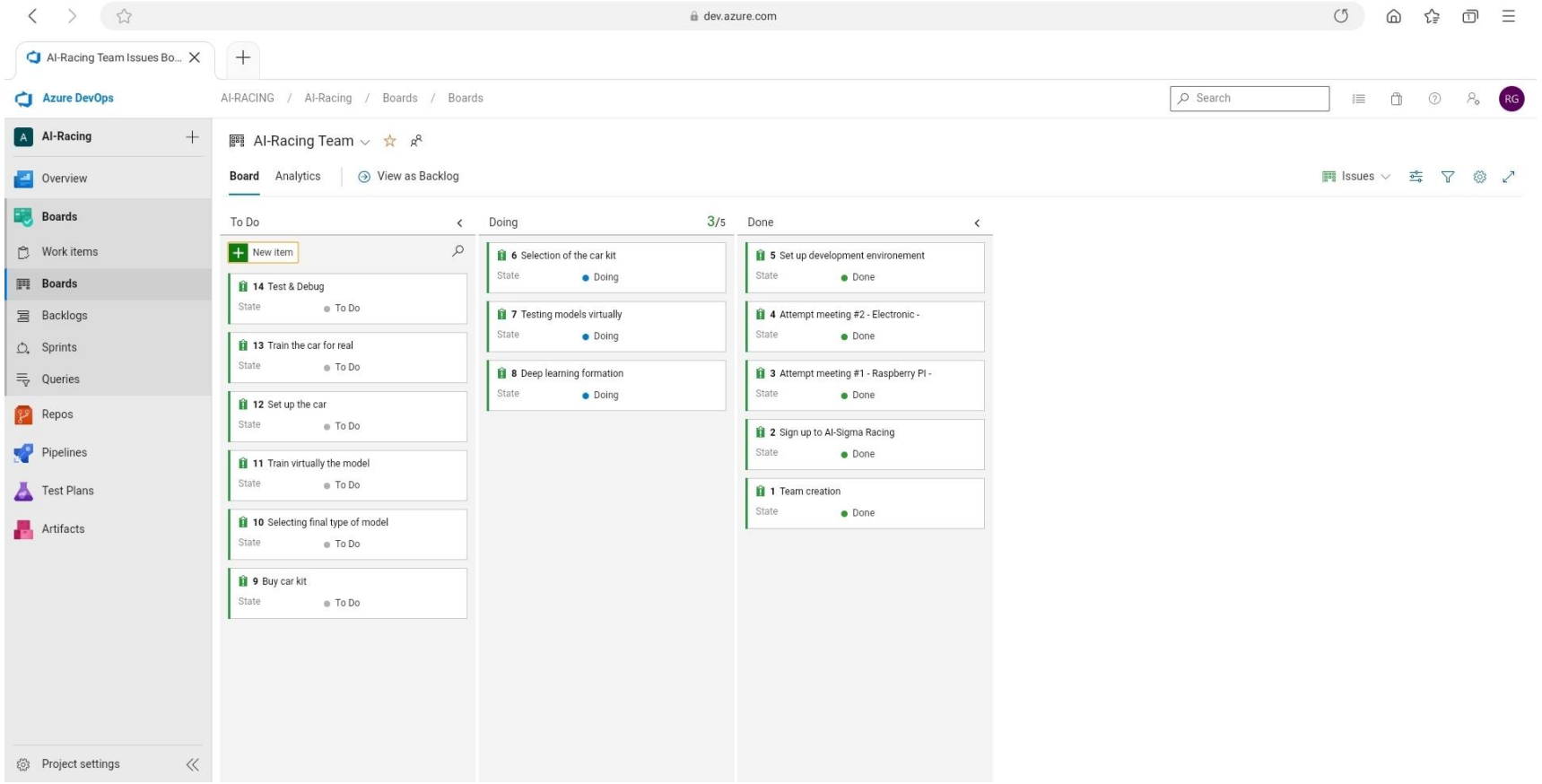
Specifications

The track



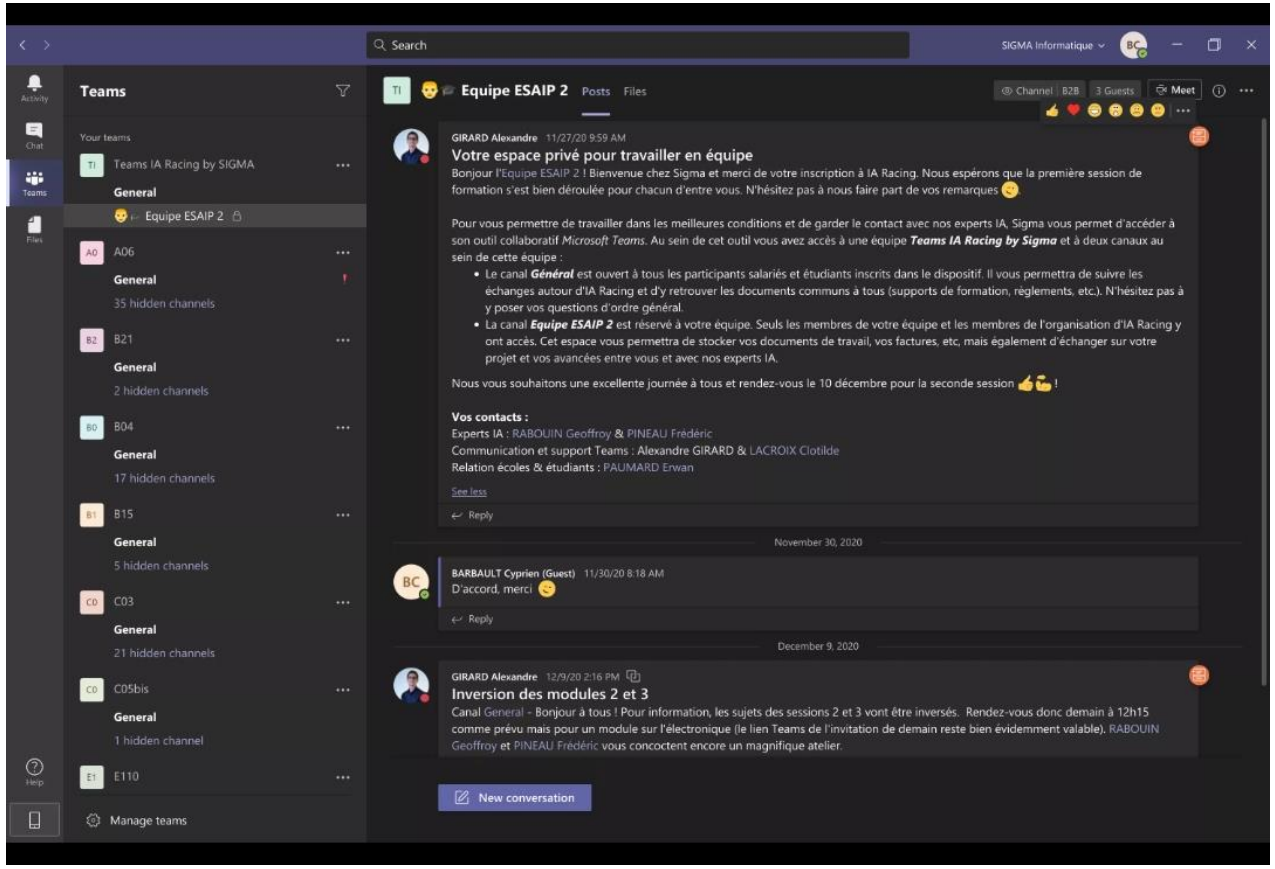
Project management

Azure DevOps



Project management

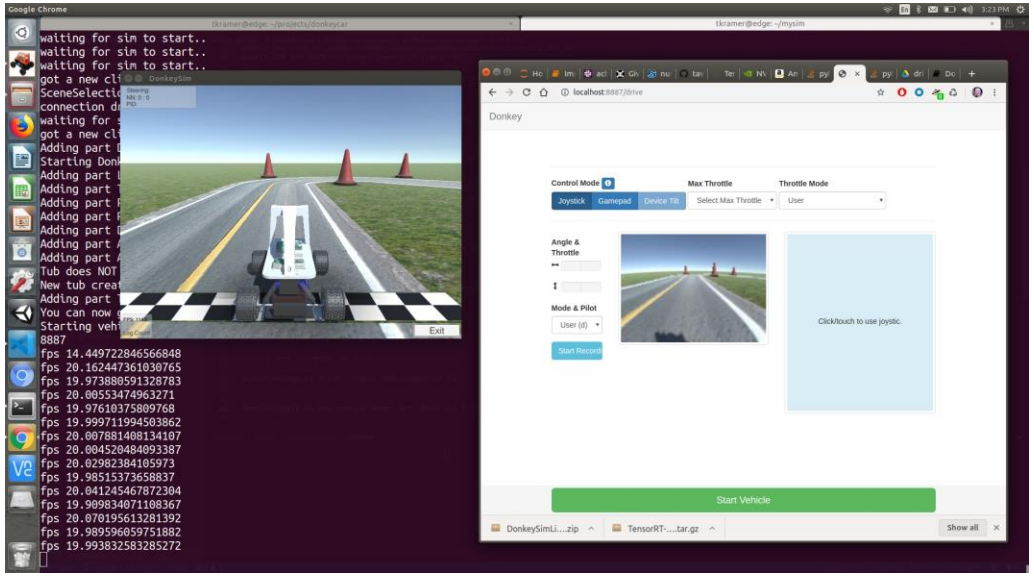
