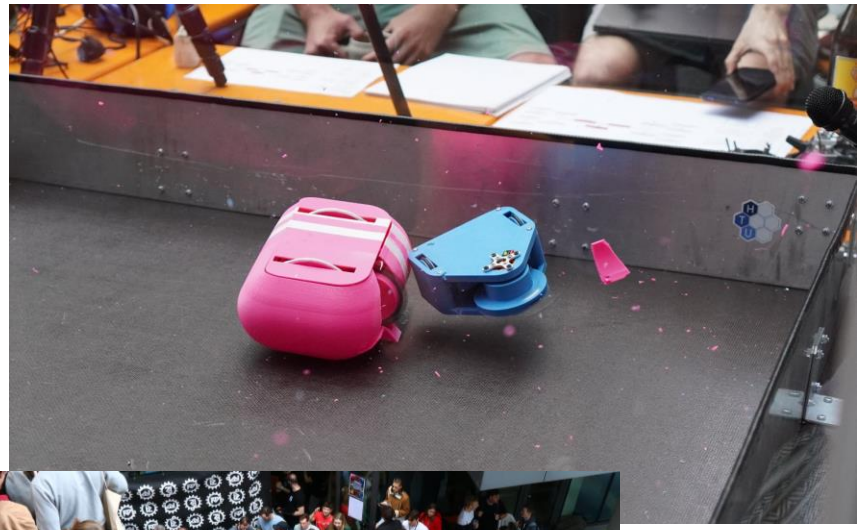

RoboFetz

RoboFetz 25/26

Infoabend am 16.10.2025

What is RoboFetz all about?

- Robot fights, famous from series like “Battlebots”
- The idea comes from American universities
- 1 vs 1 fights in specifically built arena
- Building remote controlled or autonomous bots at the TU
- Project of the RoboFetz association and TU Wien, with support of the Faculty of Mechanical and Industrial Engineering & FSMB-VT



What is your job?

Build a robot

- Design and assemble a fully functional robot
- Apply engineering principles, creativity, and teamwork throughout the development process
- Ensure compliance with competition rules and technical requirements

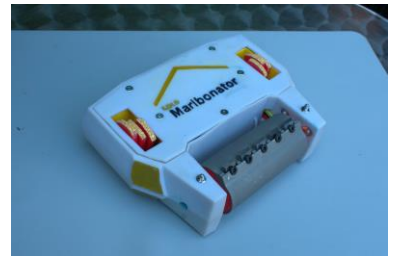
Compete

- Show off your bot's capabilities
- Challenge other teams in regulated matches in front of a large audience
- **Have fun!**
- Compete for the title of RoboFetz Champion


Da
Rules

What kind of bots can fight in RoboFetz?

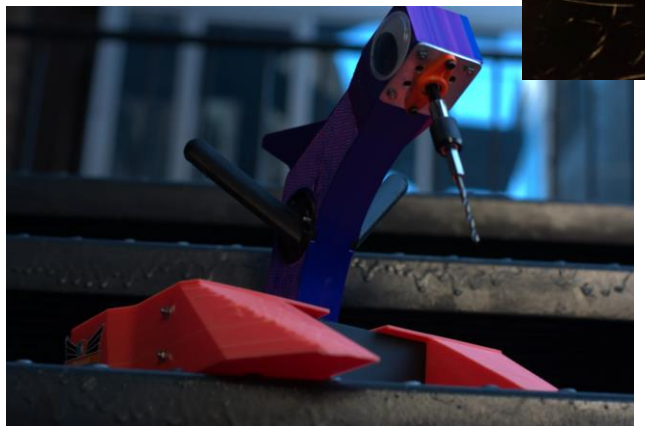
- Regular weight limit: 515 g
  weight of a common can of beer
  (beer can class)
- Wine bottle class: 775 g (approx. x1,5)
  flipper, grabber, driller or heat weapons,
  overhead saw and melty brain
- A weight of 1030 g is allowed for bots which use alternative ways of locomotion; for hammer- or punching-bots as well as autonomous bots



Weight classes (775g)

Class	Beer Can (515g)	Wine Bottle (775g)	Double (1030g)
Build	Regular bots	• Flipper or grabber • Driller or heat weapons • Overhead saw • Shuffler or melty brains	• Bots with alternative locomotion • Hammer or punching bot • Autonomous bots

- **Flipper:** ability to catapult opponents through the air
- **Grabber:** use arms to lift opponents out of arena or control robots and deal damage with secondary weapon
- **Driller:** weapon is a drill; it must be able to drills holes



