Ali C. **Demiralp**

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Education

RWTH Aachen — *Aachen, Germany*

M.Sc. in Media Informatics — *November 2016*

Thesis: Multiscale Representation of Vector Fields Derived from 3D Polarized Light Imaging

Stony Brook University — *New York, United States*

B.A. in Computer Science — *December 2012*

Cum Laude

Experience

RWTH Aachen, Virtual Reality and Immersive Visualization Group — *Aachen, Germany*

Research Assistant — *January 2017 - December 2022*

- Performed research & development on the topics of scientific visualization, numerical analysis, and high-performance computing.
- Contributed publications & software to the *Human Brain Project (HBP)* and the *Nationales Hochleistungsrechnen (NHR)* project.
- Supervised the data analysis and visualization practical, the scientific visualization seminar, 2 B.Sc. and 4 M.Sc. students.

RWTH Aachen, Virtual Reality and Immersive Visualization Group — *Aachen, Germany*

C++ Developer - Scientific Visualization — *February 2016 - December 2016*

- Contributed to the development of *pvt*, an open-source C++ library for visualization of compute performance.

Fraunhofer Institute for Applied Information Technology (FIT) — *Sankt Augustin, Germany*

C++ Developer - Internet of Things (IoT) — *February 2014 - June 2015*

- Contributed software to the *enabling Business-based Internet of Things and Services (ebbits)* and *Bridging resource and agencies in large-scale emergency management (BRIDGE)* EU research projects.

Startup Kitchen — *Istanbul, Turkey*

Unity Developer — *February 2013 - August 2013*

- Contributed to the development of *Kixel*, a multiplayer football game.

Chyron — *New York, United States*

Intern C++ Developer - Computer Graphics — *May 2012 - August 2012*

- Contributed to the development of *Chyron Lyric PRO*, a broadcast graphics creation tool.

Grupanya — *Istanbul, Turkey*

Intern Web Developer — *June 2011 - August 2011*

- Contributed to the development of *Grupanya*, a local e-commerce website.

Publications

PLIView: A Tool for Interactive Visualization of 3D-Polarized Light Imaging Data — *IEEE ISBI 2023*

A.C. Demiralp, M. Krüger, T. Gerrits, T.W. Kuhlen — *In Review*

A C++20 Interface for MPI 4.0 — *Supercomputing 2022*

A.C. Demiralp, M. Krüger, T. Gerrits — *November 2022*

Astray: A Performance-Portable Geodesic Ray Tracer — *VMV 2022*

A.C. Demiralp, M. Krüger, C. Chao, T.W. Kuhlen, T. Gerrits — *September 2022*

MODE: A Modern Ordinary Differential Equation Solver for C++ and CUDA — *ICNAAM 2022*

A.C. Demiralp, M. Krüger, T. Gerrits — *September 2022*

Insite: A Pipeline Enabling In-Transit Visualization and Analysis for Neuronal Network Simulations — *WOIV 2022*

M. Krüger, S. Oehrl, A.C. Demiralp, S. Spreizer, J. Bruchertseifer, T.W. Kuhlen, T. Gerrits, B. Weyers — *June 2022*

Performance Assessment of Diffusive Load Balancing for Distributed Particle Advection — *WSCG 2022*

A.C. Demiralp, D.N. Helmrich, J. Protze, T.W. Kuhlen, T. Gerrits — *May 2022*

MPI Detach - Asynchronous Local Completion — *EuroMPI/USA 2020*

J. Protze, M.A. Hermanns, A.C. Demiralp, M. Müller, T.W. Kuhlen — *September 2020*

Voxel-Based Edge Bundling Through Direction-Aware Kernel Smoothing — *Computers & Graphics 83*

D. Zielasko, X. Zhao, A.C. Demiralp, B. Weyers, T.W. Kuhlen — *October 2019*

Parallel Particle Advection and Lagrangian Analysis for 3D-PLI Fiber Orientation Maps — *IEEE LDAV 2019*

A.C. Demiralp, D. Zielasko, M. Axer, T. Vierjahn, T.W. Kuhlen — *October 2019*

Interactive Level-of-Detail Visualization of 3D-Polarized Light Imaging Data Using Spherical Harmonics — *EuroVis 2017*

C. Hänel, A.C. Demiralp, M. Axer, D. Gräßel, B. Hentschel, T.W. Kuhlen — *June 2017*

Programming Languages & Libraries

C++	Assimp, Boost, Box2D, Bullet, CGAL, Cinder, Doctest, Eigen, FBX SDK, FFMPEG, FMOD, FreeImage, FreeType, GLFW, GLM, GSL, HDF5, ImGui, LibCurl, MKL, MPI, OpenCL, OpenMP, OpenSceneGraph, OpenVR, OSPRay, Protobuf, Qt5, RakNet, RTTR, SDL2, STL 11/14/17/20, SUNDIALS, TBB, Thrust, Unreal Development Kit, V8, VTK, Windows API, ZeroMQ
C#	Unity SDK, WPF
CUDA	cuBLAS, cuFFT, cuSolver, cuSparse, OptiX
Java	Android SDK, Arduino SDK, Hibernate, OSGi, Swing
Node.js	Async, AWS SDK, Express, Facebook Graph API, Mongoose, Socket.io, Swagger
Python	Numpy, Pandas, Scipy, Matplotlib

Technologies

Build Systems	Cmake, Conan, Vcpkg
Databases	MongoDB, MySQL
Game Engines	Unity, Unreal Engine
Graphics APIs	OpenGL (2.0 → 4.6), Vulkan
Version Control	Git, Subversion
Visualization Tools	ParaView, VisIt
Web	Amazon Web Services (API Gateway, Cognito, EC2, Elasticache, Elastic Beanstalk, Lambda, S3, SNS)

Languages

Turkish	Native Proficiency (CEFR C2)
English	Full Proficiency (CEFR C1, TOEFL iBT: 102)
German	Intermediate Proficiency (CEFR B1)