UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

AIRI
AI Research & Innovation Center

AI academy

AImage Lab

Machine Learning and AI for Mobility @AImageLab UNIMORE

Prof. Rita Cucchiara

Università di Modena e Reggio Emilia, Italia

AimageLab, Dipartimento di Ingegneria «Enzo Ferrari»

AIRI, Università di Modena and Reggio Emilia, Italy

Director of the Italian Lab AIIS

Artificial Intelligence and Intelligent Systems

cini National Lab

Università di Modena and Reggio Emilia UNIMORE

UNIMORE one of the oldest Universities in the world (1175)

Three campus: Modena, Reggio Emilia, Mantova

- More than 20.000 students
- In the group of " big universities" in Italy since 2018
- 2 Schools, 15 Departments, 11 Research Centers, 2 Technopoles

School of Engineering:

- Dipartimento di Ingegneria Enzo Ferrari (AimageLab)
- Dipartimento di Scienze e Metodi di Ingegneria
- Dipartimento di Fisica, Matematica and Informatica

- Center of Reserch in Mechanics Intermech
- Center of Research in Cybersecurity
- Automotive Academy
- Cyber Academy

- Center of Research in Digital Humanities
- AIRI AI Research and Innovation Center (former Softech-ICT)
- AI Academy

June 19, 2019: QS World University Ranking:
Italy the third country in Europe
(UK, Germany, Italy, France, Spain)
UNIMORE is among Italian Universities, the one with the highest improvement in "Citation per faculty" in Italy
with an increasement of 109 positions in the Ranking

UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

MACHINE LEARNING AND AI @ UNIMORE

UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

AIRI
AI Research & Innovation Center

- ✓ New Interdipartimental AI Research and Innovation Center at Modena Technople
- ✓ Since 2011 (formerly Softech-ICT – ranked #1 in ICT fund rising 2015 review)
- ✓ Co-funded by UNIMORE and Regione Emilia Romagna EU FESR (2007/13,2014/20)
- ✓ Research in AI at large (Machine Learning, Computer Vision, Pervasive Computing, HPC, Edge AI, Business and SME support). Endorsed by ELLIS.

AI academy

- ✓ New Tech Transfer and Life-Long Education as an Academy in Artificial Intelligence
- ✓ Since 2019 Deep Learning Master and Industrial Education Initiative
- ✓ Collaboration with NVIDIA for Inception Programs
- ✓ Collaboration with more than 50 SMEs and Large industries
- ✓ Cofuneded by Regione Emilia Romagna

Artificial Intelligence and Intelligent Systems
cini National Lab

AImage Lab

- ✓ Research Lab in AI, Deep learning, Computer vision and multimedia
- ✓ Research in surveillance, automotive, medical imaging, HBU, Cultural heritage
- ✓ Since 2000 at UNIMORE in Dipartimento di Ingegneria “ Enzo Ferrari” and AIRI
- ✓ 31 people (6 staff, 14 Phd students, research fellows, postdoc and sw. engineers)
- ✓ Node of the National CINI Lab AIIS

2019 Research in AI and Vision:

AImage Lab

AI for
Surveillance and
Smart Cities
Mobility

AI for
Health and
Medicine

AI for
Industry:
- Manufacture
- Automotive
- Design and Fashion
- Fintech

AI for
Media
Digital Humanities and
Cultural Heritage

Start-up, and SME ecosystem

Vision-e
Vision Engineering

PIKKART
Technologies that reinvent your reality.

