

# HTWK Robots RoboCup 2024 Qualification Document

HTWK Robots

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<https://htwk.bot/>

## 1 Team Information

Team Name	HTWK Robots
Team Leaders	Rico Tilgner
Team Contact Email Address	<a href="mailto:naohtwk@gmail.com">naohtwk@gmail.com</a>
Team Website URL	<a href="https://htwk.bot/">https://htwk.bot/</a>
Country of Origin	Germany

### 1.1 University Affiliations of the Team

All team members are affiliated with HTWK Leipzig (Leipzig University of Applied Sciences).

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Karl-Liebknecht-Straße 132  
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### 1.2 Team Members

- |                    |                     |
|--------------------|---------------------|
| – Rico Tilgner     | – Max Polter        |
| – Thomas Reinhardt | – Lea Kunz          |
| – Stefan Seering   | – David Schulte     |
| – Tobias Kalbitz   | – Max Liebing       |
| – Michael Wünsch   | – Johann Straube    |
| – Florian Mewes    | – Khanh Xuan Nguyen |
| – Tobias Jagla     | – Lennard Peters    |
| – Marvin Jenkel    | – Narek Mosisian    |
| – Felix Loos       | – Frejdis Jurkat    |
| – Eric Behrendt    |                     |

### 1.3 Supervising Professors

- Jens Wagner
- Oliver Crönertz

## 2 Code Usage

Since 2021 we adopted the base image build process published by team Nao Devils.

We don't anticipate to use any code from other teams in 2024.

## 3 Own Contribution

We are reworking our team strategy and are developing an acoustic communication protocol to enable partial real-time collective reasoning. Working off of key perspectives from linguistics and harmony theory such as impoverishment (information encoding) and sequential co-articulation redundancy (message sequencing) we try to layer safe-guarding strategies against intra-protocol interference and general signal disruption. The overall goal is signal integration and dynamic world model building and targeted active and passive updating. We intend to use our acoustic communication protocol at RoboCup 2024.

## 4 Past History

Team HTWK Robots plans to compete in RoboCup 2024 and RoboCup German Open 2024.

**Table 1.** RoboCup 2021 (1vs1).

Score	Opponent
10.5 : 5	NomadZ
15 : 10	Berlin United
13.5 : 2	UT Austin Villa
12 : 9	SPQR Team
19.5 : 18	B-Human

**Table 2.** GORE 2022 matches.

Score	Opponent
4 : 0	Nao Devils
5 : 2	RoboEireann
0 : 3	B-Human
6 : 0	SPQR Team
10 : 0	R-ZWEI KICKERS
10 : 0	R-ZWEI KICKERS
5 : 2	RoboEireann
0 : 4	B-Human

**Table 3.** RoboCup 2022 matches.

Score	Opponent
3 : 0	rUNSWift
7 : 0	Bembelbots
7 : 0	SABANA Herons
0 : 8	B-Human
8 : 0	Bembelbots
4 : 0	Nao Devils
0 : 4	B-Human

**Table 4.** RoboCup 2023 matches.

Score	Opponent
6 : 0	NomadZ
4 : 0	SPQR Team
7 : 0	Bembelbots
0 : 8	B-Human
3 : 0	rUNSWift
10 : 0	SPQR Team
4 : 0	HULKs
0 : 9	B-Human

**Table 5.** GORE 2023 matches.

Score	Opponent
5 : 1	Nao Devils
0 : 7	B-Human
8 : 0	Naova
7 : 1	Bembelbots
7 : 0	Dutch Nao Team
5 : 0	Bembelbots
2 : 0	R-ZWEI KICKERS
0 : 7	B-Human

## 5 Impact

Team HTWK Robots is involved in several activities with the goal of connecting our university with local school graduates. Schoolchildren are invited to visit and get to know our robots. We support the Roberta initiative [1] for improved MINT education. Exhibition matches are held at events like Lange Nacht der Computerspiele [2] and modell-hobby-spiel [3] to wake interest for RoboCup in young visitors.

## 6 Other

In the past, we competed under the name Nao-Team HTWK in RoboCup competitions.

## References

1. <https://www.roberta-home.de/>
2. <https://computerspielenacht.htwk-leipzig.de/computerspielenacht-start>
3. <https://www.instagram.com/reel/CjsEJCroUQM/?igshid=YmMyMTA2M2Y%3D>