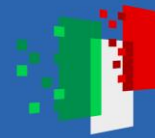




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FORESEEN Kickoff Meeting

UNIPA Activities and Team

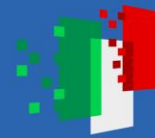




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About us



Adriano Fagiolini
ING-INF/04



Salvatore Pedone

Aerospace Engineering in 2018
PhD in Robotics (ING-INF/04) in
2023

Assegnista

M I R P A L A B

MOBILE & INTELLIGENT ROBOTS @ PANORMOUS LABORATORY

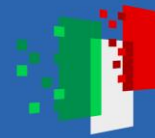




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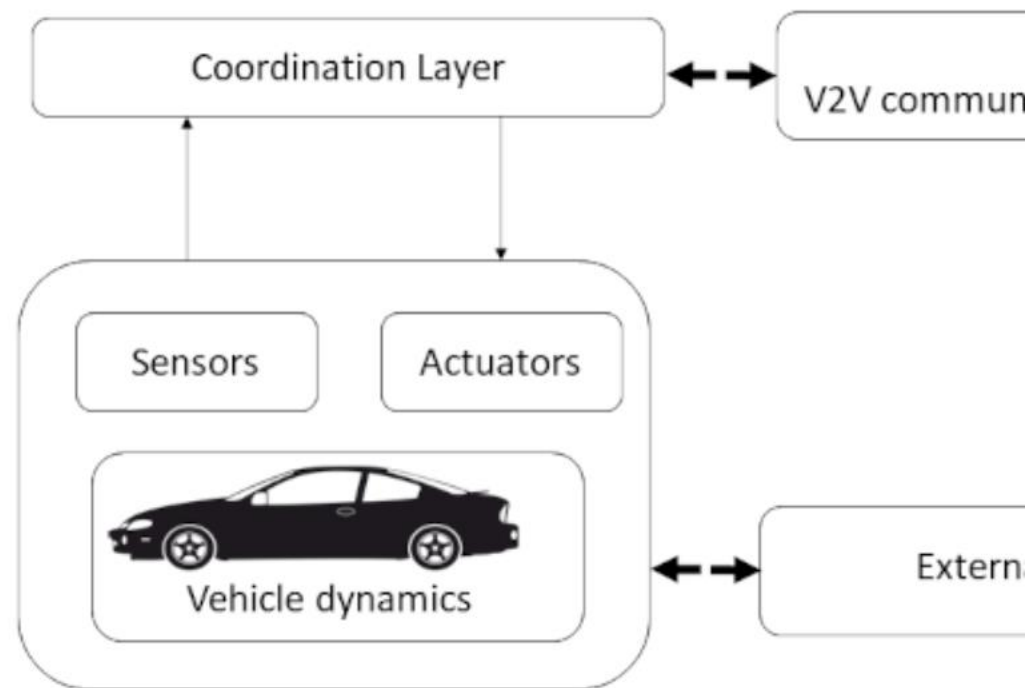
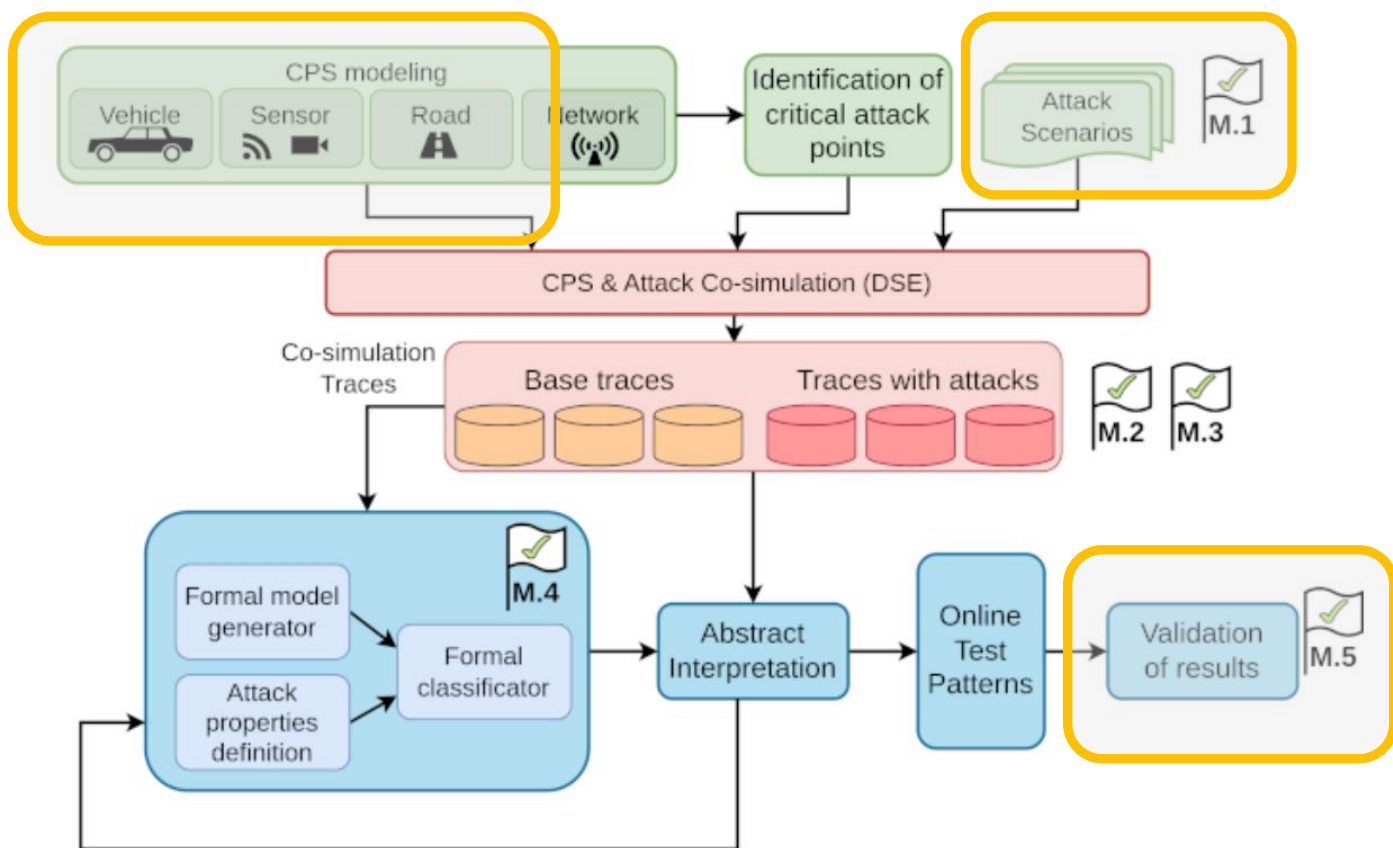
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Our research activities

