

Nemanja Bartolovic

COMPUTER GRAPHICS SOFTWARE ENGINEER

Zurich, Switzerland

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Work Experience

Senior Staff Software Engineer

Zurich, Switzerland

META PLATFORMS INC, REALITY LABS

Aug. 2021 - PRESENT

- Tech lead for real-time neural graphics and novel representations group, coordinating work across several teams and orgs.
- Spearheading the initiative and development for a company-wide, unified photorealistic real-time renderer for environments and digital avatars in VR via modern neural rendering approaches. Shipped **Meta Horizon Hyperscape**, an app that showcases photorealistic environments on Quest devices via Gaussian splatting. Designed and co-developed several components across the entire vertical stack (novel artist tools, game engine integration, evaluation, core rendering development). Mentored 10+ engineers and researchers in the domain of real-time rendering.
- Reduced training costs by multiple millions of dollars per year by optimizing CUDA kernels and training pipelines for large-scale ML efforts in 3D reconstruction of digital avatars.
- Scaled high-fidelity cloth simulations and rendering for digital humans. Led development of various cloth simulation components, both on CPU (SIMD) and GPU (CUDA), as well as real-time neural ML deformers (Vulkan, Torch) that run on VR devices.
- Created several cross-platform libraries related to computer graphics used by dozens of internal teams in diverse projects (acceleration structures, Vulkan abstraction layer, GPU tracing, Gaussian splatting runtime).

Software Engineer

Zurich, Switzerland

DAEDALEAN AG

Sept. 2020 - Aug. 2021

- Worked on reliable autonomous piloting systems for aircraft through vision-based methods.
- Developed a near real-time cloud-based rendering and simulation service to generate large-scale multi-view aerial synthetic data for multiple internal teams.
- Improved the detect-and-avoid system by scaling its infrastructure for training models, sophisticated data augmentation (TensorFlow) and safety-critical testing.

Research Assistant

Zurich, Switzerland

ETH ZÜRICH

May 2019 - Aug. 2020

- Developed novel techniques for dimensionality reduction, topology, feature extraction and visualization of high-dimensional flows, gravitational and general dynamical systems. Primary methods of approach included nonlinear optimization, machine learning and variational calculus.

Rendering Engineer

Zurich, Switzerland

KAPANU AG

June 2017 - Apr. 2019

- Shipped **IvoSmile**, a mobile AR try-on tool for dentists that aids in communicating dental prosthetic treatments.
- Developed an efficient mobile-first software architecture (iOS, Android), a cross-platform real-time rendering system (OpenGL), optimized performance and developed several geometry processing algorithms for dentures. Conducted R&D on rendering and machine learning as well as physical lab design for capturing dental materials.

Publications

SqueezeMe: Mobile-Ready Distillation of Gaussian Full-Body Avatars

SIGGRAPH 2025

FORREST IANDOLA, STANISLAV PIDHORSKYI, IGOR SANTESTEBAN, DIVAM GUPTA, ANUJ PAHUJA, NEMANJA

August 2025

BARTOLOVIC, FRANK YU, EMANUEL GARBIN, TOMAS SIMON, SHUNSUKE SAITO

- Developed a method to animate and render multiple digital human avatars in real-time on commodity VR hardware.

Hardware-Rasterized Ray-Based Gaussian Splatting

(Highlight) CVPR 2025

SAMUEL ROTA BULÒ, NEMANJA BARTOLOVIC, LORENZO PORZI, PETER KONTSCIEDER

June 2025

- Co-developed a novel rasterization-based Gaussian splatting algorithm that minimizes projection errors in high field-of-view settings like VR rendering.

Phase Space Projection of Dynamical Systems

(Honorable Mention) EuroVis 2020

NEMANJA BARTOLOVIC, MARKUS GROSS, TOBIAS GÜNTHER

May 2020

- Developed a flow and curvature-preserving dimensionality reduction technique for trajectories in high-dimensional dynamical system phase spaces.

PhysicsForests: Real-Time Fluid Simulation Using Machine Learning

Siggraph 2017 Real-time Live!

LUBOR LADICKY, SOHYEON JEONG, NEMANJA BARTOLOVIC, MARC POLLEFEYS, MARKUS GROSS

August 2017

- Implemented rendering techniques used to visualize fluid simulations which were initially developed during my .Master's thesis, as well as improvements to the core simulation framework. [Demo](#)

Education

Master in Computer Science

Zurich, Switzerland

ETH ZURICH

Sept. 2015 - Apr. 2017

- Visual computing/computer graphics track. [Thesis](#) on real-time fluid rendering and real-time neural network style transfer.

Bachelor in Computer Science

Nis, Serbia

FACULTY OF ELECTRONIC ENGINEERING, UNIVERSITY OF NIS

Oct. 2011 - July 2015

- Focus on software engineering and informatics with Bachelor thesis in computer graphics.

Personal Projects and Interests

Crisp

Personal Interest

RENDERING PROJECT

Jan. 2016 - PRESENT

- A project for fun and relaxation with a focus on implementing separate ray tracing and real-time rendering systems to test out various new ideas and algorithms in my free time. Uses Vulkan as backend graphics API. [Project Page](#)

Technical Skills

Languages & APIs C++, Vulkan, OpenGL, Python, C, Matlab, CUDA, SIMD, Pytorch

Tools VS Code, Microsoft Visual Studio, RenderDoc, Git, Mercurial, CMake, Bazel, Buck

General Computer graphics, software architecture, the C++ language, optimization, deep learning

Visual Computing Real-time rendering, path tracing, geometry processing, neural rendering, physically-based simulation, visualization