AGENTS006

Porsche Engineering Student Contest 2019

The Team

Production Team:

Kis Balázs

Research and Development Team:

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Motivation

16%

of driving accidents caused by inattentive drivers

Motivation

The human factor

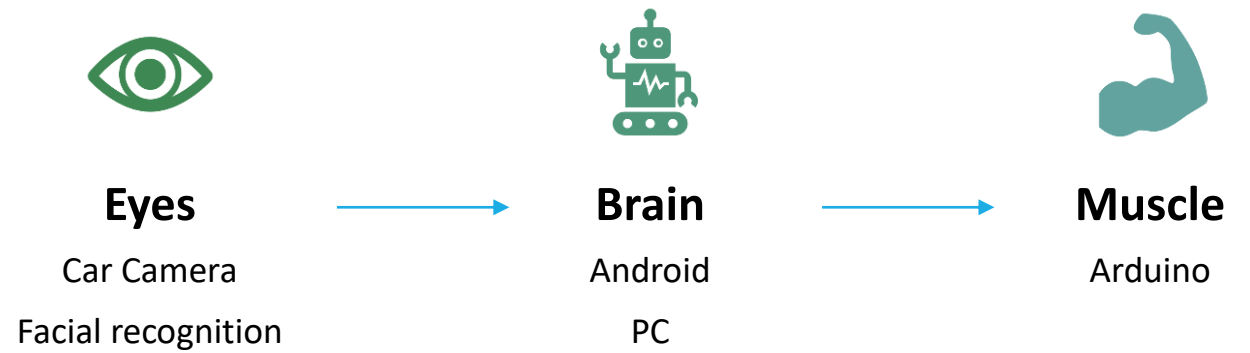To be cared about… not creepily

The Idea

Automated decision making
- ◦ Based on human state of mind
- ◦ Considering the environment

