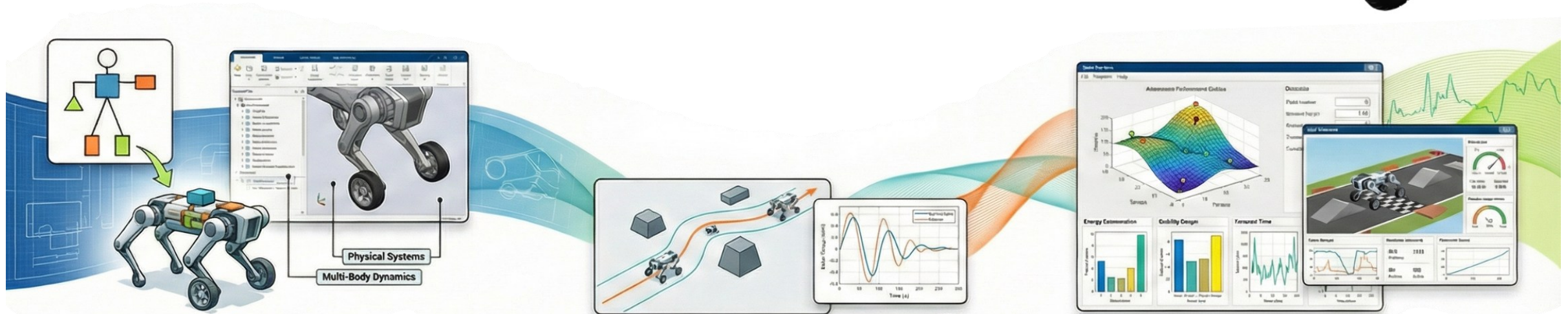
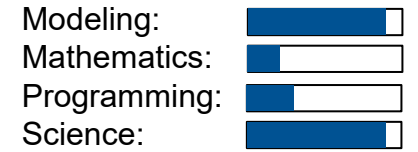


# Virtual Development of Multi-Modal Locomotion Robots

Objective: Design and simulate a **Multi-Modal Locomotion Robot** using MATLAB® [1], Simulink® [2], Simscape™ [3].

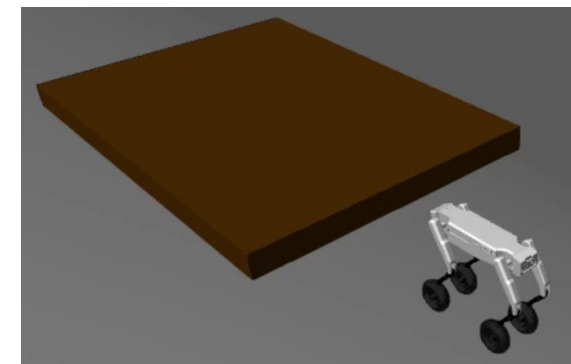
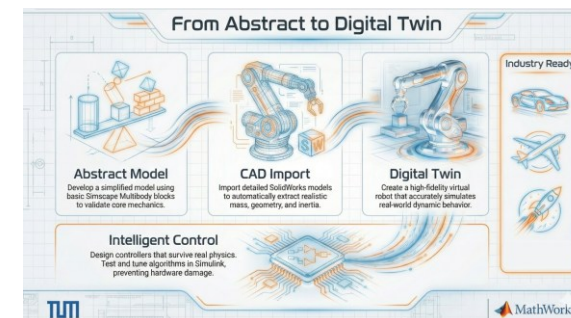
- **Identify suitable missions** for the robot, including search and rescue.
- **Motorized wheels** to move fast when terrain permits
- **Switch to legged gaits** when terrain when wheels cannot be used
- **Adaptable locomotion modes** to traverse different types of terrain

## Project Characteristics

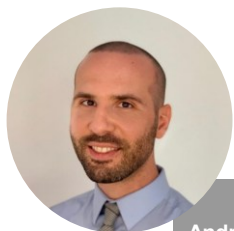


## Tasks

- Create an abstract mechanical design of a *Wheeled Quadruped Robot* using parameterized solids from [Simscape™ Multibody](#)
- Refine the mechanical design using [SolidWorks™](#) or other software
- Control the wheels to perform basic and complex maneuvers
- Implement locomotion strategies to navigate obstacles possibly also leveraging [Model-Predictive Control](#) (MPC)
- Validate and test the *Wheeled Quadruped Designs* in Simscape on more complex pathways



## Supervisors



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# Ready to Roll?

We are looking for students with a passion for multi-body dynamics, simulation, and robotics. Bring your curiosity and drive. We'll provide the challenge and the tools to succeed.



**Virtual Engineering of Multi-Modal Locomotion Robots** ▶