



Bachelor Thesis Work

of Choose title

Weltraumtauglich machen des IceBrain-1 IOT Rechners

Space Ruggedizing the IceBrain-1 IOT Node

Motivation:

Luleå University of Technology is heading to fly a series of AI in-orbit image recognition missions based on GOMSpace CubeSats. The payload consists of a camera with large focus-length optics, an Instrument control Unit (ICU), a reference AI image processor (IOT node) as well as a high-performance GPU AI image processor. Since most of these units descend from terrestrial – although industrial - computing infrastructure, they need adaptation and updates in hardware to endure launch and space conditions. One of these nodes is the AI image processing node (Internet of Things computer). More detailed material on mission, payload units is available.



Task description of the thesis work:

- Familiarize with the design of the CompuLab IOT computer (internal design details available).
- Design in CAD a new cooling top plate which is compatible with the GOMSpace satellite structure – cooperation with another student thesis at IRS.
- Get new top cover manufactured at IRS.
- Apply replacements of inner plastic and foam distance holders that are not compatible with outgassing requirements.
- Apply chip/connector fixings with ScotchWeld 2216 Epoxi glue.
- Reassemble all.
- Prepare and perform operations test in vacuum chamber.
- Document results carefully.

The thesis will be accomplished at IRS, Uni Stuttgart.

Internal supervisor: Hon. Prof. Dr. Jens Eickhoff

External supervisors: Prof. Dr. René Laufer

Starting date: 01.07.2024

Submission until: 31.12.2024

Acknowledgement of receipt:

I hereby confirm that I read and understood the task of the master thesis, the juridical regulations as well as the study- and exam regulations.

 Date
 Prof. Dr.-Ing. Sabine Klinkner
 (Responsible Professor)

 Date
 Prof. Dr. René Laufer,
 Ext. Supervisor: Luleå University of Technology

 Date
 Signature of the student

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IRS Professors and Associate Professors:

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