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## Carl Zeiss AG

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Your contact: Dr. Steffen Urban

Your ref.:

Yours of:

Our ref.:

Date: 17.12.2022

To Whom it May Concern,

I have been the supervisor for Mr. Rather during his internship at the Carl Zeiss AG in Jena, Germany and it is my pleasure to recommend him with this letter. Mr. Rather worked for more than 1 year in our department (Research and Technology – Department for Engineering and Systems). We extended his initial 6 months internship contract, because we were very satisfied with his work. Apart from his excellent work ethics Mr. Rather integrated well into the project right from the beginning.

During his 6 months internship phase, Mr. Rather worked on creating a realistic simulation environment with the Unreal Engine and Microsoft AirSim to enable the creation of vibrational motion data for surgical microscopes. The simulation not only consisted of realistically rendered images of a scene but also inertial measurement unit (IMU) data like accelerations and angular velocities of the vibrating sensor unit.

In the second part of his employment Mr. Rather worked on his master thesis and strongly strengthened his scientific working skills. He developed different neural network architectures for deep video stabilization based on ground truth motion data. After training and evaluating his work on simulated data he successfully transitioned his algorithms to real motion data from a surgical microscope and evaluated his results.

In summary, I would highly recommend Mr. Rather as he

- is very motivated and keen to work on new applications and topics
- works autonomously and independent to find solutions
- has endurance to reach his goal even if there are obstacles
- can familiarize himself with new technologies very quickly

Please feel free to contact me with any other questions.

Sincerely

Dr. Steffen Urban  
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