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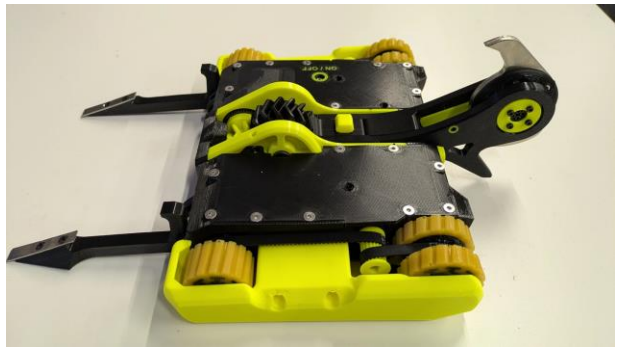
- **Heat weapons:** heat-based robots use soldering iron or similar heating elements to damage or melt opponent
- **Overhead saw:** A spinning weapon mounted on a moving arm strikes opponents with controlled swings



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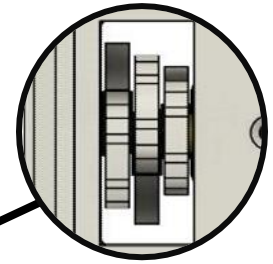
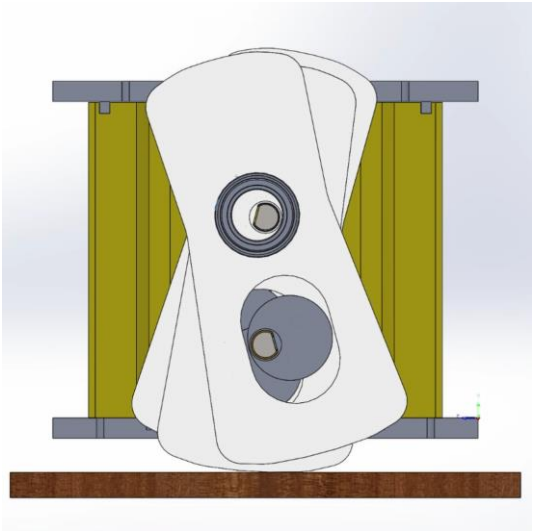
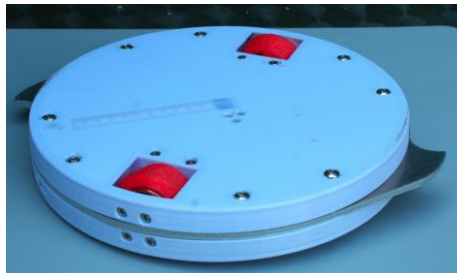
- **Shuffler:** Has a simple alternative drive consisting of translatory moving blocks driven by a rotary shaft
- **Melty brain:** the whole robot spins, it uses translatory drift for locomotion, for example through counterrotating motors







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- **Bot with alternative drive:** Does not move with electrically powered wheels, belts, treads or similar rotating drive trains. (e.g. walkers, jet propulsion, bristle bots..)

- **Hammer or punching bot:**
  - Uses a hammerhead in a hammering motion to do damage (no spinning parts)
  - Weapon can punch holes into opponent or catapult opponent away

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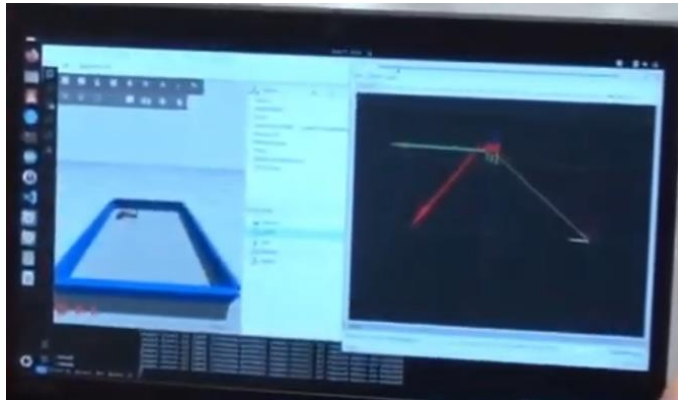
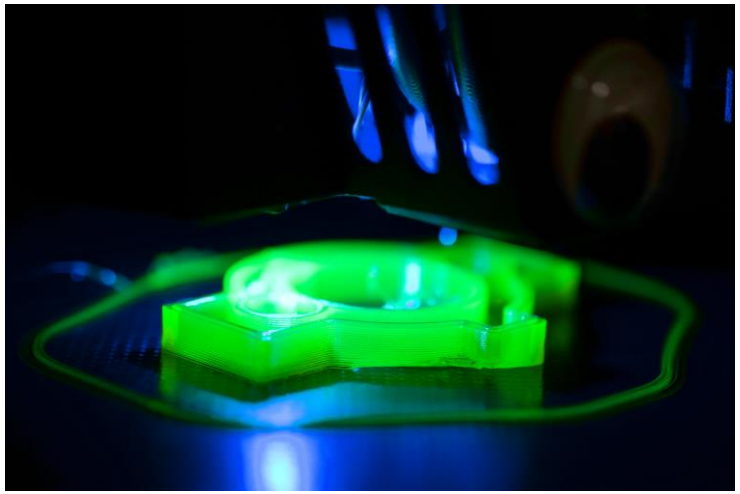
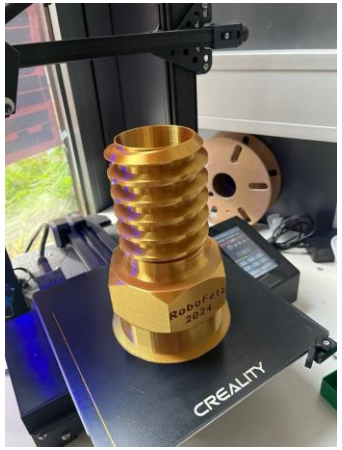
- **Autonomous robots:**
  - Can move completely independently without manual control
  - Detects and attacks opponents autonomously
  - Only remote-control emergency shutdown
  - Idle mode
  - Fight mode



