TrustMeIA
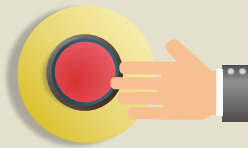## Trust Me I am Autonomous

https://www.laas.fr/projects/trustmeia/

Chantier 2018-2020

Jérémie Guiochet

LAAS-CNRS, Université de Toulouse 3

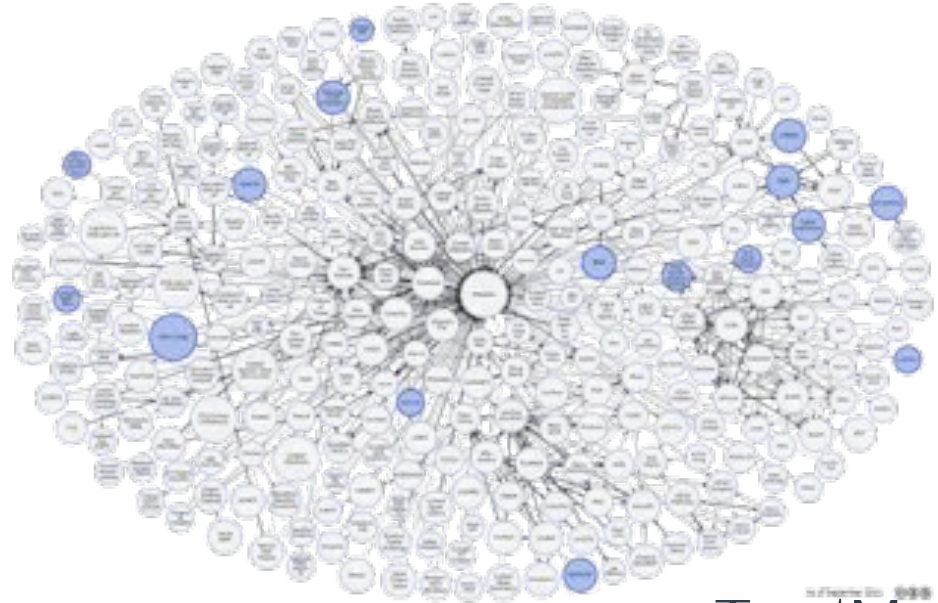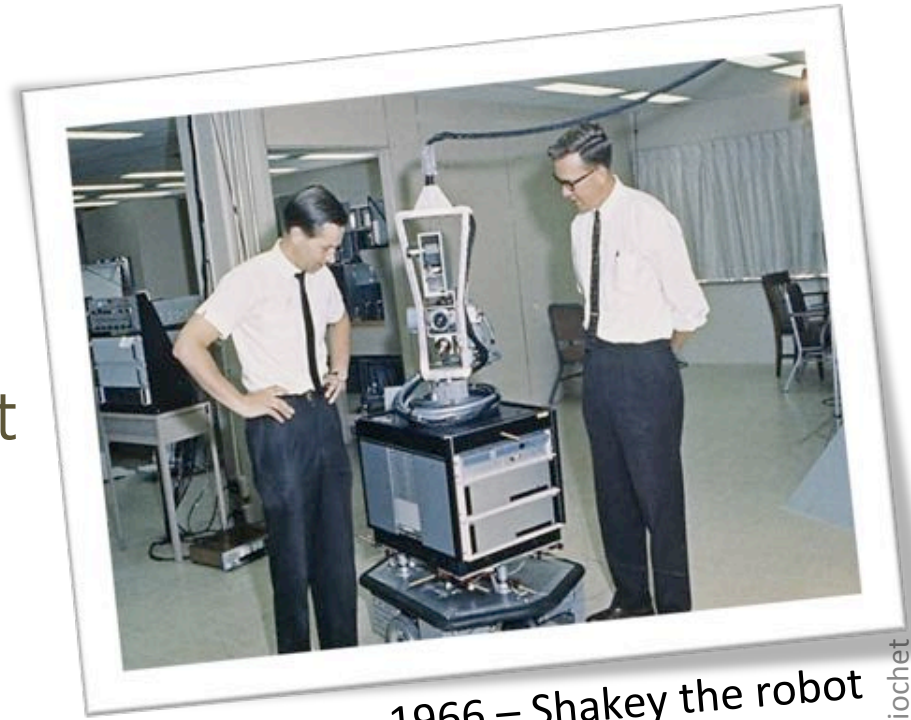Fall meeting STAE – 28/11/2018, Hotel d'Asezat, Toulouse