Teams meeting with Sigma



Technical overview

Donkey vs Udacity Simulators

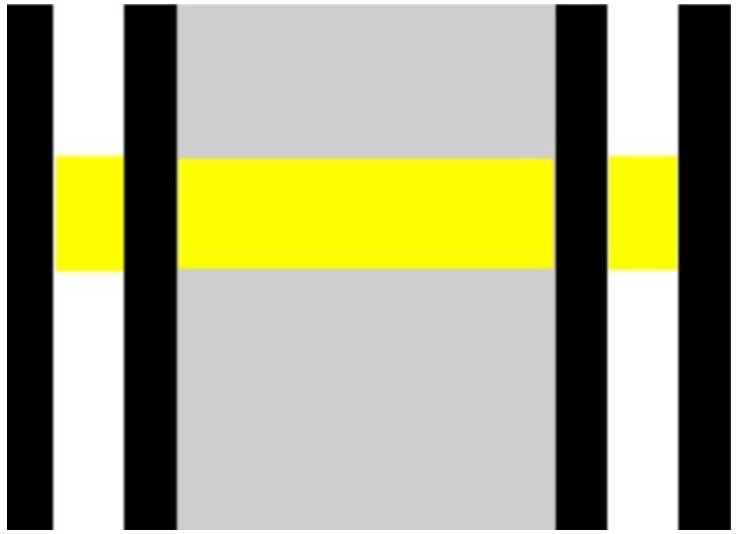
Udacity simulator



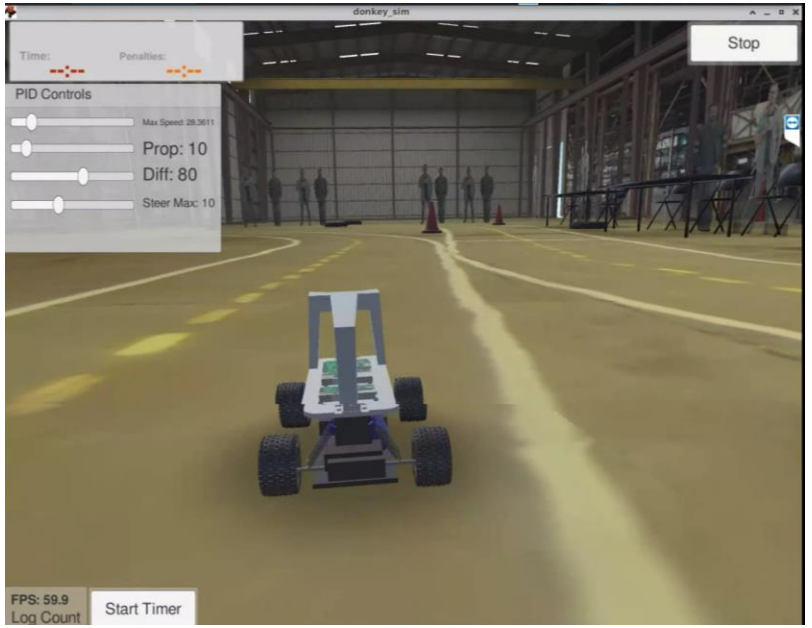
DonkeySimulator

