ROBOT UPRISING: ARTIFICIAL INVADERS

COMPETITION RULES
Updated 18.06.2019. Changes are still likely

GAME LOGIC
The game is played between two teams battling each other in short 3 round showdowns. Each team has two autonomous robots playing for their side at a time. All teams start with base points that they can either try to increase or protect to win the tournament. The points are increased by collecting positive energy cores to the mothership and the points are lost by receiving negative energy cores or by receiving other penalties.

If the mothership receives 3 negative energy cores the mothership is destroyed and the opponent wins. If both motherships are alive at the end of a tournament, the mothership holding greater energy status will over power their opponent and win. In case of a tie, the team that collected their points fastest, wins.

STARTING SETUP
The game is played in a square-shaped 4x4m arena with multiple energy cores located at the center of the arena. Two sides of the arena will function as motherships, one for each team. At the start of each showdown the competing robots are placed to the motherships. Injured robots will also return and start again from the motherships.

ENERGY CORES
Energy cores are presented in the challenge as light and hollow objects in the area - each worth of different amounts of points. Energy cores are round objects that the robots are able to push and also lift if additional arms are attached to the robot. Robot are allowed to captivate only one energy core at a time. Free pushing of multiple energy cores at the same time is allowed. Different energy cores:
- Yellow (positive points)
- Green (negative points)

MOTHERSHIP
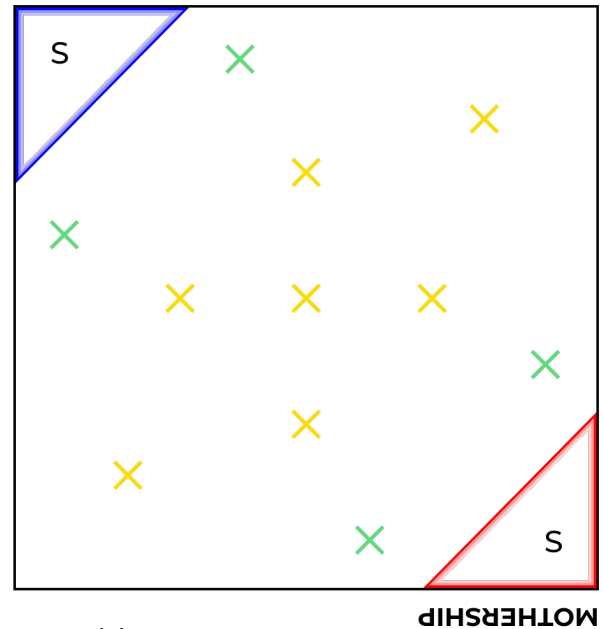
X = Positive energy cores
X = Negative energy cores
S / S = Energy scoring areas. Robots starting positions are in front off scoring area, between negative cores.

PENALTIES
If a robot breaks down, gets tilted etc and the team wants to pull their robot out of the game arena during an ongoing round, the team will lose points from their mothership. After the pull-out the robot can return to the arena from the mothership starting position. Note that the time of the ongoing round won't stop while team is fixing their robot.

TEAM QUALIFICATIONS
The game takes in teams of 4 to 8 programmers. Teams will be accepted to the competition based on their applications and their participation to the first phase of the game. Application and the aiding pre-challenges are open until 1st of September 2019.
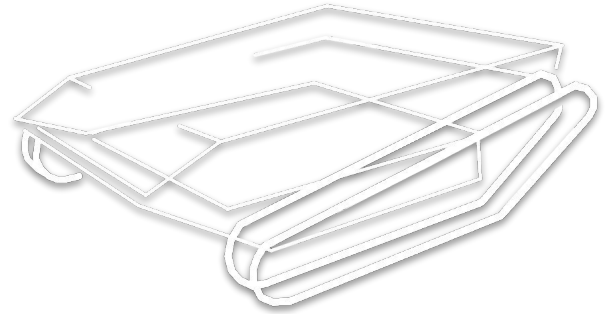
ROBOTS

Artificial Invader provides the competitors with robot base kit that will consist of:

- A tank-like drive unit with two motors and tracks. Speed 1m/s
- An Arduino-based controller board
- A Raspberry Pi Zero
- Batteries

The base is a combination of standard parts and 3D printed parts, making it completely customizable. Robots will observe the game arena through an overhead camera stream but teams are allowed to add additional sensors if they want. The use of the provided robot kit is recommended but if a team wants to build a robot of their own from scratch that is also allowed.

Teams are allowed to customize the given robot kit with additional parts, including weapons, tools, and sensors and we'll help teams with this by arranging custom workshops. Teams will be responsible for programming any hardware that they add.

GUIDELINE

The organizing team will inspect all robots before the tournament but the teams are themselves responsible for the safety of their robot. The general principle for the robots to follow is that the robot should not cause any harm of humans, arena or game infrastructure. The robot can be denied by the organizers even if it follows the listed rules but is somehow seen as a threat to the audience or the tournament functions.

Please confirm with the organizing team at info@robotuprising.fi if you are planning something out of the box.

ROBOT RESTRICTIONS

- No harm to the game infrastructure like wifi destruction etc
- No easily flammable materials to the robot trunk (wood is ok)
- No easily fragmenting materials like thin glass
- No combustion motors
- Maximum weight for a robot 3kg
- Robot and all attached equipment or weapons must fit into a 40 cm³ cube at the start of the round
- Permanent magnets and electromagnets are allowed if they don't cause radio interference
- Robots must contain a kill switch that cuts off all power, hydraulics, and pneumatics from the robot's armament and drive motors.

WEAPON RESTRICTIONS

- No sharp blades or spikes like surgical or razor blades
- No fine powders like flour etc
- No fire or strong heat
- No radiation or strong lasers that can cause harm to top-down camera or audience
- No liquids like water, glue, acids or batteries containing liquids
- No pneumatic force or Emp pulse