

## **Invitation to the Oral Examination – Department CE**

For the occasion of his examination for a Doctoral Degree,

**Julian Hille**

will present his dissertation entitled

### ***Radar Signal Processing with Spiking Neural Networks and Resonate-and-Fire Encoding***

**on August 19<sup>th</sup>, 2024 at 10:00 am, room 00.12.019**

Attendance to the presentation is open to the public. The presentation will be in English.

The candidate, all members of the Examination Committee, and authorized examiners of the TUM School of CIT are invited to the presentation and subsequent oral examination.

The presentation and subsequent examination will take place in room 00.12.019 (CIT, Boltzmannstr. 3, 85748 Garching)

#### **Examination committee:**

Chair: Prof. Stefan Leutenegger

First Examiner: Prof. Alois Knoll

Second Examiner: Prof. Erwin Biebl

Garching, the 5th of August 2024

#### **Mailing list:**

Members of the examination committee

Doctoral candidate

#### **Abstract:**

This work introduces an efficient conversion of continuous signals into spatio-temporal spike events for spiking neural networks. We demonstrate the direct processing of sensor data streams with resonate-and-fire encoding in three real-world applications. In these applications, the encoding extracts the relevant signal components while suppressing noise. An appropriate spiking network successfully classifies the encoded spike trains by analyzing the spatio-temporal correlation of spikes.