

CogniDriver

Content

- Motivation
- What is Emotiv?
- How to train Emotiv?
- Building the game
- Problems encountered
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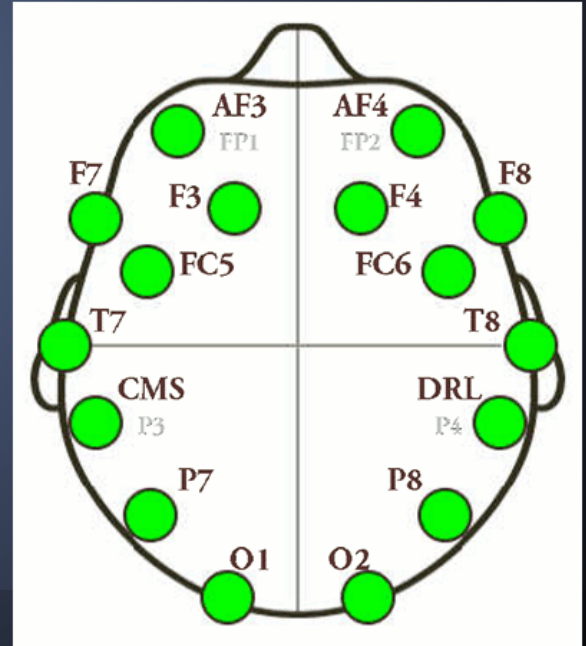
Previous games




Emotiv

- 16 sensors
- 2 reference sensors
- 13 actions

- 4 emotions
- > 10 facial expressions
- Gyro function



Training Emotiv



SDK
2.0.0.20

ENGINE STATUS

SYSTEM STATUS : Emotiv Engine is ready

SYSTEM UP TIME : 527.938

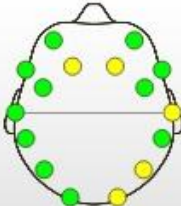
WIRELESS SIGNAL : Good ●●●●

BATTERY POWER : High ●●●●●

USER STATUS

HEADSET :

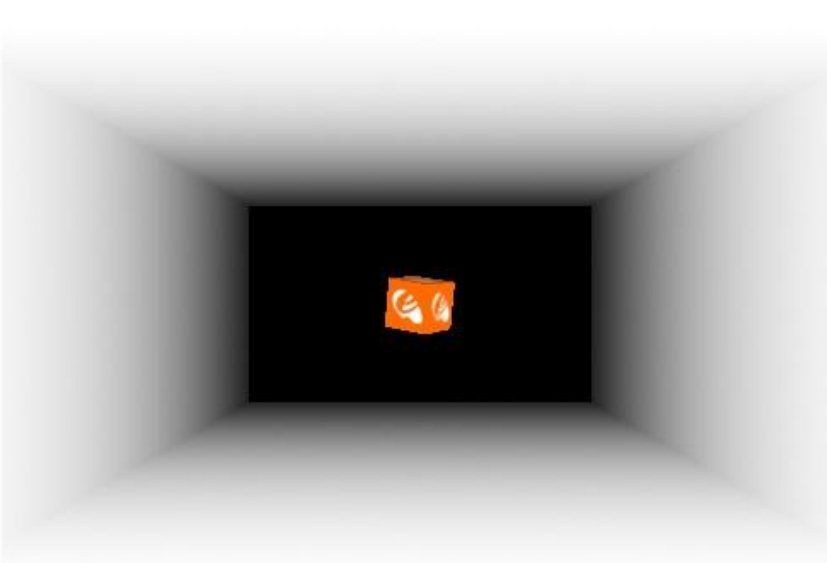
USER :



