



## **Abschlussvortrag Masterarbeit Vera Stein**

„Formal Verification of ML-based systems in Avionics“

In recent years, many formal methods and tools for verifying ML algorithms have been developed. However, they are still in research stage and therefore it is difficult to determine how and to which extent one can use formal verification on a specific AI-based system. Due to the lack of guidance for applying formal verification approaches to ML-based systems, they are rarely used in safety-critical applications like avionics which leads to the development of new technologies being restricted in those areas. In order to solve these problems, this work provides a first step for closing this gap by presenting a framework that guides through different verification objectives and supports choosing the right tools for verifying an ML-based component. As preparation for the framework, the thesis also includes a systematic summary of state-of-the-art literature on formal verification of ML algorithms. The workflow of the framework will be demonstrated and validated with examples from the avionics domain. The goal of the framework is to contribute to making the integration of ML algorithms in safety-critical applications possible.

Betreuer der Arbeit: apl. Prof. Dr. Umut Durak (Institut für Informatik), Prof. Dr. Rüdiger Ehlers

Datum: Montag, 23. Oktober 2023, 13:00 Uhr

Ort: Online-Meeting über BBB

Link: <https://webconf.tu-clausthal.de/rooms/umu-2ey-ekt/join>