Institute of Visual Computing

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To whom it may concern:

Taisiya Parkhomenko (matr. num. 01650051) contacted me regarding the bachelor project on the implementation of a skin disease diagnosis pipeline, which she would like to take as her bachelor thesis for the Biomedical Engineering degree. Here is the synopsis of the proposed project:

> "*Skin diseases affect millions of people in Europe each year. Diagnosis of skin diseases sometimes requires a high-level of expertise due to its diversity in visual appearance. As human evaluation can be subjective or hardly reproducible, to achieve a more objective and reliable diagnosis, a machine learning supported diagnostic system should be considered. In this project, we propose the implementation of a skin disease diagnosis pipeline capable of first discriminating between significant skin regions for further analysis, and then the detection and classification of different skin diseases. We propose to use neural networks trained on a subset from the DermaNet dataset (skin disease images), which would provide an initial uncertainty estimation strategy followed by a robust detector that is as lightweight as possible.*"

The proposed topic would be very suitable for the Summer Bachelor Program 2025. As her supervisor, I am interested in detecting and integrating new variants of skin diseases over time, as well as handling domain shifts. This thesis exploration of uncertainty-based methods would serve as support for moving towards a test-time adaptation pipeline. Taisiya has shown great initiative and interest in the topic and its adaptation with new machine learning techniques. She has enough prior knowledge in python programming to take the project and bring it to a successful conclusion within the time frame.

Therefore, I express my commitment to supervision, and recommend her election for the program.

Best Regards,
Marc Masana