Technical overview

Donkey vs Udacity Simulators



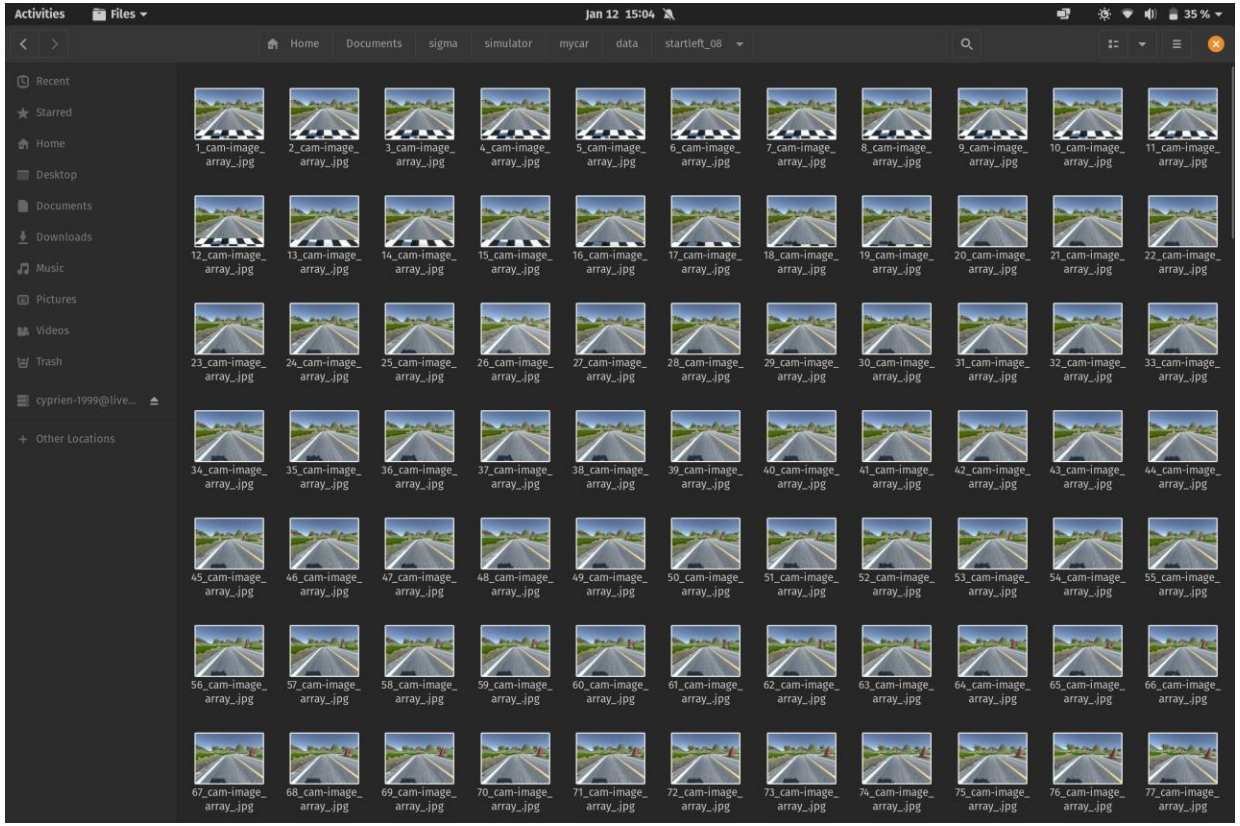
Our track



DonkeySimulator

Technical overview

Dataset



Technical overview

Our model

- Video

Conclusion

- Next steps :
  - Build the car
  - Build our own custom track for training & testing
  - Implement PID Controller
  - Tune our model
  - Implement visual odometry

Conclusion

Thanks for listening !!