- Modeling, Control and Estimation
 - Adaptive Control / Model-based and Model-free Learning
 - Design of Unknown Input-State Estimators
 - ***Distributed estimation and control***
- Application Domains
 - Soft Robotics
 - Flying Robots
 - ***Self-driving Vehicles***



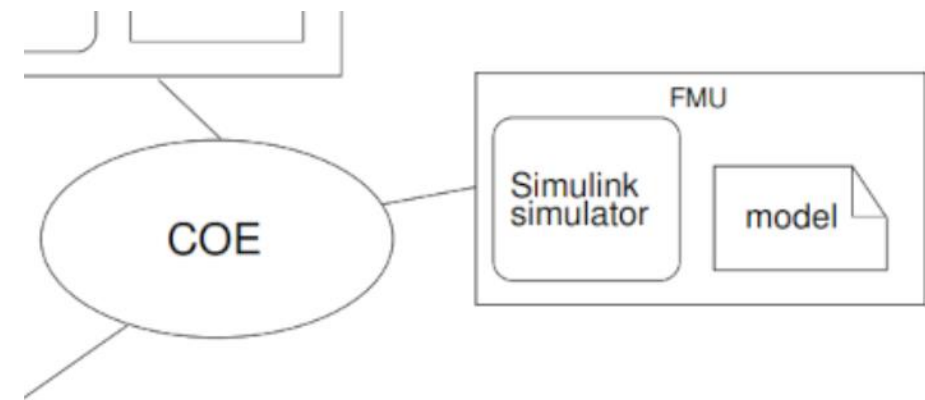
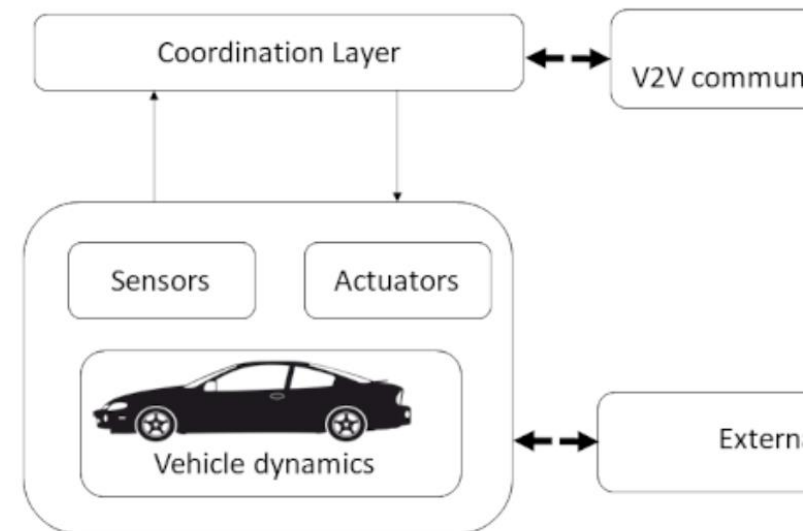
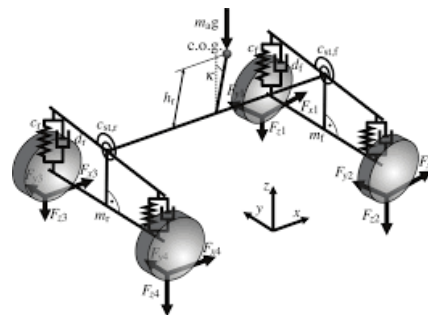
Our contribution





