

AGENTS006

Porsche Engineering Student Contest 2019

The Team

Production Team:

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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

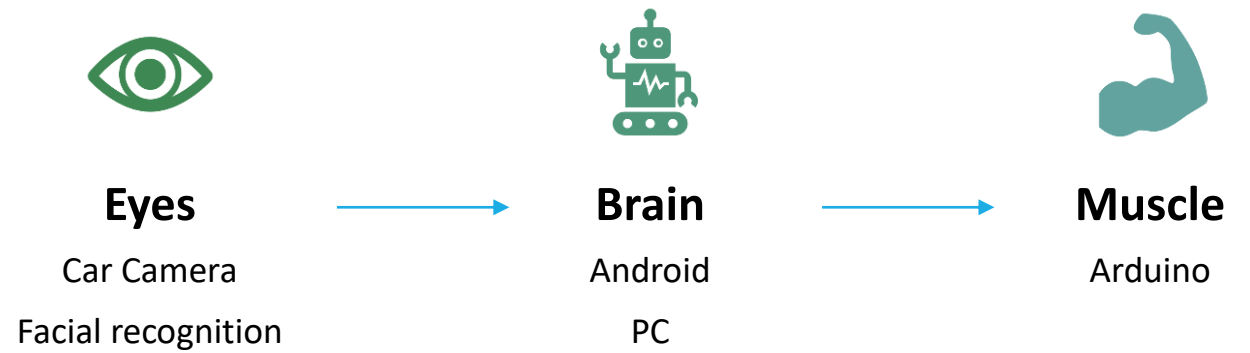
Automated decision making

- Based on human state of mind
- Considering the environment

Freedom from distractions on the road

Explore the potential of cutting edge image processing

