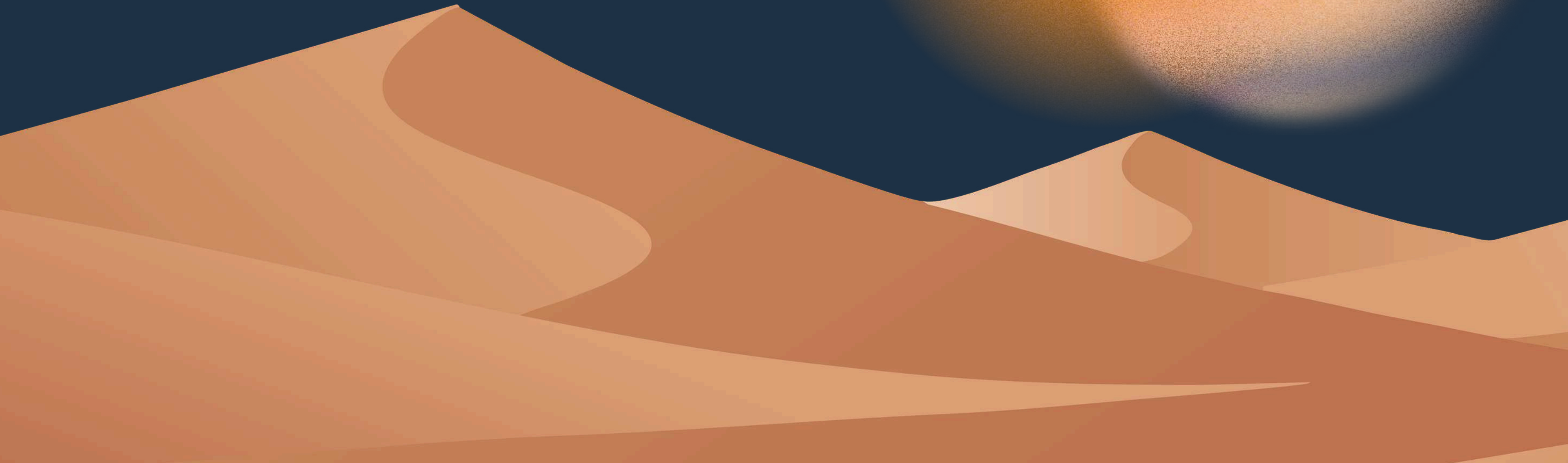




ETH zürich

PERPETUA

Legged robot for autonomous long-range exploration



Our Vision

PERPETUA

Legged robots stand out for their **versatility** and **adaptability** in irregular terrains and extreme environments. Together with their flexibility and maneuverability, they enhance a wide range of applications.

However, legged locomotion is associated with high energy needs, ultimately restricting battery endurance and operating time.

Goal

Build a highly efficient legged robot for long-range exploration on deformable and rough terrain with recharging capabilities

→ **without human intervention**

Why now?

PERPETUA

Efficiency, learned control and cheap energy storage have all crossed a threshold in the last few years. Together they make a self-sustaining legged robot buildable today.

0.25

Legged robots now walk more efficiently than humans

RAIBO2 marathon: total CoT 0.25 vs 0.37 human · Nature, Sep 2026

20 min

to train a rough-terrain walking policy on one GPU

Rudin et al., CoRL 2021, ETH/RSL

3 m/s

learned running on soft beach sand

Choi et al., Science Robotics 2023

-93%

battery pack cost since 2010, now ~\$108/kWh

BloombergNEF 2025

Possible Use Cases

PERPETUA



1 Planetary Exploration

→ Exploring vast, remote terrain beyond the reach of conventional rovers



2 Environmental Monitoring

→ Collecting environmental data across large and inaccessible areas



3 Search & Rescue

→ Reaching hazardous locations to locate and support people in need



4 Remote Logistics

→ Transporting equipment and supplies across rough, roadless terrain

System Capabilities

PERPETUA

1 Long Range Autonomy

2 Regenerative Walking

3 Solar Recharging

4 Energy efficient
Locomotion

5 Intelligent Battery
Management

The Project

PERPETUA

PERPETUA is part of the third-year Focus Project organized by the Department of Mechanical Engineering at ETH: a student team takes a product from a broad idea to a functional system in under a year, coached by the **Robotic Systems Lab at ETH Zurich**.

