Personal Information

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Work Experience

March 2024 - January 2025   **Pixomondo GmBh** *(remote) Stuttgart, Germany* – **Research Scientist**

R&D at Pixomondo Innovation team. Research on applications of Neural Rendering approaches for synthetic and real data. Volumetric capturing setups. In detail: exposing recent Gaussian Splatting papers on splat editing and rendering and application to VFX environments (Unreal) for the purpose of creating novel VFX tools. Created web-based 3DGS editor with advanced AI models for 2D/3D segmenting and inpainting. Also, developed SfM capturing setups.

May 2023 – June 2024   **VLG lab, ETH Zurich** *Zurich, Switzerland* – **Research Assistant**

Two projects: a.) Digital human-oriented rendering framework using backend of popular SMPL-based rendering models. b.) Moving and static camera capture pipeline for 4D reconstructions with GoPro and Kinect cameras. Includes SfM+localization of moving cameras, time-syncing of cameras and conversion to popular dataset formats (i.e. COLMAP). This pipeline was built for Project Aria-like automated egocentric dataset generation.

Jun 2019 – Sep 2019   **Computational Imaging Lab, Rice University** *Houston, Texas* – **Research Scholar**

R&D on Deep Learning approaches for gaze estimation and landmark detection.

Education

2025 -   **Nanyang Techonological University Singapore** *Singapore*
PhD of Computer Science. Focus on 3d & 4D reconstructions. Supervised by Xingang Pan.

2019 - 2022   **ETH Zurich** *Zurich, Switzerland*
Master of Data Science.
Master thesis: *Fast reconstruction of dynamic scenes from videos with Neural Radiance Fields*

2015 - 2019   **University of Novi Sad, Faculty of Technical Sciences** *Novi Sad, Serbia*
B.S. with Honours in Electrical and Computer Engineering
Bachelor thesis: *Microservices Architecture and Component Containerization*

2011 - 2015   **Grammar School Jovan Jovanovic Zmaj** *Novi Sad, Serbia*
Science and Mathematics

Relevant Projects and Publications

2024-2025   **3DGS Editor** Built web-based 3DGS editor which uses advanced AI models for 2D/3D segmentation and inpainting of splats. Built on top of Nerfstudio's gsplat renderer. Will be used in the production of an upcoming web framework.

2023 - 2024   **Dynamic camera capture & 4D reconstruction pipeline** Automated 4D dataset creation of moving and non-moving cameras using existing SfM+localization methods for currently existing dynamic NeRF models. Developed on top of HLOC's supported feature matchers/extractors. Tested and reconstructed with 20 GoPro/Kinect camera, scalable to more. Developed time-synchronization algorithm of various cameras by the usage of QR time syncing. Developed web viewer and converter for popular dynamic NeRF dataset formats. Supported formats include: COLMAP, i-ngp, nerfstudio, NeuS, Owlii, D-NeRF, Nerfies.

2023   **AvatarStudio** Made real-time renderer and model/datasets abstractions for avatar-oriented (SMPL-based) visualizations of digital humans. Built on top of nerfstudio's viser and gsplat renderer.

2023   **HyperNeRF/Nerfies/T-NeRF implementation in PyTorch** Reimplementation of "Reality check" paper's HyperNeRF/Nerfies/T-NeRF models in PyTorch from JAX with comparable speeds and testing results for their new IPhone dataset.

2022   **Clickbaitonator - Continuous Conditional text generation of clickbait newspaper articles with LLMs**
Using fine-tuned Pegasus text summarizer, with Fudge and PPLM conditional text generation models for summarizing news articles into clickbait titles. Promoted on EuroPython 2022: `https://huggingface.co/spaces/EuroPython2022/clickbaitonator`

2021   **Multi Object Tracking and Detection for BeeLivingSensor platform** Fine-tuning and optimizing DeepSort, ByteTrack and YOLO detection variants. Lot of data preprocessing.

2021	**Publication: Dynamic Planes Convolutional Occupancy Networks by Lionar, Emtsev, Svilarkovic, Peng** Paper accepted at 2021 Winter Conference on Applications of Computer Vision (WACV '21) `http://wacv2021.thecvf.com/`. Co-first author. Link (repo included): `https://arxiv.org/abs/2011.05813`
2021	**3D Multi Object Decomposition from the single RGB-D images** Exploration of per-object latent spaces in autoencoders, for the purpose of better decomposition of rendered objects in images and their 3D understanding in 2D space. Supervisors: Cathrin Elich and Marc Pollefeys. Keywords: Slot Attention, Neural Rendering, Instance segmentation, GCNNs, Contrastive learning.
2021	**Deepmind's ObjectRoom dataset generator with included depth maps** Custom script for generation of ObjectRoom samples with added depth maps by using the Unity Perception SDK, a SDK based on Unity 3D.

Skills & Background Knowledge

Computer/3D Vision	Projects using 3DGS, NeRFs, deep SDF, object detection, object tracking, SLAM. Used Detectron/PyTorch/Pytorch3D.
NLP/LLM	Project on text summarizations. Experienced with Huggingface/Gradio.
PyTorch-TF2.0	Intermediate. Projects in both.
Scikit, Pandas, Numpy, Matplotlib, Plotly Dash	Intermediate. Expert with Copilot.
Rendering engines	Dataset generation in Unity3D. My own reimplementations of Nerfstudio's Viser renderers.
SQL	Intermediate. PostgreSQL, MySQL, Oracle SQL
Docker	Beginner. Projects in Containerization and Microservices
Git, SVN	Beginner. Using for years. No industrial experience
Cloud	AWS EC2 machines, Azure LM, Google Cloud LM.
C++, JAVA	Beginner.

Awards

September 2023	**HackZurich2023 - Top 25 finalist** `https://hackzurich.com/`
	Did Logitech challenge focused on extending Logitech hardware's capabilities. On top of EEG headset and Logitech audio&video devices, built a brain-computer interface used for tracking the user's attention span during scheduled time slots and dynamically extending it according to our interface's measurements. Devpost link: `https://devpost.com/software/mindtrics`
May 2023	**Datathon - 3rd prize, Alpiq challenge** `https://www.datadays.ch/`
	24 hour hackathon focused on time-series analysis on Alpiq's power levels. Offered the ML-based solution extended with the info dashboard.
2019-2022	**Scholarships of Foundation for Young Talents – Dositeja** *Ministry of Education, Science and Technological Development of the Republic of Serbia*
	Awarded to the best graduate students attending ARWU ranked universities.
Feb 2019	**Scholarships of Foundation for Young Talents – Dositeja** *Ministry of Education, Science and Technological Development of the Republic of Serbia*
	Awarded to best final year undergraduate and MSc students in Serbia.
Jan 2018	**Scholarship of Excellence for Gifted Students**
	Awarded to 130 best students of technical sciences in Serbia at all University levels.
Jan 2017	**Scholarship of Excellence for Gifted Students and Young Researchers of University of Novi Sad**
	Awarded to 10 best students at technical sciences on all university levels.
2015 – 2019	**Dean's list / Award for Exceptional Students of Faculty of Technical Sciences**
	Awarded for perfect or excellent GPA on all Faculty levels. Got award in 2015/2016, 2016/2017, 2017/2018, 2018/2019 academic years.

Languages

Serbian, *Native*

English, *Advanced, C2*

Cambridge English: Advanced (CAE): Grade A (202/220), Date taken: 6/5/2016

TOEFL: 109/120, Date taken: 7/9/2019