Our contribution (modeling)

- Vehicle model
 - Car-like (bi-traccia), longitudinal, lateral dynamics
 - Sensors
 - Propulsion
 - ...
- Road model
 - Friction variation
 - Burckhardt, Paceijka
 - ...
- Environment model
 - Wind gusts
- Inter-vehicle coordination
 - Platooning
 - ...

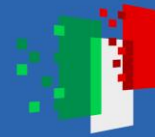




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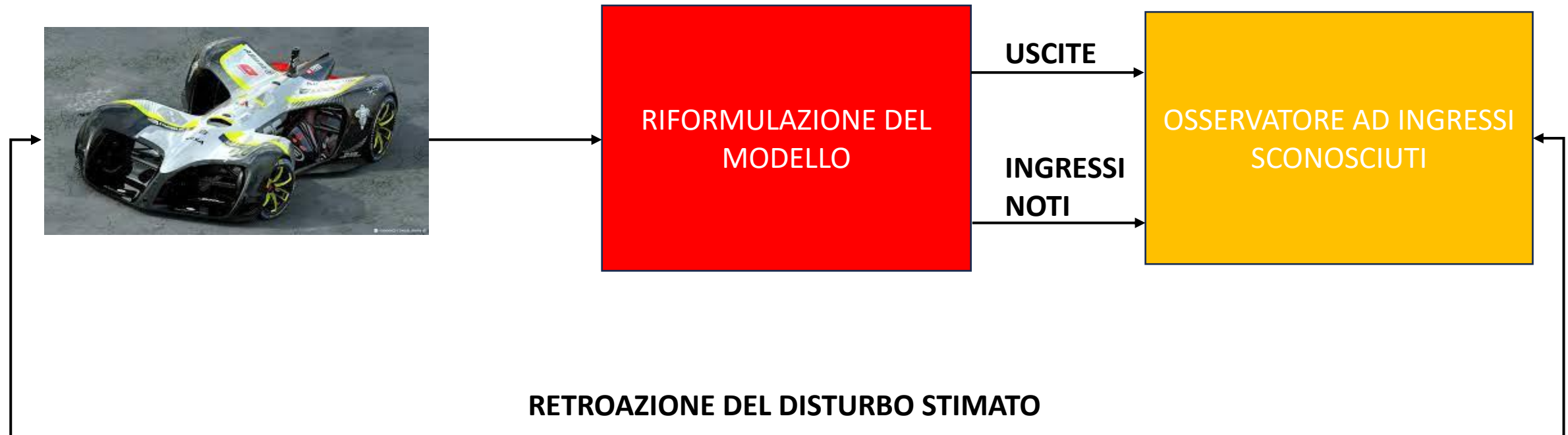
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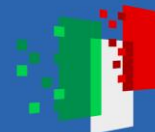