What are the robots made of?

- Permitted materials: PLA, PLA+, PETG, TPU & Resin (only 3D printed)
- Exceptions: electronics, screws, bearings, ...
- Most important exception: weapon
- Prohibited materials: carbon, glass fiber

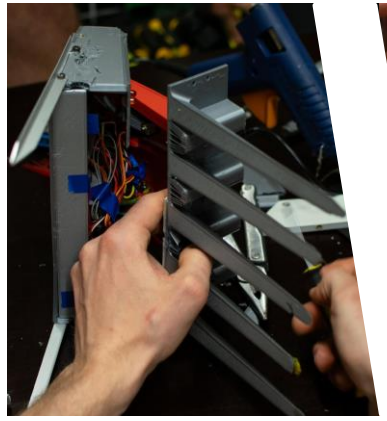


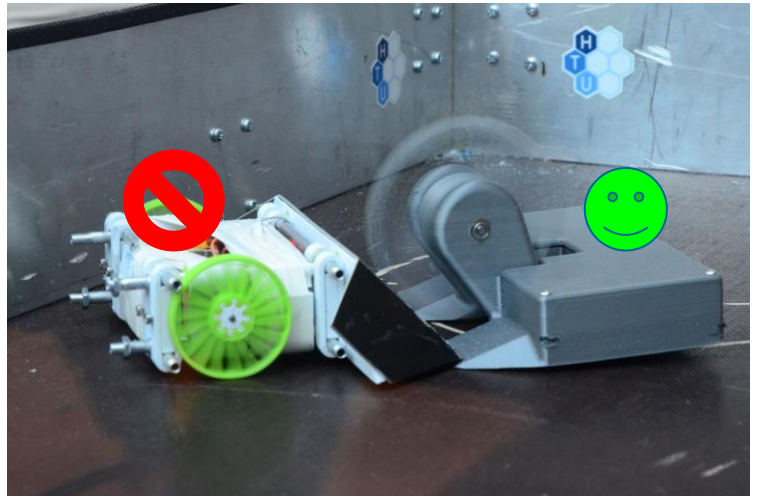


What kinds of weapons are allowed?

- A weapon must deal damage or otherwise incapacitate the enemy
- Weapons can be built out of metal
  Max 150g
- Drive and weapon can be combined, all other criteria still apply
- Heat weapons without open fire are allowed

Every bot needs to be able to move in a controlled manner and must have a weapon!





Multiple weapons

- Robots may have more than one weapon system
- Limit of 150g still applies
- To receive a weight bonus for main weapon:
  - Main weapon must make up at least 2/3 of all weapon metal
- No extra weight bonus for secondary weapons
- Only one bonus can be applied – bonuses don’t stack
- Robot still allowed to compete as long as one weapon still functions, but:
  - Failed weapon system counts as “severe damage” in judges' score

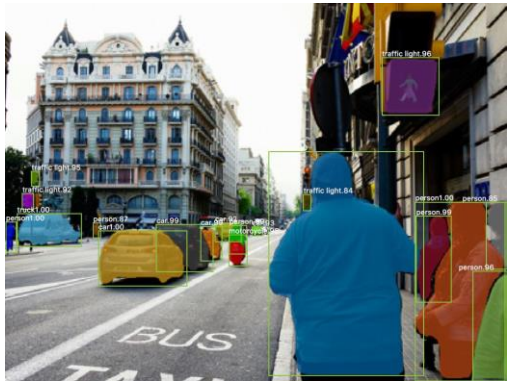
What kinds of weapons are prohibited?

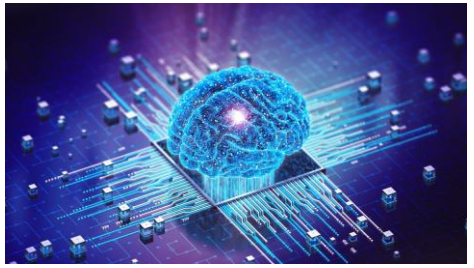
- Flame throwers
- Electromagnetic/chemical weapons
- Weapons whose primary purpose is blocking the opponent's locomotion (glue, nets, jammers, ...)
- Weapons that are potentially able to destroy or circumvent security measures (bullets, lasers,...)
- Batteries with more than 16V

In case of doubt, *please* ask!

