Résumé Bastian Kuth

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*26.05.1998 in Bamberg, Germany

Education

2023 – 2025 **Doktor-Ingenieur (PhD)**
Coburg University of Applied Sciences
University of Erlangen–Nuremberg (FAU)
Thesis: Real-Time Geometry Amplification on Graphics Hardware
Advisor: Prof. Dr.-Ing. Quirin Meyer
University Advisor: Prof. Dr.-Ing. Marc Stamminger

2021 – 2022 **M.Sc. in Computer Science**
Nuremberg Institute of Technology Georg Simon Ohm
Thesis: Real-time Image-Based 3D-VR-Rendering of Open Environments
Advisor: Prof. Dr. rer. nat. Bartosz von Rymon Lipiński
Thesis Grade: 1.0 Overall Grade: 1.0 (best of the year)

2017 – 2021 **B.Sc. in Computer Science**
Coburg University of Applied Sciences
Thesis: Compression of Vertex Blending Attributes
Advisor: Prof. Dr.-Ing. Quirin Meyer
Thesis Grade: 1.0 Overall Grade: 1.3

Working Experience

January 2023 – December 2025 **Research Associate** *full-time*
Coburg University of Applied Sciences
Project GeoFlow – Data-centred real-time geometry processing on graphics cards
Advisor: Prof. Dr.-Ing. Quirin Meyer

March 2024 – August 2024 **Contract Lecturer** *2 SWS*
Coburg University of Applied Sciences
Computer Graphics – 3D Gaussian Splatting in Direct3D12

March 2022 – December 2022 **Research Assistant** *part-time*
Nuremberg Institute of Technology: Game Tech Lab
Project IBMPP – Image-Based Media Production Pipeline
Advisor: Prof. Dr. rer. nat. Bartosz von Rymon Lipiński

February 2020 **Research Assistant** *part-time*
Coburg University: mixedrealitylab
Project Virtual Office
Advisor: Prof. Dr. techn. Jens Grubert

October 2019 – February 2020 **Internship (mandatory)** *full-time*
Siemens Healthineers – Product Development
Project AI-Rad Companion
Advisor: Dr.-Ing. Philip Mewes

February 2019 **Research Assistant** *part-time*
Coburg University: mixedrealitylab
Project Virtual Office
Advisor: Prof. Dr. techn. Jens Grubert

Summer 2018 – Fall 2018 **Working Student** *part-time*
Siemens Healthineers - Product Innovation
Project Surgery Robotics - Computer Vision
Advisor: Dr.-Ing. Peter Fischer

Summer 2017 – Fall 2017 **Vacational Worker** *full-time*
Siemens Healthineers – Product Innovation
Project Surgery Robotics - Computer Vision
Advisor: Dr.-Ing. Peter Fischer

Voluntary Work

2025 **Paper Reviewer** *3 reviews*
at High-Performance Graphics 2025

2025 **Paper Reviewer** *1 review*
at Eurographics 2025

2024 **Paper Reviewer** *1 review*
at SIGGRGAPH Asia 2024

2024 **Paper Reviewer** *2 reviews*
at High-Performance Graphics 2024

Fall 2016 – Spring 2017 **Bundesfreiwilligendienst** *full-time*
Bundesanstalt Technisches Hilfswerk (THW)
Geschäftsstelle Bamberg

Skills

Programming
Proficient in: C++, C, Python, GLSL, HLSL
Familiar with: Java, C#, Haskell, JavaScript

Tools, Libraries and Software
Blender, Git, Gimp, LaTeX, Overleaf, Gurobi, SCIPopt, Direct3D12, OpenGL, OpenCV, OpenXR, Vulkan, CMake, Unity, NumPy, SymPy, Real Virtuality Engine, Matplotlib, Tensorflow, Keras, Pytorch, Adobe Premiere, DaVinci Resolve, Visual Studio, VS Code

Languages
German (native), English (fluent), Russian (beginner)

Awards

June 2026 **Wolfgang Straßer Best Paper Award (2nd place)**
At Hight-Performance Graphics 2025
For *Real-Time GPU Tree Generation*

September 2024 **Best Paper Award**
At Vision, Modeling, and Visualization 2024
For *Towards Practical Meshlet Compression*

July 2024 **Wolfgang Straßer Best Paper Award (1st place)**
At High-Performance Graphics 2024
For *Real-Time Procedural Generation with GPU Work Graphs*

June 2023 **Best Computer Science Master's Degree of the Year**
At Nuremberg Institute of Technology Georg Simon Ohm

June 2023 **Wolfgang Straßer Best Paper Award (3rd place)**
At High-Performance Graphics 2023
For *Edge-Friend: Fast and Deterministic Catmull-Clark Subdivision Surfaces*

June 2023 **DATEV Sponsorship Award**
At Nuremberg Institute of Technology Georg Simon Ohm
For Master Thesis *Real-time Image-Based 3D-VR-Rendering of Open Environments*

May 2022 **Best Paper Award**
At ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games 2022
For *Permutation Coding for Vertex-Blend Attribute Compression*

July 2021 **Wolfgang Straßer Best Paper Award (1st place)**
At High-Performance Graphics 2021
For *Vertex-Blend Attribute Compression*

October 2019 **Best Paper Award**
At International Symposium on Mixed and Augmented Reality 2019 (IEEE ISMAR)
For *ReconViguRation: Reconfiguring Physical Keyboards in Virtual Reality*

Publications

2025 **Real-Time GPU Tree Generation**
Bastian Kuth, Max Oberberger, Carsten Faber, Pirmin Pfeifer, Seyedmasih Tabaei, Dominik Baumeister, Quirin Meyer *High-Performance Graphics - Symposium Papers (HPG)*

