

Digital Forensics

Lima Madomi

23rd June, 2026

TPG | Filière IG | HEG-Genève



Table of contents

1. Context
2. Autonomous Vehicles
3. Safety & Security
4. Workshop
5. Group Presentations

Our Team



Lima Madomi

PhD Researcher, UNIGE and
Project Manager, TPG



Jeroen A. Beukers

Head of Innovation, TPG
Beukers.Jeroen@tpg.ch



Prof. Dr. Anastasija Collen

Associate Professor, HES-SO - HEG
Anastasija.Collen@hesge.ch

Context



CHORUS is an EU funded Connected, Cooperative and Automated Mobility (CCAM) project developing an AI enabled orchestration framework to improve road safety, traffic efficiency, and sustainable multimodal mobility across seven European demonstration sites.

CHORUS Demonstration Sites



(a) Paris-Saclay, France



(b) Oxfordshire, UK



(c) Trikala, Greece



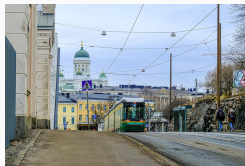
(d) Bern, Switzerland



(e) Geneva, Switzerland



(f) Zürich, Switzerland

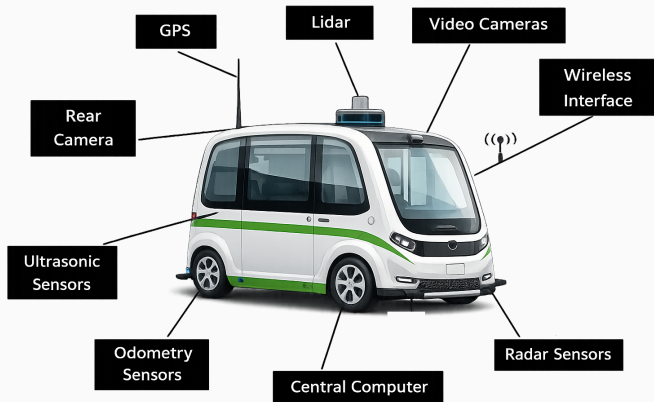


(g) Helsinki, Finland

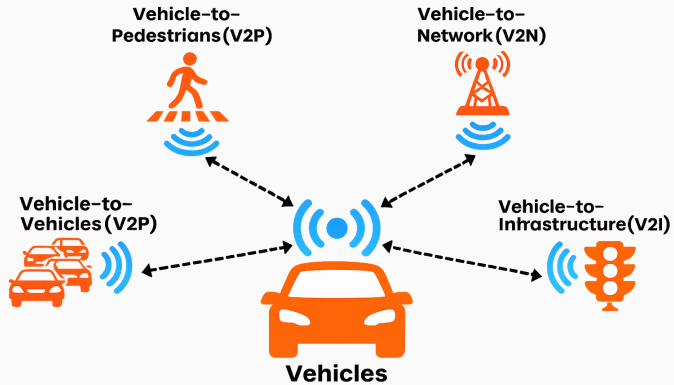


Autonomous Vehicles

What is an autonomous vehicle?



How does autonomous vehicle communicate?



Safety & Security

Objective: Ensure safe vehicle operation and minimize risks to passengers and road users.

- Reliable perception of the environment
- Accurate localization and navigation
- Safe decision making and planning
- Robust vehicle control
- Fail safe operation during faults

Safety Risks

Sensor Failure | Software Errors | Adverse Weather | Hardware Faults

Objective: Protect vehicle systems, communications, and data from malicious attacks.

- Secure in vehicle networks and ECUs
- Protect V2X communications
- Prevent unauthorized access
- Ensure data integrity and authenticity
- Detect and respond to cyber threats

Common Threats

Sensor Spoofing | GPS Jamming | V2X Attacks | Unauthorised remote access

Workshop

Timeline

- Introduction (10 min)
- Round 1 - Group Discussion (25 min)
- Round 2 - Group Discussion (25 min)
- Group presentation (10 min)
- Wrap up (5min)

Workshop

Round 1

Geneva has introduced small self driving electric shuttles that move through normal city traffic. They share the road with cars, bikes, and pedestrians. These shuttles receive information from traffic lights and road equipment to help them drive safely. A team of operators watches the system from a control room to make sure everything runs smoothly. Passengers can see trip updates on a screen inside the shuttle and in a mobile app on their phone.

Scenario

It is Monday morning at 08:15. Rush hour. Children are going to school. Adults are going to work. Multiple shuttles are on the road and running normally. Everything seems fine until...



Can you tell what happened? Is it a security issue
or safety?

Can you tell what happened? Is it a security issue
or safety?

If you were in the vehicle would you trust the
vehicle again?

Can you tell what happened? Is it a security issue
or safety?

If you were in the vehicle would you trust the
vehicle again?

Would you feel safe to ride the vehicle again
tomorrow?

Can you tell what happened? Is it a security issue
or safety?

If you were in the vehicle would you trust the
vehicle again?

Would you feel safe to ride the vehicle again
tomorrow?

Do you feel transport companies are transparent in
communicating the incident and its causes?

Can you tell what happened? Is it a security issue
or safety?

If you were in the vehicle would you trust the
vehicle again?

Would you feel safe to ride the vehicle again
tomorrow?

Do you feel transport companies are transparent in
communicating the incident and its causes?

Do you think the system is overwhelming the
operator?

Workshop

Round 2

Digital Forensics

The discipline that involves collecting, preserving, and analyzing digital data to reconstruct an incident and identify its cause.

Same scenario again but this time before the shuttles start operating, the city had prepared for situations like this.

- All vehicles and control rooms record what happens in a clear and organized way
- Important information is safely stored and cannot be tampered with
- The system keeps track of why, when, and how a vehicle makes a decision
- Actions taken by human supervisors are recorded
- Critical warnings are clearly annotated on screens so they are not missed
- Passengers receive honest and clear explanations if something unusual happens
- Personal information is protected and handled carefully

After knowing that there is a clear investigation mechanism in place, would you feel safer riding the shuttle again tomorrow?

After knowing that there is a clear investigation mechanism in place, would you feel safer riding the shuttle again tomorrow?

How much do you trust the investigation process to identify the root cause of the incident?

After knowing that there is a clear investigation mechanism in place, would you feel safer riding the shuttle again tomorrow?

How much do you trust the investigation process to identify the root cause of the incident?

Do you think the system could overwhelm the operator, even if they are trained to deal with similar situations?

After knowing that there is a clear investigation mechanism in place, would you feel safer riding the shuttle again tomorrow?

How much do you trust the investigation process to identify the root cause of the incident?

Do you think the system could overwhelm the operator, even if they are trained to deal with similar situations?

Has this incident changed your overall perception of autonomous shuttles?

Group Presentations

Thank you!

Questions ?

Lima Madomi

lima.madomi@unige.ch & madomi.lima@tpg.ch

