Fabian Meyer

Curriculum Vitae

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✉ *fabian.meyer1337@web.de*
github.com/MeyerFabian
Date of Birth: 1992-12-05
Marital status: single

Education

04/2015–02/2019 **Master of Science in Computational Visualistics**, *Universität Koblenz-Landau*, Koblenz, (GPA (German): 1.4).
- Thesis: "GPU Acceleration of the Material Point Method" (Grade: 1.1).

10/2011–03/2015 **Bachelor of Science in Computational Visualistics**, *Universität Koblenz-Landau*, Koblenz, (GPA: 1.6).
- Thesis: "Simulation of Snow" (Grade: 1.0).

08/2003–06/2011 **A-levels**, *Liebfrauenschule Cloppenburg*, Cloppenburg, (GPA: 2.1).

Programming Coursework: Algorithms & Data Structures, Real-Time Rendering, Computer Graphics, Computer Vision & Image Processing, Machine Learning, Animation & Simulation, Object-Oriented Programming, Software Engineering, Computer Architecture, Medical Computational Visualistics, Functional Programming, Theoretical Computer Science, Computer Networks, Basics of IT Security, Media Technology, Software Ergonomics

Math/Physics Coursework: Linear Algebra, Calculus, Multivariable Calculus, Mechanics & Thermodynamics, Stochastic, Topological Spaces, Algebraic structures

Design Coursework: Drawing, Psychology of the Visual System, Visual Culture Studies, Picture Design

Work Experience

11/2015 **Blue Byte (Ubisoft) Coding Workshop**.
- Simple physics simulation in Unity with C# utilizing DirectCompute

06/2010–03/2014 **Artharia, Graphic Design & php Programming**.
Hobby Project, `http://artharia.de`
- Development of an RPG Browser Game with php, HTML & CSS.
- Designed header, maps and more than 250 icons.

Software Projects

Material Point Method(MPM), `github.com/MeyerFabian/snow`, `github.com/mpm-msc/snow`
- Implemented the MPM using OpenGL Compute for physically based simulations of continuum material.
- Designed a shader generator for OpenGL to allow for various permutations of GPGPU compute programs.
- Enforced Test-driven development to monitor numerical precision and performance metrics.
- Applied preprocessing of data layout(SoA), binning & counting sort to increase coalescing & caching behaviors and stream compaction of active cell regions.
- Accelerated governing transfers by fusing threads and utilizing the shared memory architecture leading to order-independence of data and up to 10x speedup over a naive GPU implementation.

- **Acquired Knowledge:** OpenGL Compute, C++17, CMake, NVIDIA Nsight, GPU Caching + Coalescing & Memory Architecture, Data-Oriented Design, Test-Driven Development, Physical & Particle Simulation, Continuum Mechanics, Partial Differential Equations, Numerics, Finite Element Methods, Shader Generator, Elasticity & Plasticity Theory, Reflection

Voxel Cone Tracing, `github.com/MeyerFabian/VoxelConeTracingAO`
- Produced deferred shading by rendering to G-buffer and applying shadow/light mapping
- Finalized building and 3D-filtering + mip-mapping of the sparse voxel octree(SPVO)
- Created Ambient Occlusion & simplified Global Illumination shaders cone tracing the SPVO
- **Acquired Knowledge:** OpenGL, CUDA, C++, Ambient Occlusion, 3D-Filtering, Sparse Voxel Octree

Visualization of Molecule Simulation
- Designed & maintained system architecture between three task groups as well as interfacing between C++-Application and Unreal Engine
- Tasked as Integration Manager which includes maintaining and supplying a blessed repository
- Allocating/deallocating memory in MDTraj & Unreal Engine on creation & deletion of molecules
- **Acquired Knowledge:** Git, C++, Unreal Build Tool, Unreal Engine, MDTraj, Memory Allocation

Rust Ray, `github.com/MeyerFabian/rust-ray`
- Created simple CPU ray tracer with multiple bounces in Rust featuring multi-threading with Rayon.
- **Acquired Knowledge:** Rust, Rayon, Cargo, Mutability & Borrow Checking

Fiber, `github.com/MeyerFabian/fiber`
- Visualized DTI-data in Visualization Toolkit(VTK) & Qt with file managing and different view options.
- **Acquired Knowledge:** CMake, VTK, Qt, C++, Git

Effects of G8/G9 schooling system `http://193.175.238.89/datasci/index.php/author/fmeyer`
- Preprocessed and visualized schooling system data with D3.js
- **Acquired Knowledge:** Javascript, D3.js, Data Science & Visualization

Skills

Software	OpenGL, C++, Windows, Vim, Git (*proficient*) Rust, Python, Matlab, CUDA, OpenCL, Unix, Haskell (*familiar*)
Language	German (*native*) English (*fluent*), M.Sc.-Thesis written in English
Math/Physics	Modeling & Simulation, Fluid mechanics, Optics, Complex analysis, Electrodynamics

Hobbies & Interests

Hobbies	Computer Games, Concept Art, Tabletop Role-Playing Games, Inline skating
Interests	Simulation, Game Design, Tactics(Sports), Live-Streaming