Alex Sheldrick

Munich, Germany
+49 157 7133 2918
alex.sheldrick@tum.de
alex-sheldrick.com
github.com/AlexSheldrick

Summary

An M.Sc. graduate from TUM, Munich, with a strong foundation in Physics from TUB, Berlin. Proficient in Python and PyTorch, I specialize in Computer Vision and Machine Learning research. With native fluency in German and English, I'm poised to excel as a Machine Learning Engineer.

Education

Master of Science | ***Robotics, Cognition, Intelligence*** 2023
Technical University Munich

Master of Science | ***Physics*** 2020
Technical University Berlin

Bachelor of Science | ***Physics*** 2015
Technical University Berlin

Experience

Research Intern Apr. 2021 – Mar. 2023
Prof. Nießner Visual Computing & Artificial Intelligence Group Munich, Germany

- Performed deep learning research for novel view synthesis and 3D reconstruction
- Achieved 50-90% reduction in images required for photorealistic novel views by using RGBD data
- Derived a novel RGBD loss for NeRFs that outperformed SoTA methods for scenes with opaque materials
- Reconstructed colored meshes from pointclouds and from single views

Esports Team Captain Feb. 2016 – Nov. 2020
Various, most notably: Tempo Storm, Diablous and ABC Multiple International Locations

- Founded and led an esports team, becoming World Champions in 2017
- Combined roles as player and manager, responsible for roster, scheduling and strategy
- Secured funding and sponsorships from VC-backed global esports organizations
- Represented the team in global tournaments, liaising with sponsors and stakeholders

Skills

Languages: German (Native), English (Native), Italian (C1), Spanish (B1), French (B1)
Programming: Python, C++
Frameworks: PyTorch, Lightning, NumPy, SciPy, Matplotlib, Pandas

Selected Machine-Learning & Computervision Projects

Neural Radiance Field Reconstruction with Depth and Normal Constraints. | ***Python*** Spring 2023
Technical University Munich

- Tackled view synthesis challenges using Neural Radiance Fields for sparse-view supervision
- Assessed the benefits of normal and depth maps as supplementary supervision signals
- Formulated a method leveraging additional depth data to consistently improve reconstruction quality
- Realized a 50-90% training data reduction for photorealistic reconstructions by incorporating depth information

3D Reconstruction: single-view colored mesh generation | ***Python*** Fall 2021
Technical University Munich

- Developed a 3D Convolutional Neural Network integrating both local and global features
- Utilized point-to-image plane projections for feature-map sub-selection
- Engineered the network to produce vertex-colored meshes from single images
- Surpassed state-of-the-art results with a 2.7% improvement in IoU and a 464% reduction in Chamfer-L1 distance

Object detection and pose estimation using Random Forests | ***C++*** Spring 2020
Technical University Munich

- Developed a C++ object detection pipeline using OpenCV, targeting three unique classes
- Employed Histogram of Oriented Gradients for feature extraction and utilized random forests for window classification
- Incorporated selective search for region proposals and refined results with Non-Maximum Suppression for bounding box determination

Achievements and Grants

Fellowship Grant Apr. 2021
Awarded to excellent Master's students to perform independent research in Visual Computing & AI

WoW Arena World Champion (Arena World Championship) Nov. 2017
Founded and led an esports team to victory in a premier tournament with a $280,000 prize pool

Publications

Nieto, P., Müller, D., Sheldrick, A., Günther, A., Miyazaki, M., & Dopfer, O. (2018). Effect of alkali ions on optical properties of flavins: Vibronic spectra of cryogenic m+lumichrome ions (m = li–cs) in the gas phase. *Phys. Chem. Chem. Phys.*, *20*, 22148–22158. doi:10.1039/C8CP03950J

Sheldrick, A., Müller, D., Günther, A., Nieto, P., & Dopfer, O. (2018). Optical spectroscopy of isolated flavins: Photodissociation of protonated lumichrome. *Phys. Chem. Chem. Phys.*, *20*, 7407–7414. doi:10.1039/C8CP00590G

Günther, A., Nieto, P., Müller, D., Sheldrick, A., Gerlich, D., & Dopfer, O. (2017). Berlintrap: A new cryogenic 22-pole ion trap spectrometer. *Journal of Molecular Spectroscopy*, *332*, 8–15. Molecular Spectroscopy in Traps. doi:https://doi.org/10.1016/j.jms.2016.08.017