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Joint master program
Artificial Intelligence and Data Science
Deggendorf Institute of Technology and
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Your letter of	Phone	E-Mail	Date
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Master thesis evaluation

Dear exam committee,

I am pleased to provide an evaluation of the master's thesis titled "Predicting spectral channels related to mineralogy from CRISM spectral bands using deep learning" submitted by Aman Sahani as a part of the joint Master degree program in Artificial Intelligence and Data Science at Deggendorf Institute of Technology and the University of South Bohemia.

The Master's thesis under review focuses on the application of generative models, specifically diffusion models, to predict the Near-Infrared (NIR) spectral channel from an RGB+NIR image in the context of planetary science. The research is innovative and addresses a significant gap in the field of hyperspectral data analysis, particularly in the study of Martian surface composition. The student has demonstrated a solid understanding of the complex interdisciplinary concepts, including spectroscopy and the underlying principles of generative AI.

Mr. Sahini outlines clear objectives in the introduction. The literature review is comprehensive, adequately covering the foundational aspects of Stable Diffusion and relevant prior research. The methodological approach is well-documented, with clear explanations of data preprocessing and model implementation. The inclusion of intermediate results and alternative data reduction methods, although not fully justified, contributes to the work's overall rigor.

The results are well-presented, with appropriate use of metrics and evaluations. The discussion could benefit from deeper engagement with the subject matter to explore potential improvements. The summary encapsulates the main findings, and the suggestions for future research are constructive, though a broader contextualization within the existing literature would have strengthened the work.

Overall, the thesis is well-executed, with effective use of visual aids to support the narrative. The student's ability to adapt and implement the Stable Diffusion model for this specific application is commendable. While some areas could be expanded upon, the work provides valuable insights. I recommend a final grade of 2.7.

Sincerely,

Prof. Dr. Florian Wahl