

*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