10

mechanical engineering
students

10

months from idea to
working robot

1

functional robot, built
fully in-house

2.6.2027

rollout event at ETH

The Team

PERPETUA



07/12 - ETH Focusproject 2026/27

ETH zürich

RSL
Robotic Systems Lab

The Team

PERPETUA



Akshahy Jeyaranjan



Philip Weidenbach



Felix Hattwig



Tim Stark



Julia Wagner



Jackson Wang



Andri Sauer



Lilith Giuliani



Matteo Giger



Daniel Popovici

Supervisors

PERPETUA



Marco Hutter,
Full Professor at RSL



Tanaka Yusuke,
Postdoc at RSL



Filip Bjelonic,
PhD Student at RSL



Victor Klemm,
PhD Student at RSL



Clemens Schwarke,
PhD Student at RSL



Oliver Fischer,
Researcher at RSL



Elena Krasnova,
Researcher at RSL



Emilio Palma,
Researcher at RSL



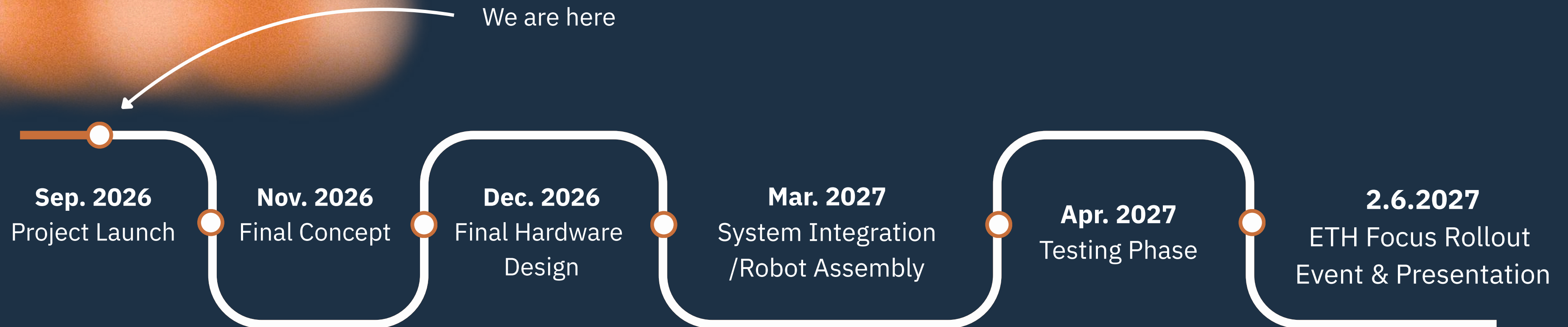
Konrad Meyer,
Technical Advisor



Ennio Schnieder,
Student Coach

Timeline

PERPETUA



Sponsoring

PERPETUA

As a sponsor, you can:

- support **innovative research and development**
- increase your image as an **attractive employer**
- get access to a **huge talent pool** of ambitious students.

You can support us through either **cash** or **in-kind sponsorships**, which are essential to the progress of our project.

Cash sponsorships count double, but we are also open to custom requests.

Categories	Bronze	Silver	Gold	Platinum	Diamond
Amount (CHF)	>100	>500	>2000	>5000	>10000
Logo on Website, ...	S	S	M	M	L
... Videos, presentations, flyers		S	S	M	L
Social Media Post		✓	✓	✓	✓
Logo on Clothing and Robot, ...			✓	M	L
... Project Slides				✓	✓
Presentation at Company Event					✓
Custom Text on website					✓

Contact

We are excited to discuss how your organization can partner with our project!

Contact us with any inquiries about our work, we are looking forward to your sponsorship suggestions.

Philip Weidenbach
Fokusprojekt PERPETUA

PERPETUA



ETH Zürich WWA D10.1
Wasserwerkstrasse 10
8092 Zürich, Switzerland



+41783412900



[linkedin.com/company/perpetuarobotics](https://www.linkedin.com/company/perpetuarobotics)



perpetua@perpetua.ethz.ch



[perpetua_eth](https://www.instagram.com/perpetua_eth)



perpetua.ethz.ch