External Means

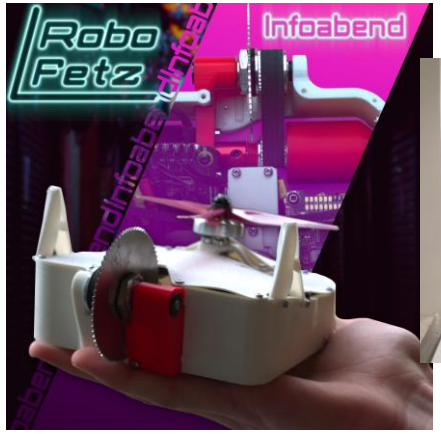
- Every bot is allowed to use external means
- Only full steering autonomy warrants weight bonus
- Camera / notebook with navigation software
- Data transfer and external computing is allowed
- We will provide cameras, but you can bring your own
- Rapid installation and dismount of necessary equipment
- May not be attached to the floor of the arena (fighting area)

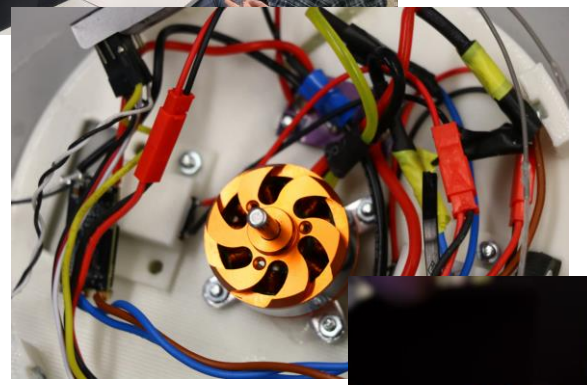


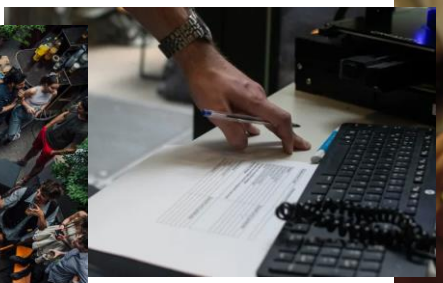


Timeline

- Kick-Off (today)
- Workshops
- Electronics kit distribution
- Build your bot
- Design review and approval
- Event
- Protocol (grades)



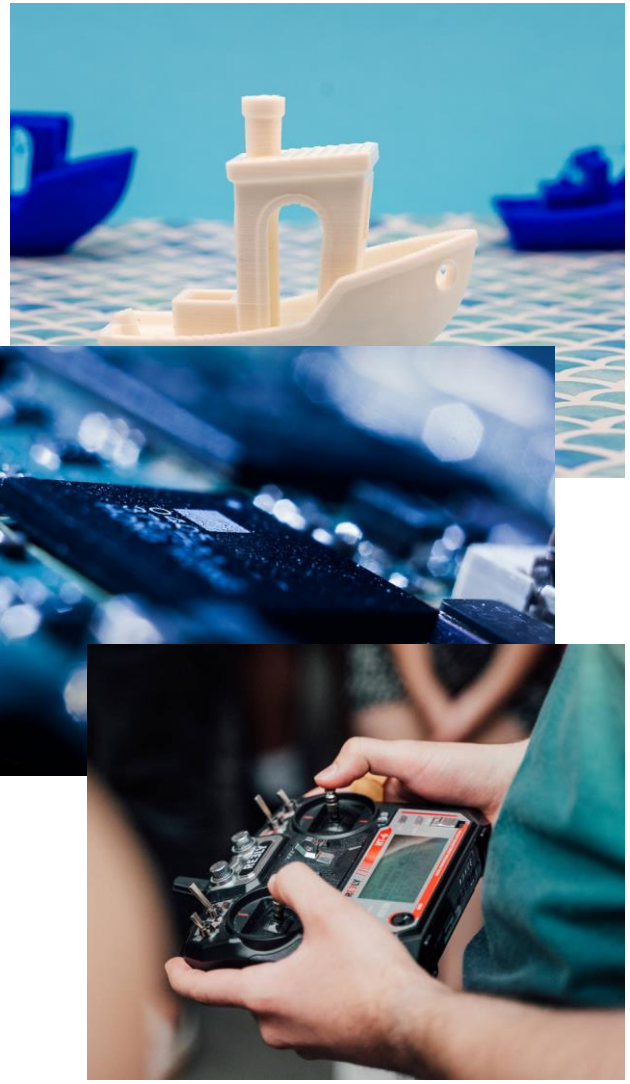




Workshops

Provide all necessary knowledge for bot building.

