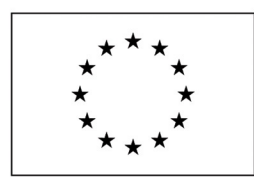


SER5 TEAM



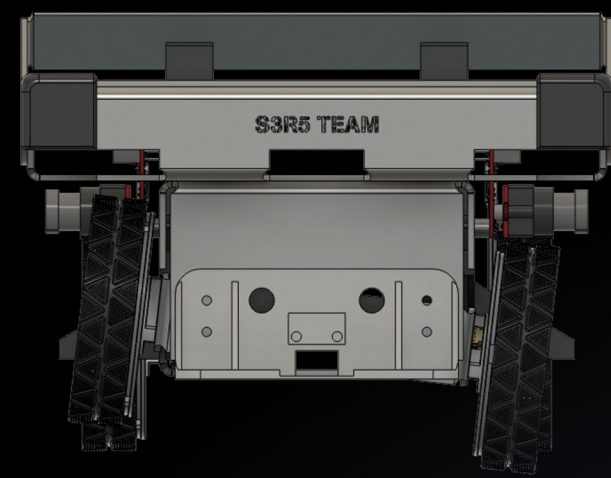
Co-funded by the
Erasmus+ Programme
of the European Union



CONTRON

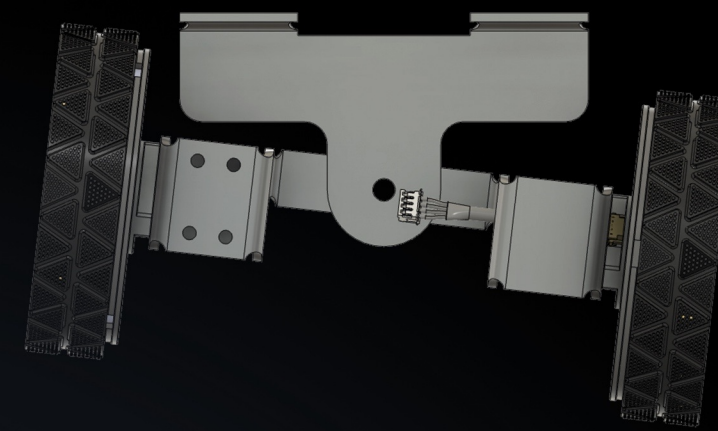
dem
Dravske elektrarne Maribor

LEDINEK POLIGRAM



OUR INNOVATIVE SUSPENSION

The front drive axle can rock left and right to adjust to different obstacles



HARDWARE

1

MCU

STM32F767ZI high-performance MCU running at 216MHz makes sure our robot adapts to the environment in real-time

2

MOTORS

DDSM210 brushless servo motors propel our robot throughout the maze with astonishing accuracy

3

DISTANCE SENSORS

ST's VL53L3CX ToF distance sensors are more resilient to strong ambient light, this allows our robot to detect every wall clearly

4

COLOR SENSOR

TCS34725 color sensor can measure color in under 3ms, alerting our robot in case of a black tile

