THALES

list
cea tech

Vision, Autonomy & Robotic learning

an innovation lab addressing major societal challenges

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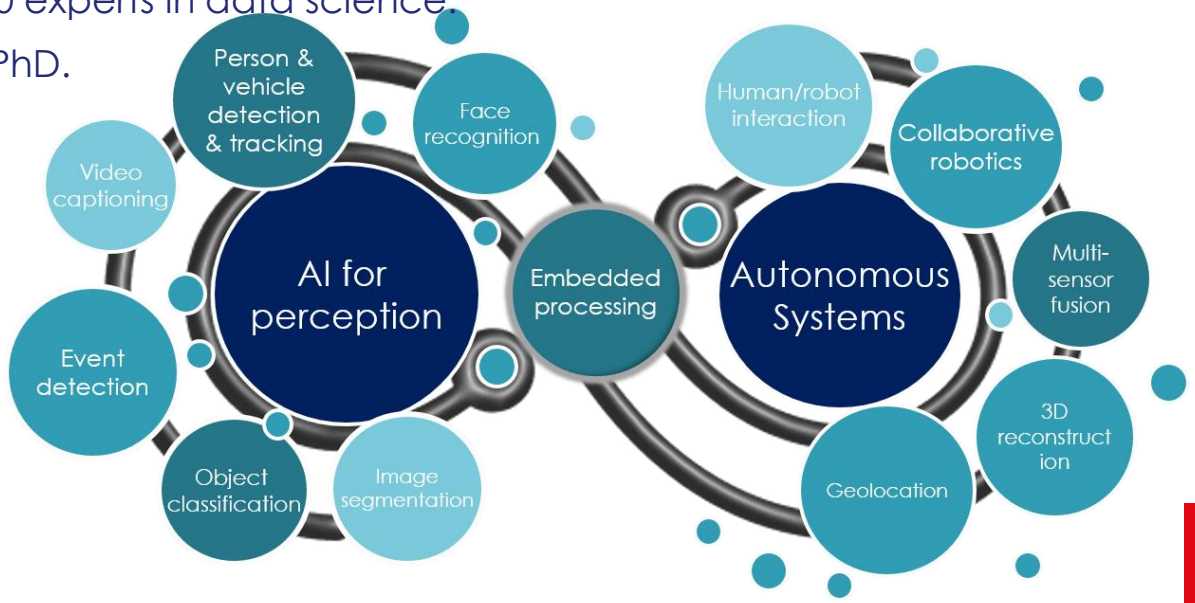
ThereSIS – Vision, Autonomy & Robotic learning

A joint laboratory on AI for computer vision with CEA-List since 2008

- More than 40 experts in data science.
- 10 ongoing PhD.

R&T activities



Experience in European projects (Secur-ED, ProtectRail, AI4EU, CloudLSVA, ASGAR, CPS4EU, Emospaces, Virtuoso, ePoolice, ResponDrone, DeepHealth, IoTwins)

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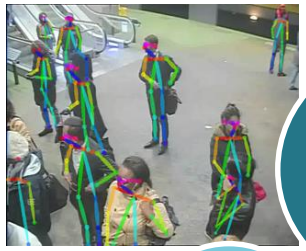
AI for perception



Person & vehicle detection & tracking

Face recognition

People are fighting in the train

Video captioning

AI for perception

Event detection

Object Classification & localization

Image segmentation

Deep Learning for

- Re-identification & tracking
  - ⇒Face / Silhouette & soft biometrics
  - ⇒Object detection
  - ⇒Counting
- Semantic description of images
  - ⇒Human interaction recognition
  - ⇒Semantic segmentation
  - ⇒Video captioning
- Video Human Behavior Classification
  - ⇒Assisted living activity recognition
  - ⇒Violent event detection
  - ⇒Crowd behavior recognition