- Introduction to electronic tinkering [23.10.2025]
- 3D-Printing [06.11.2025]
- Electronics [20.11.2025]
- Lessons learned and yet to learn [04.12.2025]
- ESC-Tuning [January 2026]
- Event procedure and judges guide [March 2026]



Building phase

- Craft nights:

  for info, feedback, tips and communal tinkering

- Technical approval

  Validation of rule compliance, weight and safety precautions:

  On-/Off-Switch, Failsafe, Security-Pin

  (Deadline: 1 week prior to event)

Activating weapons is forbidden outside of the arena or test-box!
Violation of this rule can lead to injury and *will* lead to disqualification.

Craft nights

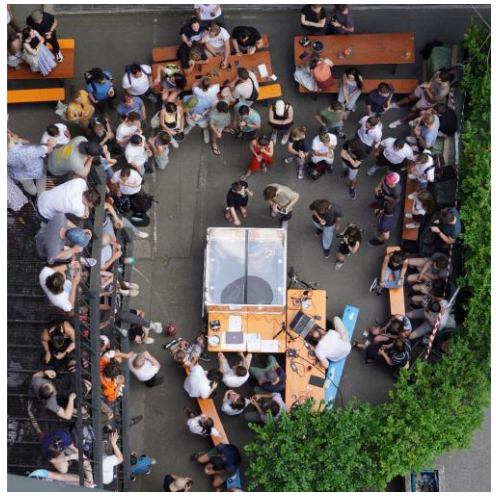
- Thursday evening, starting 18:00
- We provide technical advice, rule explanations, …
- At FSMB
- Arena for testing your bots
- Meet with other teams
- Tools and materials are available

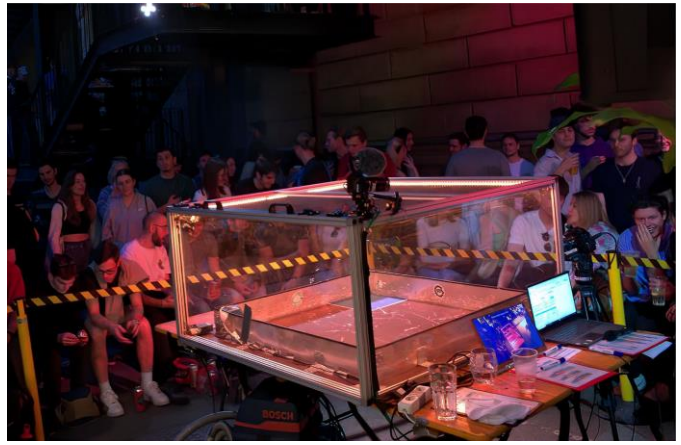
The Tournament [27.03.2026]