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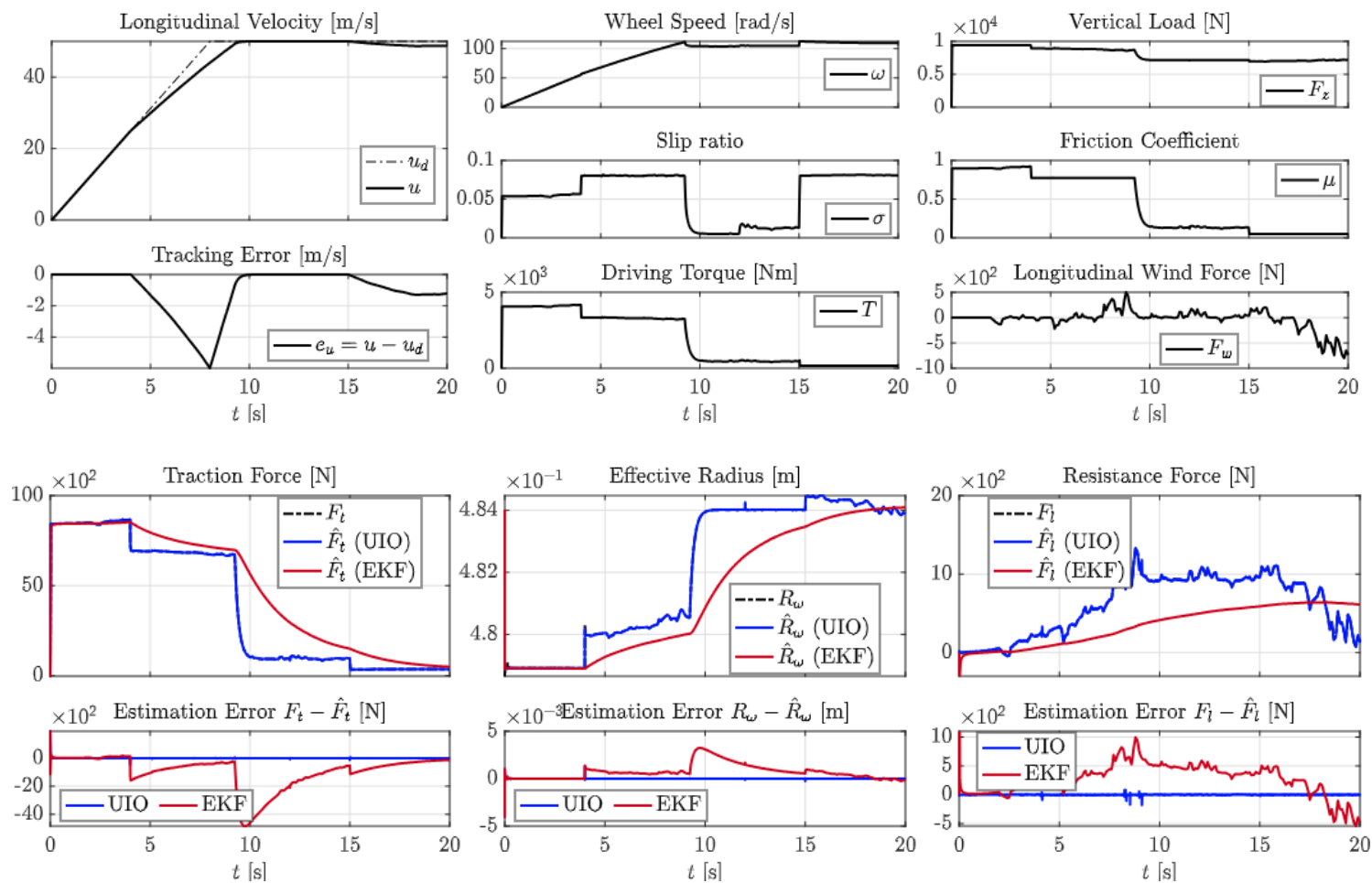
Our contribution (Robust control)

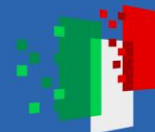
- Distributed Estimation of Road, Environmental conditions
- Local Parameter Estimation
- Robust Control of Full-dynamics





Examples w/ Longitudinal Dynamics





Examples w/ Lateral Dynamics

- Tools

- Matlab/Simulink

- Vehicle Dynamics Blockset

- ...

- ROS2

- Gazebo

- ...