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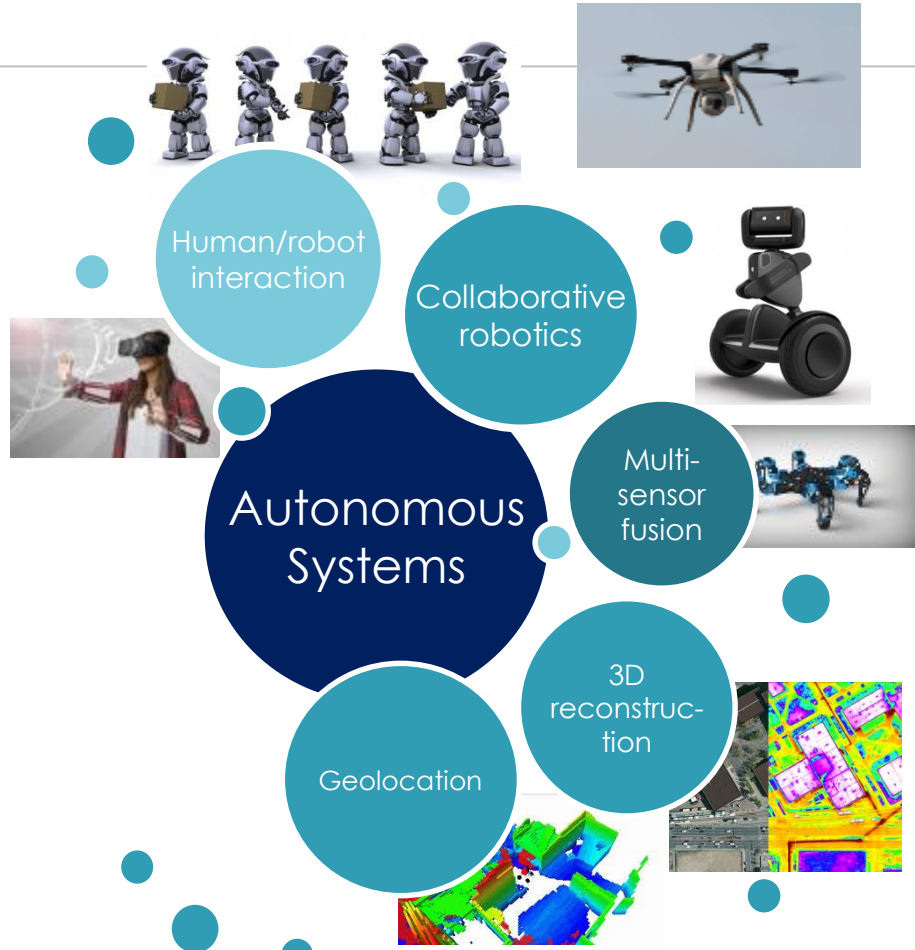
Autonomous Systems

Improve perception capacities of autonomous systems

- Autonomous exploration of unknown areas
  - Improve environment knowledge
  - ⇒ Autonomous navigation
  - ⇒ Collective intelligence (ex: collective mapping)
  - ⇒ Dynamic adaptation to the environment
- Alert Management
  - apply AI to the video footprints (ex : on VR/AR interfaces)
  - working space transformation in a remote handling control centre.
  - ⇒ reduce the operator mental workload



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H2020 security calls

- **SU-INFRA01** -Physical threads- AI to supervise critical infrastructure human behavior Analysis etc
- **SU-BES02** - AI for object recognition & fine-grained classification via IR/THZcamera (subtopic 5 “non-intrusive identification of hidden goods” /subtopic open)
- **SU-BES03** - Segmentation of satellite img via neural networks (Subtopic 3: “Improved systems for the vessel tracking, behavior analysis & anomaly detection” /subtopic open)
- **SU-DRS02** - Victim detection and localization through embedded AI (subtopic open)
- **SU-FCT02** - AI solution for Automated captioning system (subtopic open)
- **SU-FCT03:** - AI for human behavior recognition (improved imaging techniques to allow for the identification of suspicious events or of criminals)
- **SU-AI02** - AI for Identification & protection against adversarial attacks

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Thanks

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test platforms & infrastructure @ Palaiseau

Multi-sensors live demonstration platform

- More than 30 cameras & other physical sensors
- Real-time CIP (video analysis algorithms, people identification…)

Transport platform

- Rail vehicle replica with realistic environment
- Audio / video acquisitions & algorithms benchmarking

Autonomous systems

- UxVs platforms (drones, robots)
- UAV operator (DGAC authorization, 3 pilot's licenses)
- Robotic heads with optical & mechanical capacities

Computing cluster

- High end GPUs, high speed interconnect
- Jupyter/Docker based software stack

Mini Fablab

- 3D printer