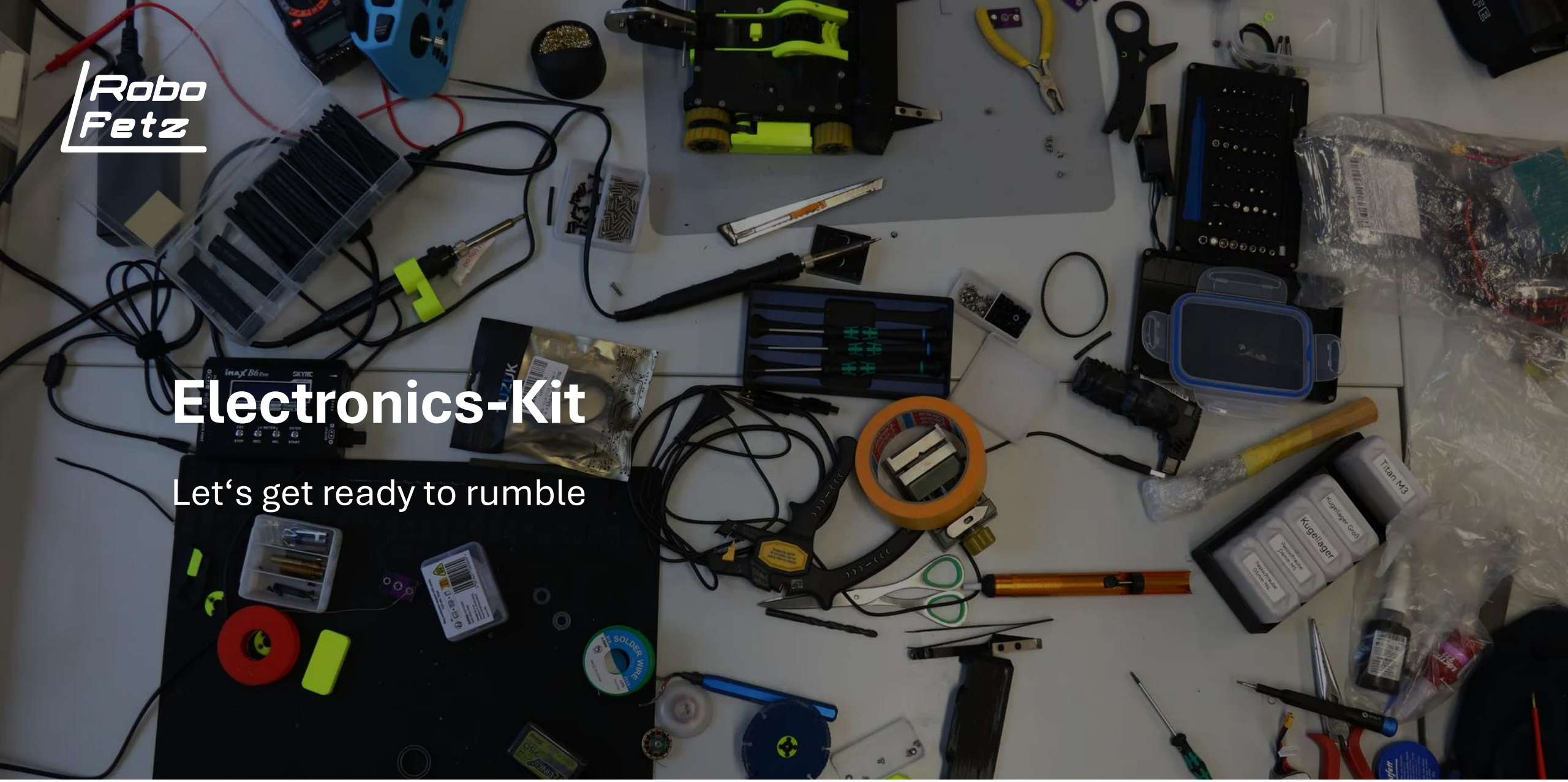
- Bots compete in 1 on 1 fights

  Sometimes the tournament structure necessitates exceptions

- Tournament with group stage and knock out stage
- A match lasts 3 minutes or ends earlier with K.O.
- In case of no K.O. → judges' decision based on:
  - Damage [5 points]
  - Aggression [3 points]
  - Control [3 points]
- Repairing bots between fights is allowed