Decisional autonomy

J. Guiochet
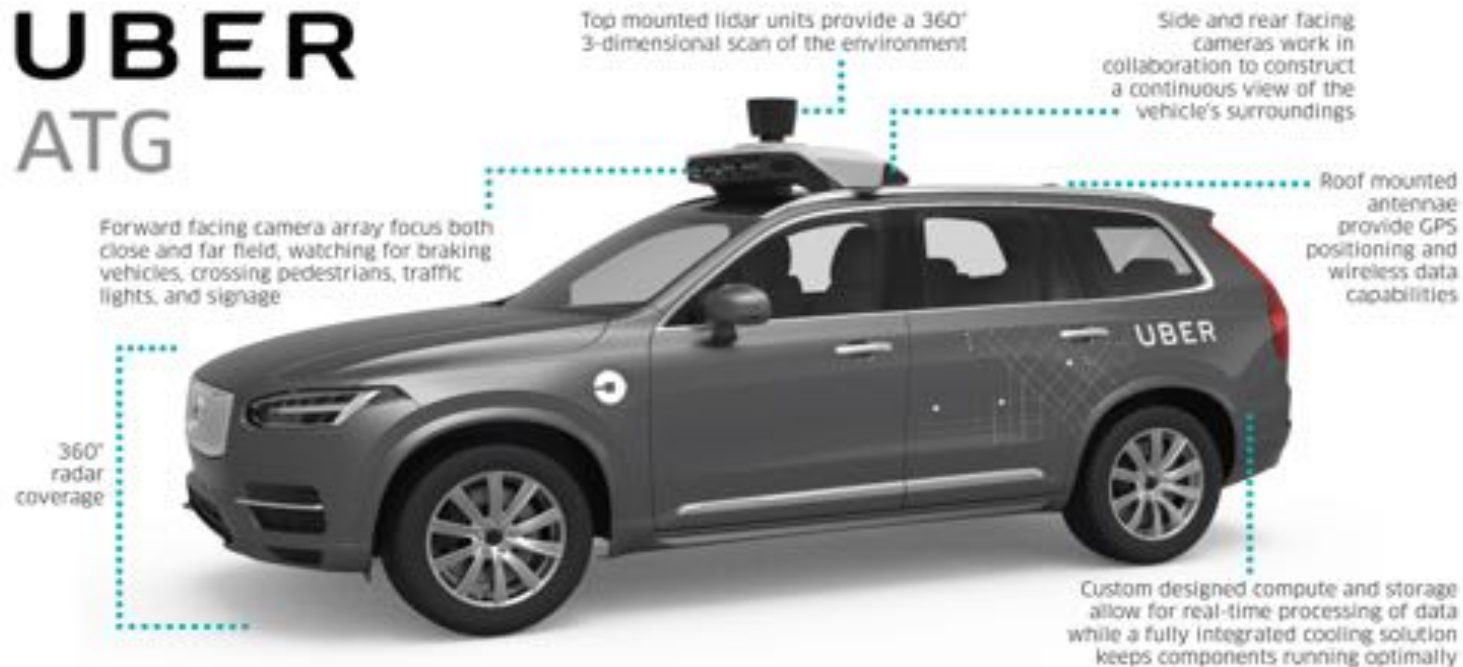
TrustMeIA

Autonomy & robotics

- Sense/plan/act paradigm
- No human intervention
- Unstructured environment

1966 – Shakey the robot

J. Guiochet

UBER
ATG

Top mounted lidar units provide a 360° 3-dimensional scan of the environment

Side and rear facing cameras work in collaboration to construct a continuous view of the vehicle's surroundings

Roof mounted antennae provide GPS positioning and wireless data capabilities

Forward facing camera array focus both close and far field, watching for braking vehicles, crossing pedestrians, traffic lights, and signage

360° radar coverage

Custom designed compute and storage allow for real-time processing of data while a fully integrated cooling solution keeps components running optimally

Self Driving Uber sensor suite

7 Cameras
1 Laser
Inertial Measurement Units

Custom compute and data storage
360° radar coverage

Advanced Technologies Group

UBER

This is it …

Tesla, 2016

Uber, 2018

Tesla X , 2018

Why?

- Non deterministic systems

- No model of algorithms

- No formal specification

- Many uncertainties

- No standards

TrustMe**IA**

TrustMeIA Objectives

- Bring together researchers and industrials in the field of autonomous systems and computer science

- Initiate/animate open discussions, open publications, open platform and collaborative projects in the domain of trusted autonomous systems

- Focus on technical topics but other aspects related to trust as societal, legal or ethical may also be part of the TrustMeIA actions

TrustMeIA

TrustMeIA Topics

- Decision making under uncertainty and incompleteness : probabilistic and non-probabilistic approaches
- Validation and verification, confidence estimation and certification (formal methods for expression and verification of requirements, testing, simulation, assurance cases, etc.)
- New software architectures for safe autonomous systems (integrity levels, isolation in intelligence architectures, runtime verification, monitoring)
- Transparency and explainability of perception, inference, actions
- Security and autonomous systems
- Legal, ethical, societal aspects, superintelligence issues

TrustMeIA actions (1)

- Two Master 2 internship grants for 2019
  - "Run-time monitoring : formal-based vs machine learning" ONERA - LAAS
  - "Multi-agent and machine-learning algorithms from the perspective of trust." IRIT - IRT
- First TrustMeIA workshop in 2019 July during the PFIA (Plate-Forme Intelligence Artificielle)
- TrustMeIA white paper

TrustMeIA

TrustMeIA actions (2)

- Invitations (TBD)

- Seminars (TBD)

- Opensource and collaborative plateforms and data (e.g. http://osmosis.gitlab.io)

Partners

J. Guiochet

Actions locales liées

- Défi du pôle aerospace : STAC (Systèmes de Transport Autonomes Critiques)
- AutoCampus (UPS, Pôle AV et Région Occitanie)
- Tremplin DAAVVE (Dependable Adaptative Algorithm : V&V Engineering)
- AVA (Autonomous Vehicle Acceptability) groupe de travail commun au trois sociétés savantes 3AF-SEE-SIA fortement implanté à Toulouse
- Institut 3IA ANITI

J. Guiochet

Questions?

`https://www.laas.fr/projects/trustmeia/`

TrustMeIA