Application Connect Help

HEADSET SETUP EXPRESSIV SUITE AFFECTIV SUITE COGNITIV SUITE

Power 0 100



Action Training Advanced Settings Challenge

ACTION CONTROL

CURRENT ACTION Push

DETECTION STATUS Active

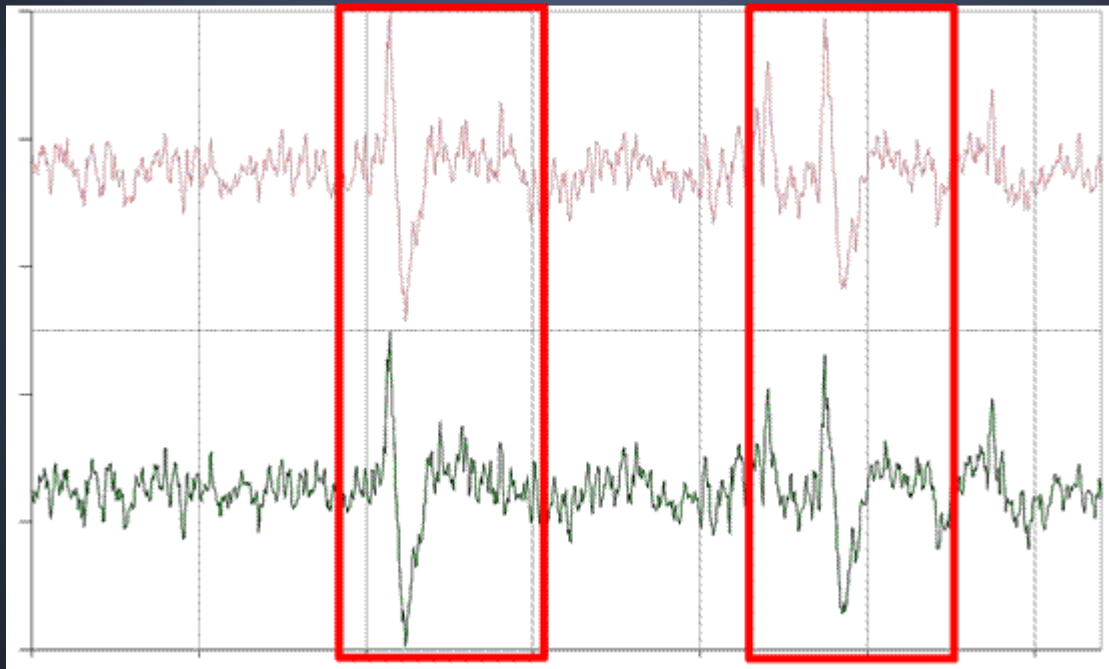
DIFFICULTY LEVEL Expert Only!

OVERALL SKILL RATING 92%

Trained?	Action	Skill Rating
✓	Push	100%
✓	Pull	74%
✓	Left	97%
✓	Right	99%

You are now ready to control the model with your mind! Each action skill rating reflects how well you can do the action. More training would increase your cognitive ability.

Training Emotiv



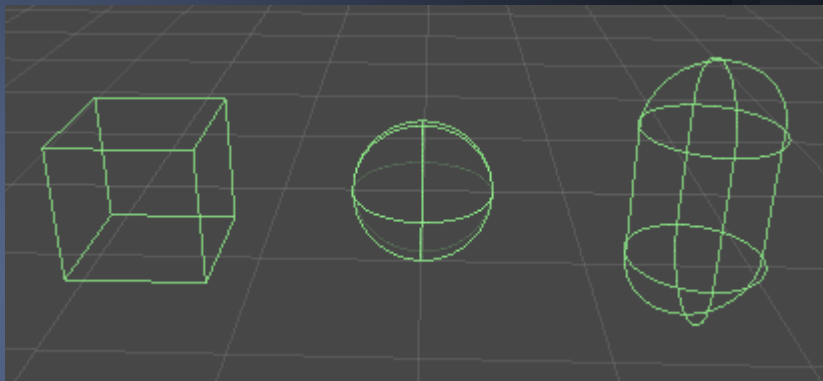
Application for Emotiv EPOC by Michael Adelson, Princeton University



Unity Game Engine

Allows:

- Easy object importing
- Object control
- Scene design
- Basic shapes (sphere, cube, etc.)
- Collision detection
- Automatic object updates
- Scripting in JavaScript, C#, Boo



Developing CogniDriver

- 2 scenes so far
- GUI done using GUILayout module



Developing CogniDriver

- Player data stored using PlayerPrefs module
- Camera script to smooth follow car
- EasyRoads 3D used for road creation
- Free 3D models from tf3dm.com and archibase.net