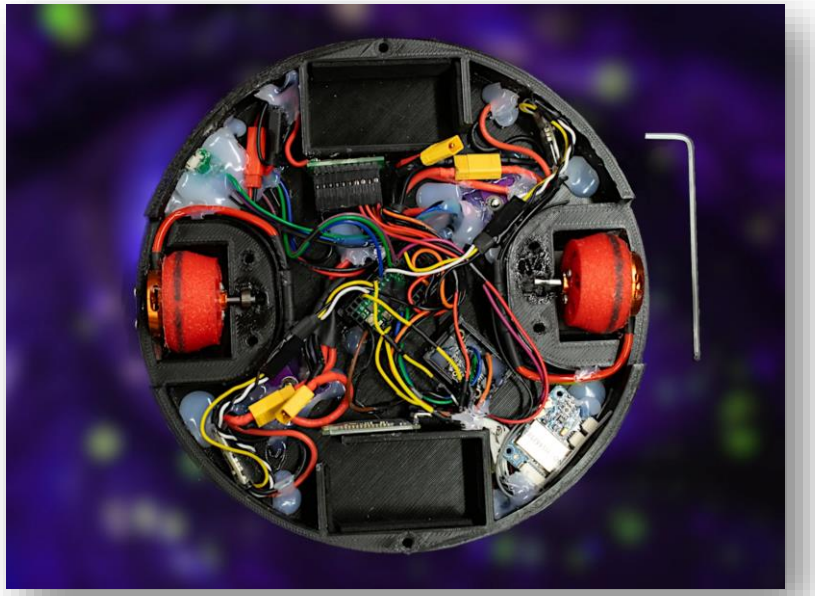


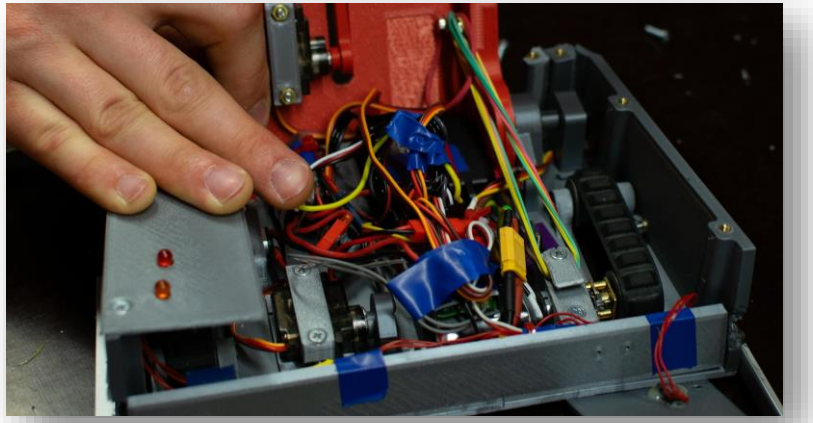
Electronics-Kit

Let‘s get ready to rumble

RoboFetz Electronics-Kit

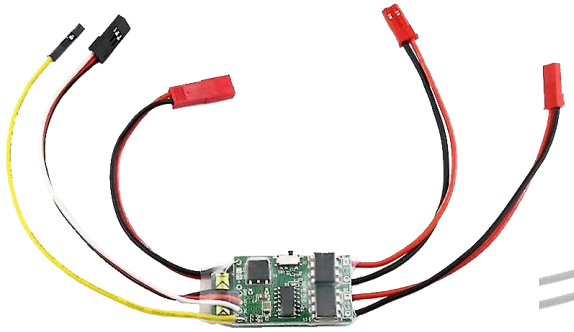
- Each team receives a complete electronics kit
- Parts carefully selected and tested
- Includes all necessary components for building a bot
- Designed to save time and make building easier
- Free of charge, only a 35€ deposit required
- Damage during fights or while testing?
  → No problem
- You are allowed to use your own parts

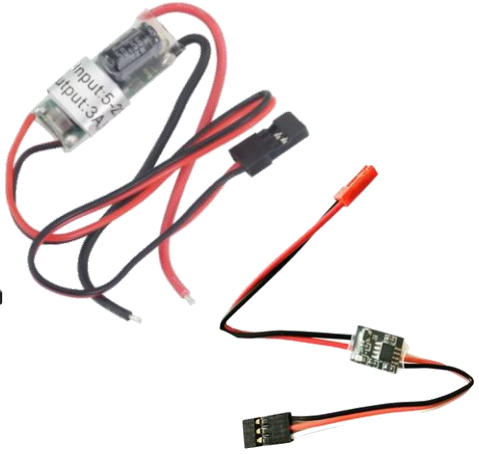




The components

- Weapon motor
- Weapon ESC
- Drive motors
- Drive ESC
- Radio receiver
- LiPo battery
- On/Off Switch
- Servo (optional)
- BEC (optional)
- RC switch (optional)