Implementation



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

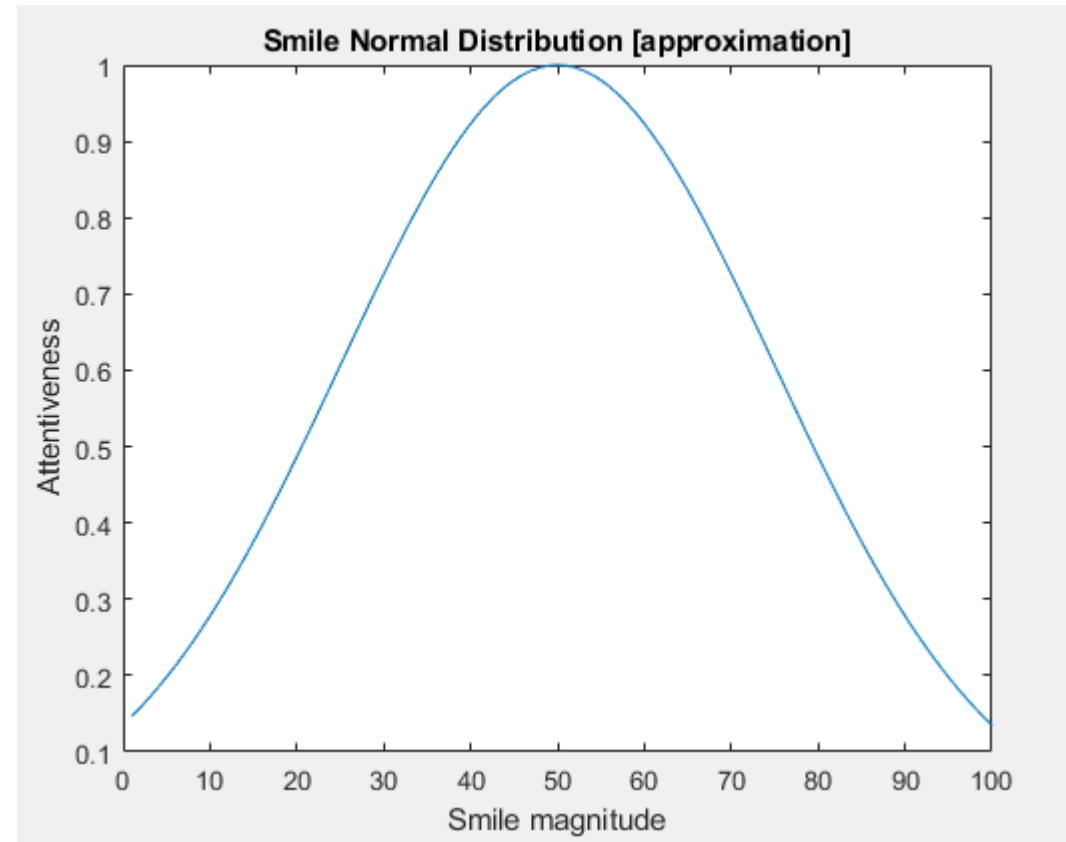
FaceDetector library

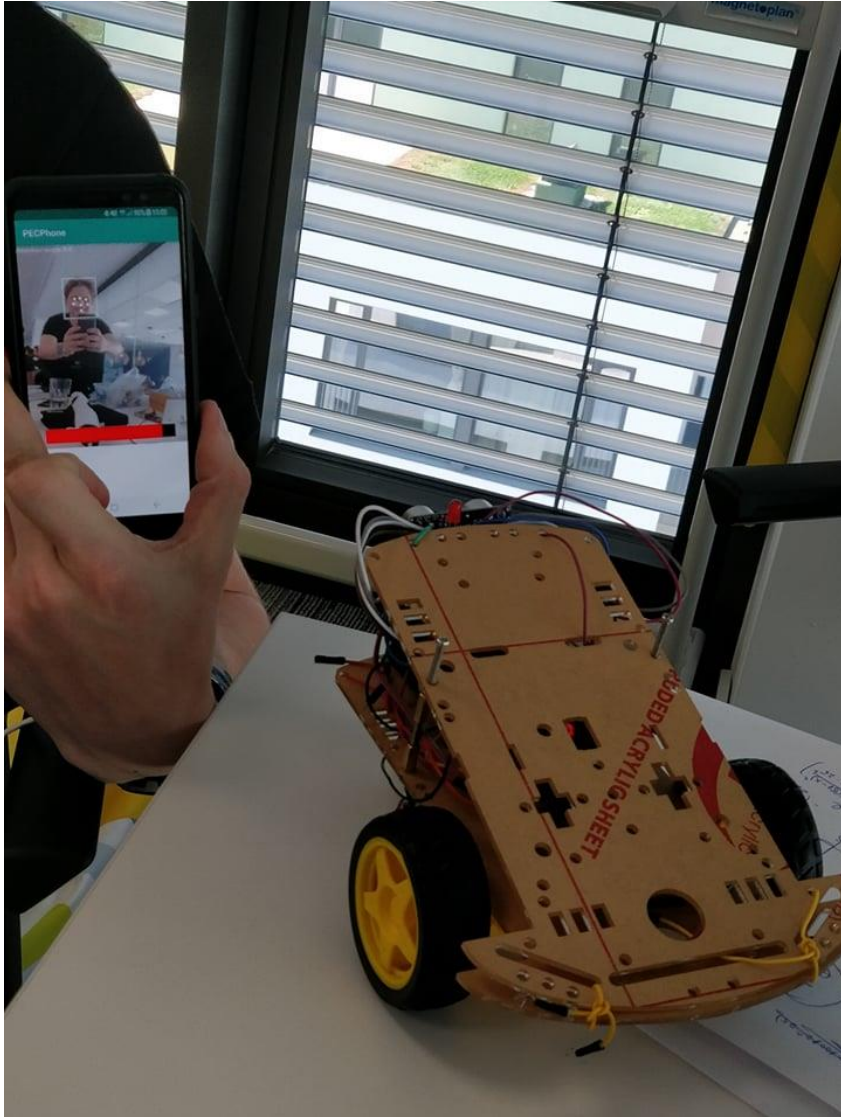
Inputs:

- 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

https://drive.google.com/file/d/1dqvWopADV3KmuWd_RH5g5dHSECKhZG7/view

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!