MIND

AXYON.AI

DEEP VISION CONSULTING

energyway

AI for Mobility in 2019

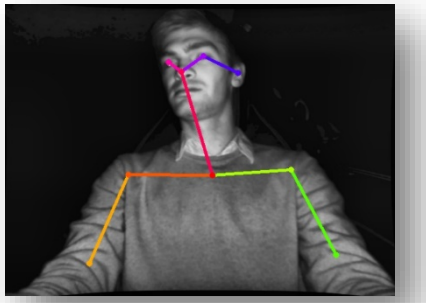
UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

- AI for Automotive

  - RedVision Join Lab Aimagelab Ferrari: human and vehicle interaction
  - PANASONIC Beta Lab: motion analysis for ADAS and unmanned cars
  - Prystine Horizon EU project: free space segmentation for autonomous vehicles
  - Dr(EyE)Ve: predicting human attention in driving

- AI for Railway
  - RFI Ferrovie Italiane, Lab CINI AIIS, Sant'Anna Pisa: Railway anomaly detection

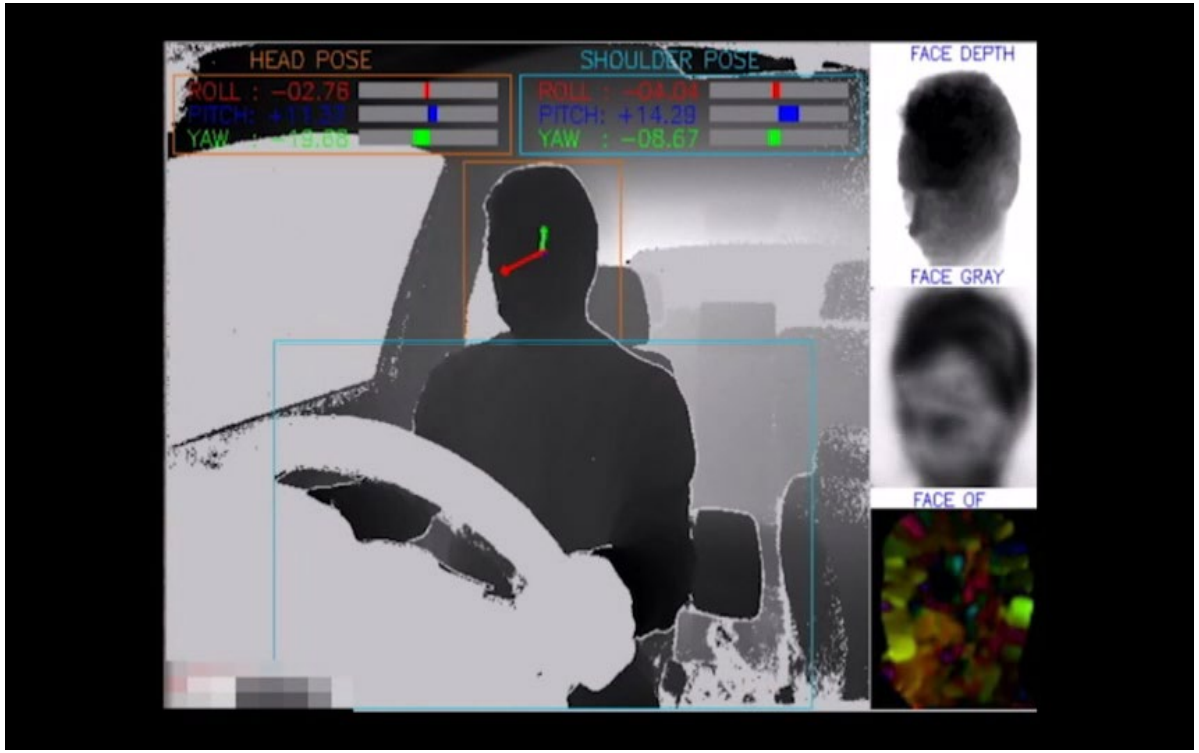
- AI for Humans and Smart cities

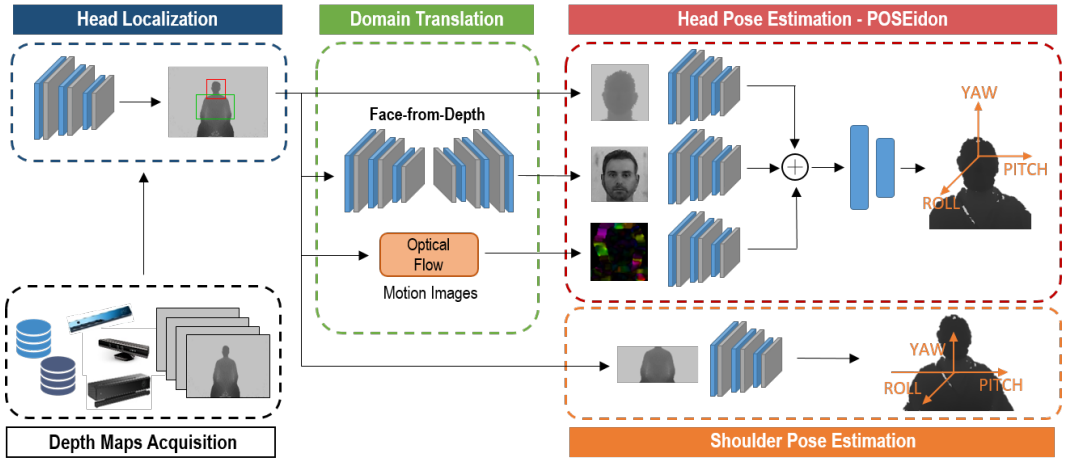


  - (Past projects) NATO, Italy Israel anomaly in people human behavior
  - MIUR PREVUE Predictiing Events in urban environment and MASA
  - MIUR COSMOS Biometry and Surveillance
  - IARPA-DIVA USA and Kittware
  - Arroowtool ECSEL EU project: embedding video surveillance with ST
  - INSecTT ECSEL EU projects: security in transport (final evaluation)

