Alex Sheldrick

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Summary

An M.Sc. graduate from TUM, Munich, funded by a fellowship grant, I specialize in Computer Vision and Machine Learning research. With a solid Physics foundation from TUB, Berlin, and proficiency in Python and PyTorch, I'm fluent in German and English and poised to excel as a Machine Learning Engineer.

Education

Master of Science | ***Robotics, Cognition, Intelligence*** 2023
Technical University Munich: School of Computation, Information and Technology

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 90% reduction in images required for photorealistic novel views by using RGBD data
- Derived a novel loss for NeRFs that outperforms SoTA methods for scenes with opaque materials
- Reconstructed textured 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 managed an esports team, becoming World Champions in 2017
- Responsible for roster, management and strategy
- Aquired funding from VC-backed global esports organizations
- Collaborated 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

- Addressed the challenge of view synthesis from sparse-view supervision using Neural Radiance Fields
- Evaluated the effectiveness of incorporating normal and depth maps as additional supervision signals
- Developed a method to enhance reconstruction quality across all cases using supplementary depth data
- Achieved photorealistic reconstructions with a 50-90% reduction in training views

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

- Designed and implemented a 3D Convolutional Neural Network with local feature and global features
- Feature-map sub-selection are generated by using point to image plane projections
- Network generates vertex-colored meshes from single images
- Achieved a 2.7% increase in IoU and 464% reduction in Chamfer-L1 distance over state of the art

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

- Created an object detection pipeline in C++ using OpenCV for three distinct classes
- Histogram of Oriented Gradients for feature extraction and random forests for classifying windows
- Adopted selective search for region suggestions and applied Non-Maximum Suppression for bounding box finalization

Achievements and Grants

Fellowship Grant Apr. 2021
Awarded to excellent Master's students to perform deep-learning research

WoW Arena World Champion (Arena World Championship) Nov. 2017
Founded and captained an esports team that won a premiere $280,000 Tournament

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