Freedom from distractions on the road

Explore the potential of cutting edge image processing

Implementation

Eyes

Car Camera

Facial recognition

→

Brain

Android

PC

→

Muscle

Arduino

Brain – Car Camera's Object Detection

First try: Matlab
◦ Failed due to performance issues
◦ $$

Finally settled on Python
◦ You Only Look Once image recognition library

Data extraction
◦ Number of relevant object seen by the camera
◦ Their coordinates for potential further analysis and data masking
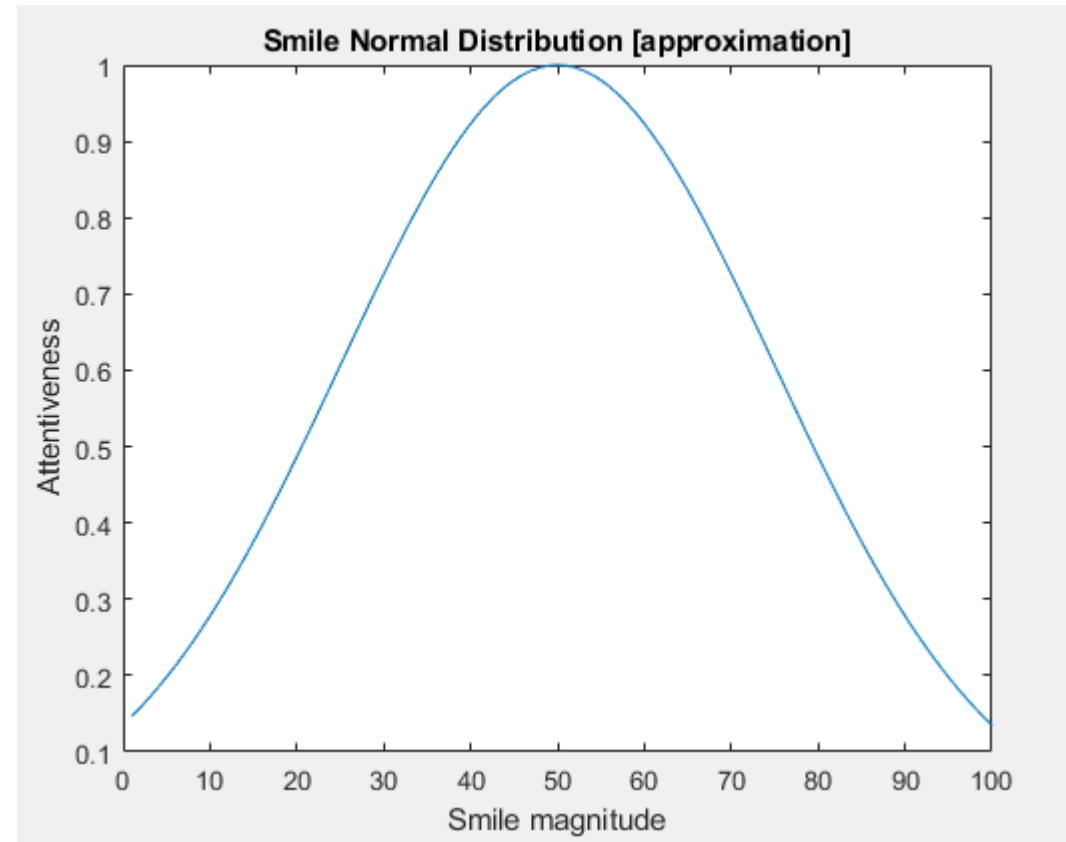
Brain – Android facial recognition
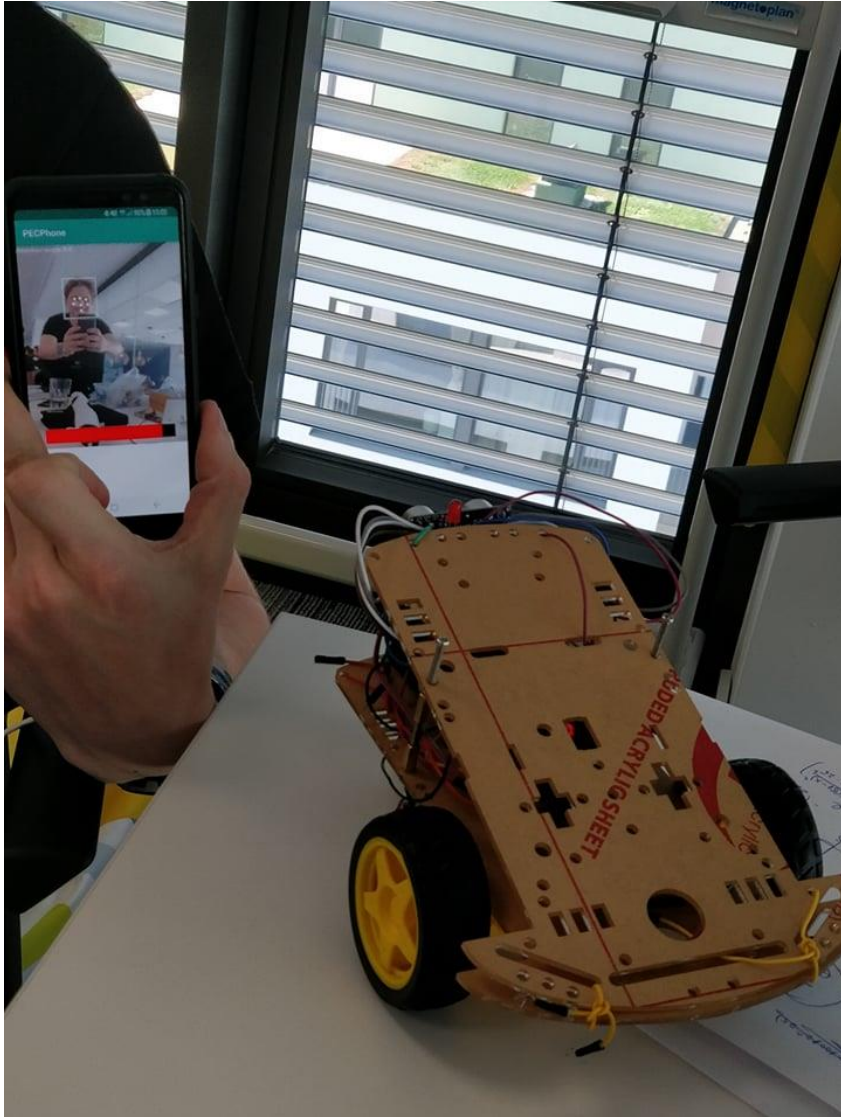
FaceDetector library

Inputs:
◦ Eye tracking
◦ Smile meter
◦ Number of object seen by the camera
◦ The above objects' position
◦ Face positioning

Outputs:
◦ **AttentionScore**

Muscle – RAMPAge, the Arduino Car

The proof of concept

Independent, ultrasound based, braking system

AttentionScore based adaptive speed control

He'll be a 911 when he grows up

DEMO

Future Developments

- More sophisticated environmental data analysis
  - surface roughness -> suspension
  - relative motion detection -> business of a place
  - **Speed limit data**: GPS & Camera
- Facial recognition
  - Emotion detection
  - Possible emotion mapping on roads to plan stress-free voyages
  - **Driver profiling** based on emotions

Q&A

Thank you
for your
attention!