2025 **EGO-VC – Evolutionary GPU-Optimization of Visual Correspondences for Image Alignment**
Thomas Chang, Karl Hartmann, Bastian Kuth, Simon Seibt, Bartosz von Rymon Lipiński
WSCG 2025 (follows section 3 of my master thesis)

2025 **Multidimensional Image Morphing-Fast Image-based Rendering of Open 3D and VR Environments**
Simon Seibt, Bastian Kuth, Bartosz von Rymon Lipiński, Thomas Chang, Marc Erich Latoschik
Virtual Reality and Intelligent Hardware (VRIH) (follows section 2 of my master thesis)

2024 **Towards Practical Meshlet Compression**
Bastian Kuth, Max Oberberger, Felix Kawala, Sander Reitter, Sebastian Michel, Matthäus Chajdas, Quirin Meyer
Vision, Modeling, and Visualization (VMV)

2024 **Real-Time Procedural Generation with GPU Work Graphs**
Bastian Kuth, Max Oberberger, Carsten Faber, Dominik Baumeister, Matthäus Chajdas, Quirin Meyer
Proceedings of ACM on Computer Graphics and Interactive Techniques (PACMCGIT / HPG)

2023 – 2024 **Mesh shaders on RDNA™ graphics cards**
Max Oberberger, Bastian Kuth, Quirin Meyer
GPUopen **(not peer-reviewed)**

2023 **Edge-Friend: Fast and Deterministic Catmull-Clark Subdivision Surfaces**
Bastian Kuth, Max Oberberger, Matthäus Chajdas, Quirin Meyer
Computer Graphics forum (CGF / HPG)

2022 **Permutation Coding for Vertex-Blend Attribute Compression**
Christoph Peters, Bastian Kuth, Quirin Meyer
ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games (I3D)

2021 **Vertex-Blend Attribute Compression**
Bastian Kuth, Quirin Meyer
High-Performance Graphics - Symposium Papers (HPG)

2020 **Breaking the Screen: Interaction Across Touchscreen Boundaries in Virtual Reality for Mobile Knowledge Workers**
Verena Biener, Daniel Schneider, Travis Gesslein, Alexander Otte, Bastian Kuth, Per Ola Kristensson, Eyal Ofek, Michel Pahud, Jens Grubert
IEEE Transactions of Visualization and Computer Graphics (TVCG)

2019 **ReconViguRation: Reconfiguring Physical Keyboards in Virtual Reality**
Daniel Schneider, Alexander Otte, Travis Gesslein, Philipp Gagel, Bastian Kuth, Mohamad Shahm Damlakhi, Oliver Dietz, Eyal Ofek, Michel Pahud, Per Ola Kristensson, Jörg Müller, Jens Grubert
IEEE Transactions of Visualization and Computer Graphics (TVCG)

Public Talks

2025 **GPU Work Graphs**
Course at SIGGRAPH 2025

2025 **Real-Time GPU Tree Generation**
Paper presentation at HPG 2025 in Copenhagen, Denmark

2024 **GPU Work Graphs - mastering the future of GPU programming**
Masterclass at GPC 2024 in Breda, Netherlands

2024 **Towards Practical Meshlet Compression**
Paper presentation at VMV 2024 in Garching, Germany

2024 **Real-Time Procedural Generation with GPU Work Graphs**
Paper presentation at HPG 2024 in Denver, USA, recording

2023 **Edge-Friend: Fast and Deterministic Catmull-Clark Subdivision Surfaces**
Paper presentation at HPG 2023 in Delft, Netherlands, recording

Video Game Modding

2019–2021 **Nassau 1715**
Our international team created a total conversion mod that transforms Arma 3 from a modern military simluation on a greece island into one about pirates in the Bahamas. I handled most of the programming. Key features include a physically accurate sailing model and a custom interaction system. The mod has ~17k current subscribers or ~62k total downloads on the Steam Workshop.

2017 **WMO — Walkable Moving Objects**
A mod that extends Arma 3's Real Virtuality Engine to support players riding moving objects, such as cars, boats, or airplanes. With the vanilla game engine, players just slide off or die when trying to board a vehicle. This mod fixes this. It currently has ~263k+ subscribers and ~538k+ total downloads on the Steam Workshop.

2014–2019 **Loewenherz Altis Life**
Volunteered as developer, admin, and moderator for one of Germany's largest Altis Life servers — a 100+ player (MMO)RPG game mode for Arma 3. Contributed to scripting, texturing, 3D modeling, as well as gameplay/sound/level design. At peak, the server database had 70,000 unique players and the community forum over 7,000 members.

Noteable Media Coverage

2025 **TechPowerUp** *link*
Researchers Unveils Real-Time GPU-Only Pipeline for Fully Procedural Trees

2025 **PC Games Hardware** *link*
Von 35 GiB auf 51 KiB: Forscher demonstriert "Work Graphs" für 3D-Rendering von Bäumen

2025 **PC Gamer** *link*
Graphics researchers have created a GPU-run procedural algorithm for creating an equivalent 35.6 GB worth of trees, leaves, and bushes from just 52 kB of data

2025 **Tom's Hardware** *link*
AMD researchers reduce graphics card VRAM capacity of 3D-rendered trees from 38GB to just 52 KB with work graphs and mesh nodes — shifting CPU work to the GPU yields tremendous results

2024 **Heise Online** *link*
New GPU technology creates dynamic 3D worlds

2024 **Tom's Hardware** *link*
AMD shows off DX12-related rendering advances that make game engines more efficient and less dependent on the CPU — demo shows a 64% improvement