Deep Learning and Computer Vision for human and car understanding In and Out Car

UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA



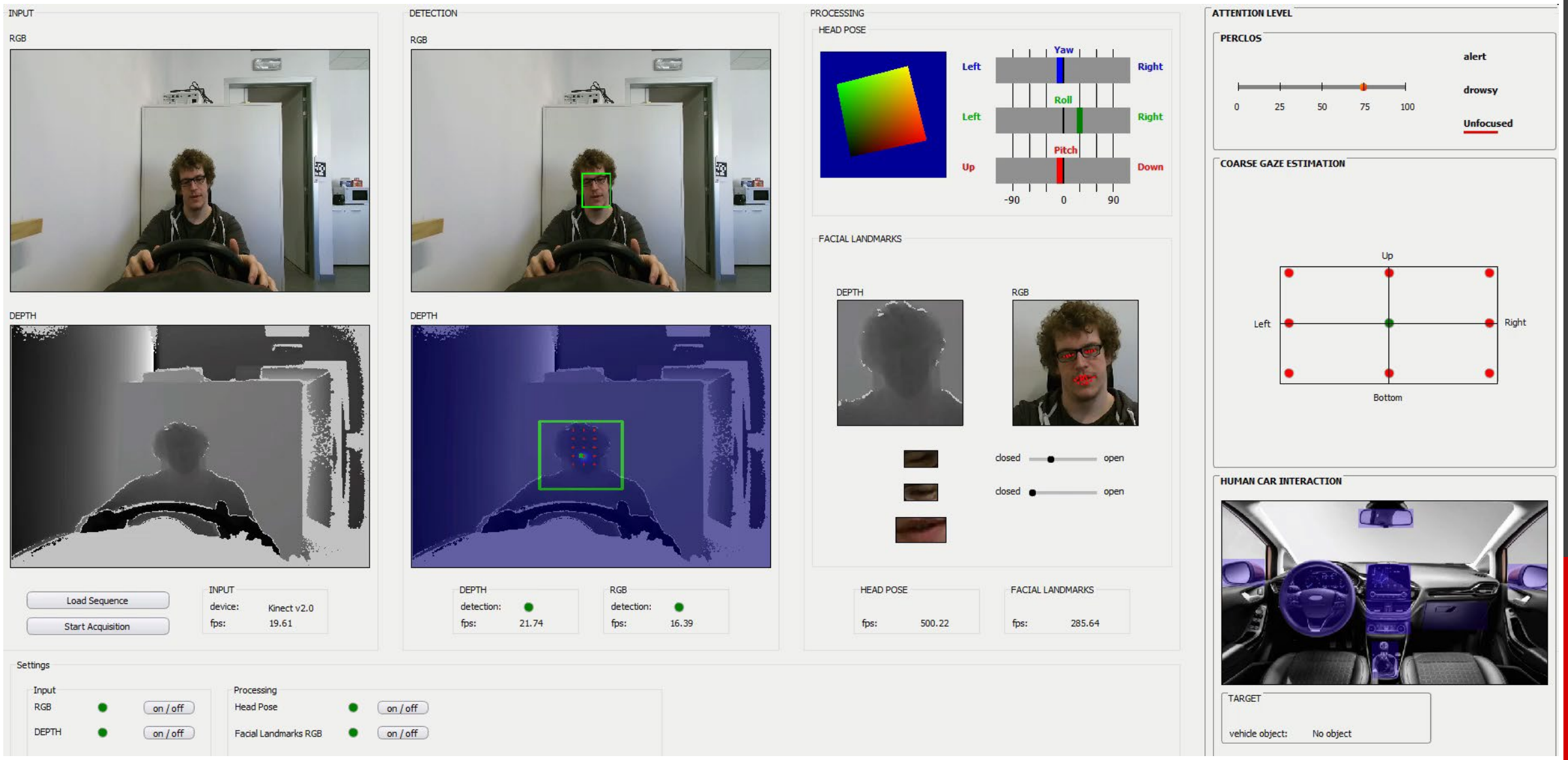


CINECA

PRYSTINE

RedVision lab

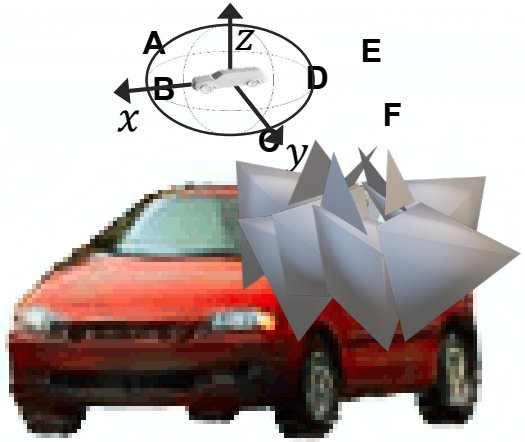
Deep Learning and Depth Data only for human-vehicle interaction



[See CVPR2017, IEEET-PAMI 2018, BMVC 2018]

Comparison:
SAM general purpose saliency [IEEE T-IP 2019]
Dr(EYE)ve attentive [IEEET-PAMI 2010]

Anomaly and Event early detection and prediction with Italian Railway and Modena MASA



People mobility: understanding presence, activity, behavior of single, group and crowds

International Contacts in AI for Mobility (2019)

UNIMORE
UNIVERSITÀ DEGLI STUDI DI MODENA E REGGIO EMILIA

AIRI
AI Research & Innovation Center

AImage Lab

ellis
European Laboratory for Learning and Intelligent Systems

- Max Plank II Tubingen Germany
- University of Amsterdam: ICAI Innovation Center of AI
- University of Valencia
- NTNU Norway
- Technion, TAU, Israel
- Amazon, Facebook, Qualcomm, NVIDIA, Panasonic
- Northwest Minzu University, Lanzhou, China
- ……
- CVF(Computer Vision Foundation)
- IAPR (International association on Pattern Recognition)
- SIGMM (Special Interest Group in Multimedia ACM)

Contact

Segreteria.aimagelab@unimore.it
rita.cucchiara@unimore.it
http://aimagelab.ing.unimore.it

Rita Cucchiara
Università di Modena e Reggio Emilia, Italy

ICPR 2020
25th INTERNATIONAL CONFERENCE ON PATTERN RECOGNITION
Milan, Italy 13 | 18 September

Loook forward to see you at

ICPR2020 Milano Italy
www.icpr2020.it

12-19 September 2020

Acknowledgements