Moritz Heep

Curriculum Vitæ

I am a PhD student at the University of Bonn in the field of Computer Science. My research focuses on the intersection of 3D reconstruction and Mesh Processing. In particular, I am working on photometric stereo techniques for the reconstruction of plants.

Education

Since 2020 **PhD Student in Computer Science**, *PhenoRob/University of Bonn*, Germany
My research under Eduard Zell focuses on
- combining Depth-from-Stereo and Photometric Stereo for detailed 3D reconstruction
- using Physically Based Rendering in Photometric Stereo

2017 – 2020 **B.Sc. in Mathematics**, *University of Göttingen*, Germany
Graduation in 2020 with an overall grade of "good" (1.9 on a scale from 1 to 5, 1 being the best)
- Thesis on "The Charge operator in Wightman theory" under Dorothea Bahns

2016 – 2020 **M.Sc. in Physics**, *University of Göttingen*, Germany
Graduation in 2020 with an overall grade of "very good" (1.4 on a scale from 1 to 5, 1 being the best)
- Thesis on "Local generators of global symmetries in quantum field theory" under Karl-Henning Rehren

2016 **Semester Abroad**, *McMaster University*, Hamilton, Canada

2013 – 2016 **B.Sc. in Physics**, *University of Göttingen*, Germany
Graduation in 2016 with an overall grade of "good" (1.9 on a scale from 1 to 5, 1 being the best)
- Project Course on "Neural networks for single-station weather forecasting"
- Thesis on "Aspects of new physics in top-quark pair production at hadron colliders" under Steffen Schumann

Professional Experience

Since 2020 **Research Assistant**, *University of Bonn*

2017 – 2020 **Teaching Assistant**, *University of Göttingen*
Tutor for exercise groups on 'Quantum Field Theory', 'Quantum Mechanics' and 'Calculation Methods of Physics'

09/2018 **Teaching Assistant**, *University of Göttingen*
Instructor of refresher courses on 'Analytical Mechanics' and 'Quantum Mechanics'

Publications

M. Heep and E. Zell, *An Adaptive Screen-Space Meshing Approach for Normal Integration*, Accepted at the European Conference on Computer Vision (2024)

M. Heep and E. Zell, *Image Segmentation from Shadow-Hints using Minimum Spanning Trees*, Special Interest Group on Computer Graphics and Interactive Techniques Conference Posters (SIGGRAPH Posters '24)

M. Heep and E. Zell, *ShadowPatch: Shadow Based Segmentation for Reliable Depth Discontinuities in Photometric Stereo*, Computer Graphics Forum, Vol. 41, No. 7. (2022)

Scholarships and Awards

2014 – 2020 **Student Scholarship**, *Konrad Adenauer Foundation*

2019 **Travel Grants for the DPG Spring Meeting**, *Wilhelm and Else Heraeus Foundation*

2024 **Third Place in the SIGGRAPH Student Research Competition**, *SIGGRAPH 2024, Denver, Colorado*

Skills

Languages German (Native speaker), English (Fluent), French (Basics)

Programming C++, Python, C#, Java, Basic

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