5

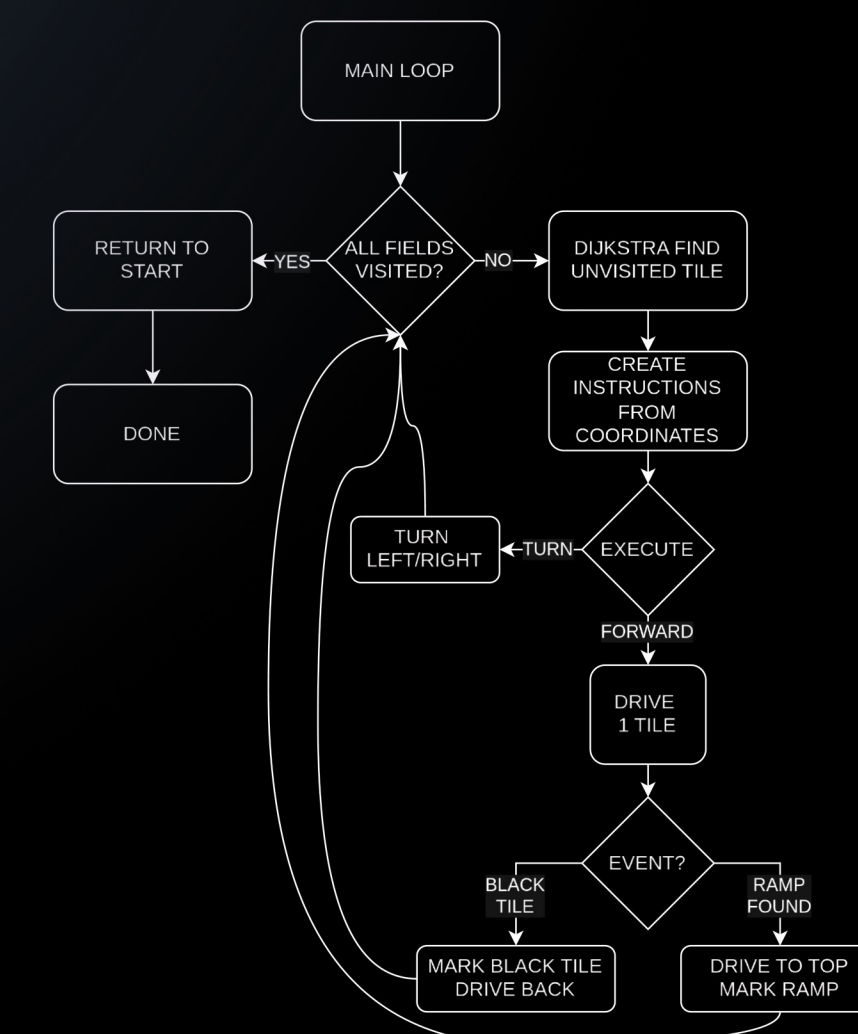
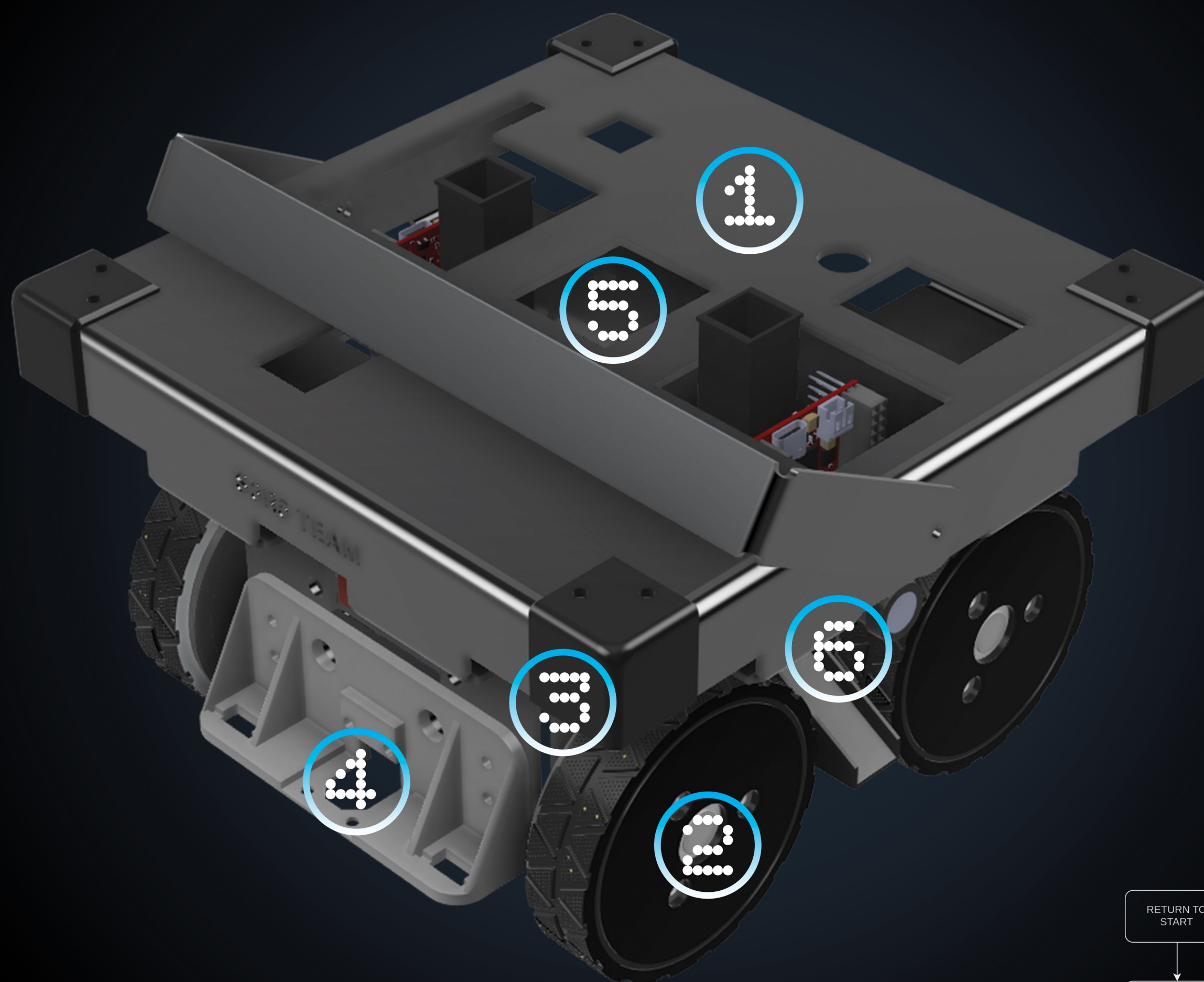
IMAGE RECOGNITION

