

Tobias Kirschstein

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RESEARCH PROFILE

- PhD candidate for 3D Computer Vision & Artificial Intelligence focusing on 3D Human Head Avatars
- Creator and maintainer of the NeRsemble multi-view video dataset of human faces
- Computer Science graduate specialized in Machine Learning with outstanding academic performance
- Technical lead in an interdisciplinary team of 5 students aimed at improving the aircraft maintenance process at Lufthansa CityLine partnering with Celonis
- Demonstrated willingness to take risks and openness to other cultures by working in Norway for a year

EDUCATION

Apr 2022 – Present	PhD Computer Science Expected date of graduation: March 2026	<i>Technical University of Munich</i>
Oct 2018 – Dec 2021	MSc Computer Science Final grade: 1.1 Thesis topic: <i>Flow-guided Side Supervision for Novel View Synthesis on Large Outdoor Scenes</i> Supervisor: Matthias Nießner	<i>Technical University of Munich</i>
Sep 2019 – Dec 2019	MSc Computer Science Study abroad, term WAM: 89/100 (Australian system, equivalent to an A)	<i>UNSW Sydney</i>
Oct 2014 – Sep 2018	BSc Mathematics Final grade: 1.1	<i>University of Passau</i>
Oct 2013 – Oct 2016	BSc Computer Science Final grade: 1.2	<i>University of Passau</i>

PUBLICATIONS

- Nov 2023 DiffusionAvatars: Deferred Diffusion for High-fidelity 3D Head Avatars
Kirschstein, T., Giebenhain, S., Nießner, M.
- Nov 2023 GaussianAvatars: Photorealistic Head Avatars with Rigged 3D Gaussians
Qian, S., **Kirschstein, T.**, Schoneveld, L., Davoli, D., Giebenhain, S., Nießner, M.
- Nov 2023 MonoNPHM: Dynamic Head Reconstruction from Monocular Videos
Giebenhain, S., **Kirschstein, T.**, Georgopoulos, M., Rünz, M., Agapito, L., Nießner, M.
- Aug 2023 NeRsemble: Multi-view Radiance Field Reconstruction of Human Heads
Kirschstein, T., Qian, S., Giebenhain, S., Walter, T., & Nießner, M.
SIGGRAPH 2023
- Jun 2023 Learning Neural Parametric Head Models
Giebenhain, S., **Kirschstein, T.**, Georgopoulos, M., Rünz, M., Agapito, L., & Nießner, M.
CVPR 2023
- Mar 2021 Language-Agnostic Representation Learning of Source Code from Structure and Context.
Zügner, D., **Kirschstein, T.**, Catasta, M., Leskovec, J., & Günnemann, S.
ICLR 2021
- Jul 2017 End-to-end learning for dimensional emotion recognition from physiological signals.
Keren, G., **Kirschstein, T.**, Marchi, E., Ringeval, F., & Schuller, B.
ICME 2017

SCHOLARSHIPS

- Oct 2013 – Sep 2021 **Max Weber-Programm Bayern**
Scholarship for highly talented students promoting personal development, interdisciplinary exchange, and networking
- Dec 2016 – Dec 2017 **ERASMUS+**
European funding program for international internships

RELEVANT EXPERIENCE


- Apr 2020 – Apr 2021 **Research Assistant for Machine Learning** *Data Analytics & Machine Learning Group, TUM*
- Designed a distributed preprocessing pipeline for multilingual Machine Learning experiments on Source Code
 - Implemented several Machine Learning models for comparison and improvement
 - Investigated research questions autonomously, discussed results and prepared findings for publication
- Apr 2020 – Aug 2020 **Interdisciplinary Project (IDP) – Data Innovation Lab** *Lufthansa CityLine & Celonis*
- Analyzed the current aircraft maintenance process and conceptualized an architecture based on relational graph convolutional networks for predictive process management
 - Constructed a new graph dataset containing maintenance cases extracted from a DB
 - Evaluated predicted performance against baselines, estimated respective cost saving potential and presented high-level findings to management
- Apr 2019 – Aug 2019 **Large-scale Machine Learning Project in NLP** *Technical University of Munich*
- Implemented and adapted state-of-the-art machine learning models in PyTorch for a large-scale Natural Language Processing task in a team of 3 students
 - Analyzed a dataset of 650 000 newspaper snippets and leveraged unlabeled data using semi-supervised Graph Convolution Networks
 - Communicated key findings to industry partner, reported weekly progress to course participants and presented final system on campus
- Jan 2018 – Mar 2018 **Software Development Intern** *Senacor Technologies AG, Nuremberg*
- Extended the AngularJS frontend and Java Spring backend of client's partner relationship management system, assisted users with new features
 - Improved reliability of system by writing unit, regression, and especially end-to-end tests with Cucumber
 - Assessed and discussed complexity of upcoming tasks in biweekly Sprint planning
- Dec 2016 – Dec 2017 **Software Developer** *Sportradar AS, Trondheim*
- Conceptualized software architecture for a new Java project; Conducted a complete test run under real conditions before going live
 - Fixed live systems under pressure; Developed, released, and monitored 5 new reliable and high-available software components for processing real time sports data
 - Facilitated software engineering process by creating developer tools and redesigning existing system
 - Coached and supervised a new co-worker during onboarding
 - Established and maintained contacts to other teams to clarify interdependencies

SKILLS

Tools & Technologies	Python, C/C++, Java, SQL, JavaScript, PHP, HTML, CSS, Git, PyTorch	<i>Experienced</i>
	AngularJS, Flyway, Spring, R, Linux, Tensorflow	<i>Intermediate</i>
Languages	German - native speaker	<i>Level C2</i>
	English - highly proficient in both spoken and written English	<i>Level C1+</i>
	Norwegian - solid communication skills	<i>Level B2</i>

REFERENCES

Prof. Dr. Matthias Nießner - niessner@tum.de *Visual Computing & Artificial Intelligence Lab*
Prof. Dr. Stephan Günnemann - guennemann@in.tum.de *Data Analytics and ML Group*



Munich, 14 December 2023