Invitation to the Oral Examination – Department CE

For the occasion of his examination for a Doctoral Degree,

Mr. Mark Balazs Hilary Sagi, M.Sc.

will present his dissertation entitled

***Accurate and Lightweight Run-time Power Estimation and
Power Forecasting Models for Multi-core Processors***

on **11.09.2024** at **14:00 h**

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 a hybrid manner. **In
person** at the **TUM School of CIT, Main Campus, room N2128 (0101.02.128)** and
via **Zoom** under the following link:

https://tum-conf.zoom-x.de/j/62066272872?pwd=ZlrfXzvcnbj1sOghZaQKnLR1IdIaVW.1

Meeting-ID: 620 6627 2872
Kenncode: 925989

Examination committee:
Chair: **Prof. Dr. rer. nat. habil. Hans Michael Gerndt**
First Examiner: **Prof. Dr. Andreas Herkersdorf**
Second Examiner: **Prof. Dr.-Ing. Jörg Henkel**

Garching, **16th of August, 2024**

Abstract:

To maximize the performance of multi-core processors within power constraints,
accurate run-time core-level power information is needed. This thesis proposes novel
power models based on neural networks, nonlinear transformations and independent
component analysis. Run-time performance counters are used for dynamic power
estimation on current time epochs and forecasts for future epochs. The evaluation
revealed a decrease of 3.0% - 7.5% in relative RMSE compared to state-of-the-art
methods.