A dedicated Raspberry Pi 5 separates the image recognition pipeline from the rest of the logic, allowing for uninterrupted driving

6

CAMERAS

Two Raspberry wide camera module 3, both running at 30 fps can see and detect a victim no matter where it is

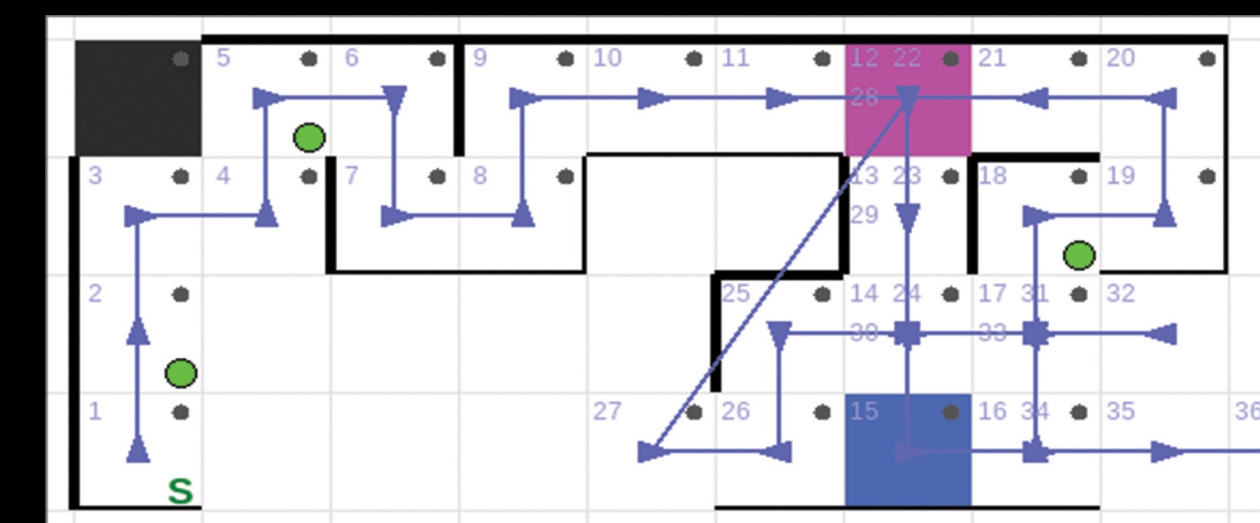


OUR FOUNDATION

Our software stack consists mainly of C++ due to its performance and manual memory control, as well as python for image recognition. This allowed us to focus on optimizing the core functions and use advance detection models for victims.

OUR CORNERSTONE

Our robot excels with its cutting-edge mapping and pathfinding! It uses time-of-flight distance and color sensors to scan the maze, stores the data in a 3D matrix, and applies Dijkstra's algorithm to find the optimal path, assigning higher cost to blue tiles for smarter navigation.



OUR LEGACY

SER5 TEAM has been building robots and competing with them since 2012. We are a group of students dedicated to creating advanced robotics solutions and representing Slovenia at international competitions like RoboCup

TEAM MEMBERS



Tadej Božičko

Team Lead | Hardware Engineer

Tadej has been with SER5 for three years, he designed custom PCBs, the chassis and other hardware. He also helped with the drivers for sensors and motors.



Mark Ptičar

Software Developer | Website Manager

Mark is a new member of the team. He manages our website and sponsors, to secure funding for our robot. In addition, he helped with the robot's software.

SOME OF OUR ACHIEVEMENTS

- 2013, World Cup in Eindhoven, 1st Place
- 2015, World Cup in Hefei, 3rd Place (Cospace)
- 2018, World Cup in Montreal, Innovation award
- 2022, European Cup in Guimarães, 1st Place (Cospace SuperTeam)
- 2023, European Cup in Varaždin, 1st Place (Cospace Advanced)
- 2023, European Cup in Varaždin, 1st Place (Rescue Simulation SuperTeam)