Emotiv SDK

- Connect to SDK by using EE_EngineConnect
- Permanently query for events
- Get event type by using EE_EmoEngineEventGetType
- Call EE_Engine_Disconnect at the end

Main Menu Options

CorgniDriverz



Welcome

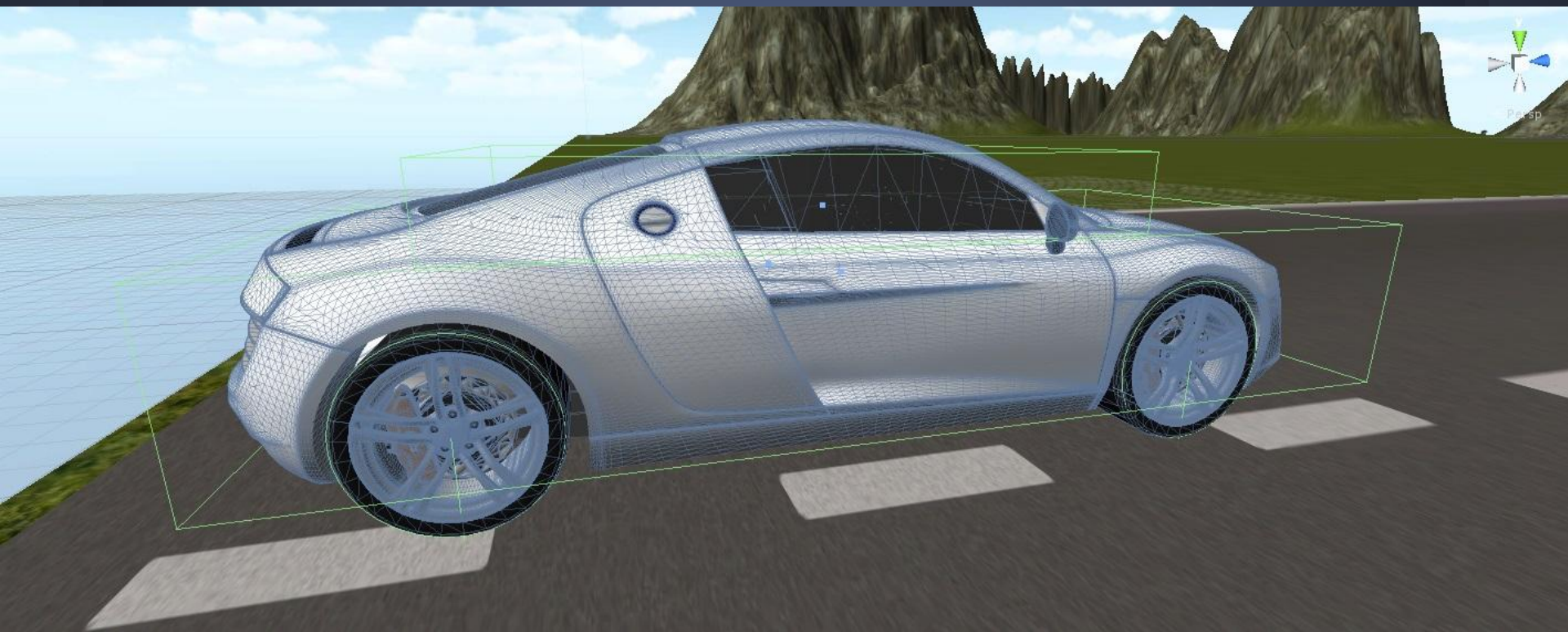
Race
Player Profile
Train Headset
Statistics
Options
Help
Exit



Race



Car



Car movement

- Wheel rotation
- Steering Wheel Rotation
- motorTorque and brakeTorque used for acceleration and deceleration
- Handbrake
- Skidding



Game Screen Helpers

- Display elapsed time
- Minimap
- Speedometer



Difficulties

- Training the cognitive actions
- Emotiv losing wireless signal

Future development

Train Headset
30th Nov

Control using Gyro
14th Dec

Detailed game looks
18th Feb

Action Power
7th Dec

Add new scene
30th Jan

User testing
4th March



Questions?