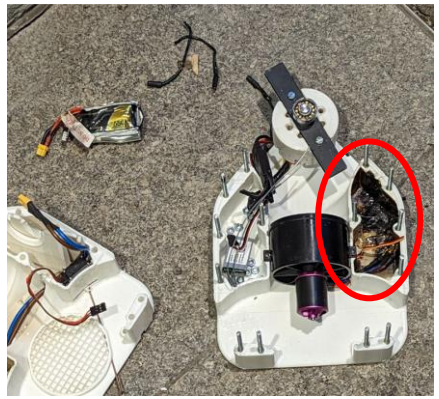


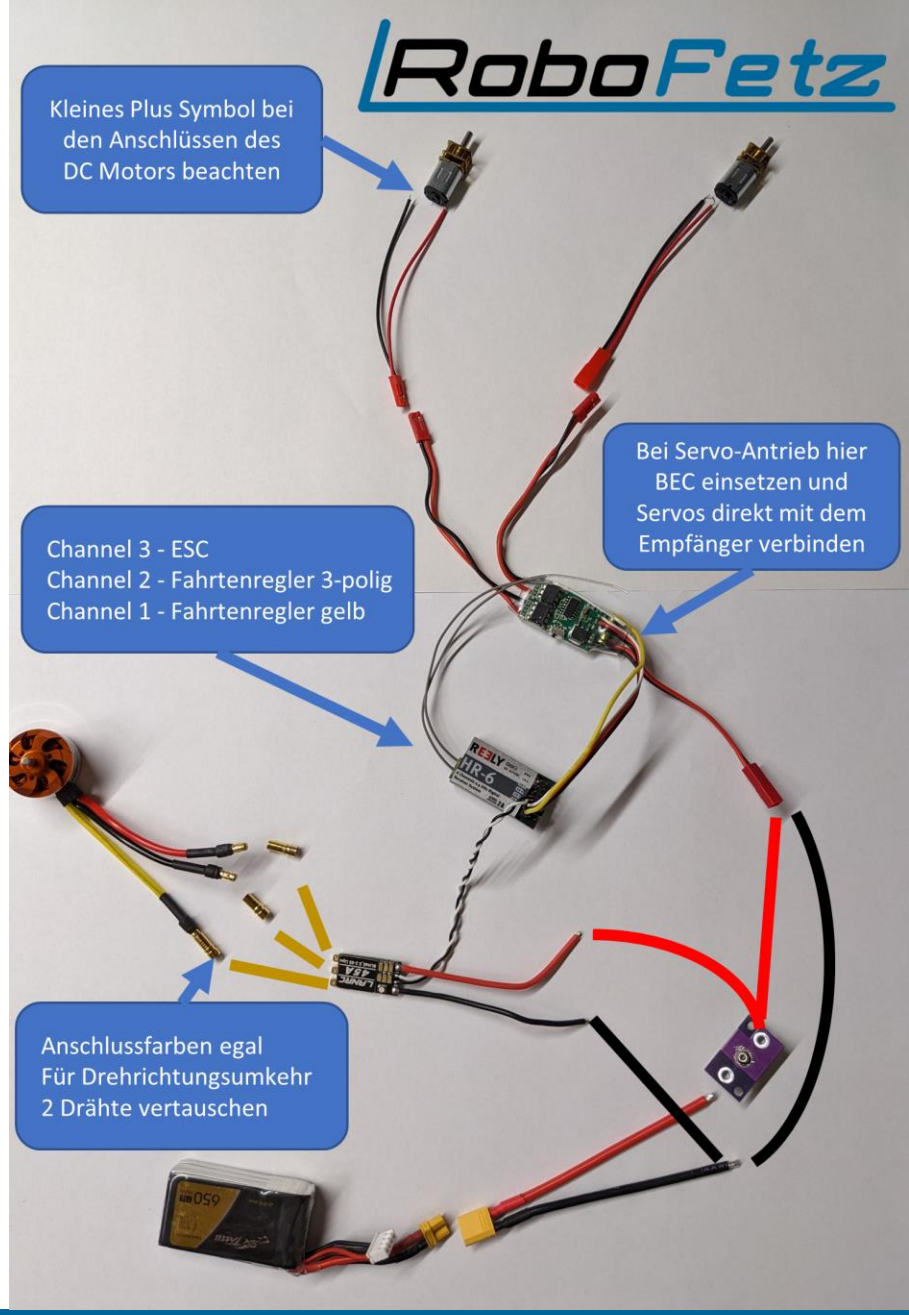


FOR FURTHER INFORMATION VISIT THE ELECTRONICS WORKSHOP OR OUR WEBSITE

How to put it together

- Color-code wires in red & black for troubleshooting efficiency
- Rotational direction can also be configured in the remote control
- For CAD-Drawings always measure the actual parts for optimizing tolerance
- Connect only one power source to the receiver
- Battery maximum charging rate: 1A/10W





Remote controls

- One for every team available
- Not part of the electronics kit
- Can be used at the FSMB, but not taken home
- We provide help with the setup

Electronics-Kit summary

Part	Function	Quantity	Weight [g]	Price*
D2826 / D3530 BLDC Motor	Weapon motor & mount	1	56 / 74	20€
Micro geared motor 6V 500rpm	Drive motor	2	20	each 5€
Tattu 650 mAh LiPo 11.1 V	Battery	1	54	15€
AM32 40A ESC	Weapon controller	1	8	20€
iA6 6CH 2.4G Receiver	Radio receiver	1	7	15€
RC Brushed ESC	Drive controller	1	14	15€
Switch board	On/Off switch	1	1	2€
		Total		97€
Optional				
BlHeli 45A ESC	Old weapon controller	1	6,6	15€
RC Switch 5V	RC switch for 5V 2A	1	3	10€
RC Switch 30V	RC switch for 30V 20A	1	5	10€
Servo	Actuator motor	1	12	5€
BEC	Voltage converter	1		10€

*prices may vary

3D-printing

- **FSMB-Printer**
- Price: 5 Cent per gram printed
- 235x235x250mm build volume
- Other printers can be used
- Permitted materials:
  - PLA & PLA+
  - TPU
  - PETG
  - Resin

Print soon enough!

RoboFetz Lecture

- 3 ECTS
- LVA sign-in in TISS until *30.11.2025*
- Group sign-in in TUWEL
- Limited to 5 members per team
- Repeated participation possible
- TUWEL: dates & deadlines, materials, etc.
- Protocol:
  concept, organization, tournament, reflection

Communication and contact information

For everyone

- WhatsApp-Group
- Website
- In person: workshops, craft night, ...
- Email addresses:
  - robofetz@fsmb.at
  - kontakt@robofetz.at

For the lecture

- TUWEL
- Email addresses:
  - florian.gaessler@tuwien.ac.at
  - florian.schatteiner@tuwien.ac.at

For joining the organization and contributing to the project

- Ask us
- Email address:
  - kontakt@robofetz.at

Useful Links

- Our website:
  https://robofetz.fsmb.at
- Highlights and streams of old events:
  https://www.youtube.com/@robofetz
- Battlebot tech website:
  http://runamok.tech/AskAaron.html
- RioBotz Combat Robot Tutorial:
  riobotz-combot-tutorial-pdf
- Hackspace:
  https://metalab.at/

Robo Fetz

A big thank you to our supporters!

TU WIEN TECHNISCHE UNIVERSITÄT WIEN

Dominik Hajek

ANDRITZ

Questions?

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