

# Ali C. Demiralp

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## Education

### RWTH Aachen

M.Sc. IN MEDIA INFORMATICS

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

Aachen, Germany

November 2016

### Stony Brook University

B.A. IN COMPUTER SCIENCE

GPA: 3.64/4.00 (Cum Laude)

New York, United States

December 2012

## Experience

### RWTH Aachen, Virtual Reality and Immersive Visualization Group

RESEARCH ASSISTANT

Aachen, Germany

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

C++ DEVELOPER - SCIENTIFIC VISUALIZATION

Aachen, Germany

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)

C++ DEVELOPER - INTERNET OF THINGS (IoT)

Sankt Augustin, Germany

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

UNITY DEVELOPER

Istanbul, Turkey

February 2013 - August 2013

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

### Chyron

INTERN C++ DEVELOPER - COMPUTER GRAPHICS

New York, United States

May 2012 - August 2012

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

### Grupanya

INTERN WEB DEVELOPER

Istanbul, Turkey

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

A.C. DEMIRALP, M. KRÜGER, T. GERRITS, T.W. KUHLEN

IEEE ISBI 2023

In Review

### A C++20 Interface for MPI 4.0

A.C. DEMIRALP, M. KRÜGER, T. GERRITS

Supercomputing 2022

November 2022

### Astray: A Performance-Portable Geodesic Ray Tracer

A.C. DEMIRALP, M. KRÜGER, C. CHAO, T.W. KUHLEN, T. GERRITS

VMV 2022

September 2022

### MODE: A Modern Ordinary Differential Equation Solver for C++ and CUDA

A.C. DEMIRALP, M. KRÜGER, T. GERRITS

ICNAAM 2022

September 2022

## Insite: A Pipeline Enabling In-Transit Visualization and Analysis for Neuronal Network Simulations

M. KRÜGER, S. OEHL, A.C. DEMIRALP, S. SPREIZER, J. BRUCHERTSEIFER, T.W. KUHLEN, T. GERRITS, B. WEYERS

WOIV 2022

June 2022

## Performance Assessment of Diffusive Load Balancing for Distributed Particle Advection

A.C. DEMIRALP, D.N. HELMRICH, J. PROTZE, T.W. KUHLEN, T. GERRITS

WSCG 2022

May 2022

## MPI Detach - Asynchronous Local Completion

J. PROTZE, M.A. HERMANN, A.C. DEMIRALP, M. MÜLLER, T.W. KUHLEN

EuroMPI/USA 2020

September 2020

## Voxel-Based Edge Bundling Through Direction-Aware Kernel Smoothing

D. ZIELASKO, X. ZHAO, A.C. DEMIRALP, B. WEYERS, T.W. KUHLEN

Computers & Graphics 83

October 2019

## Parallel Particle Advection and Lagrangian Analysis for 3D-PLI Fiber Orientation Maps

A.C. DEMIRALP, D. ZIELASKO, M. AXER, T. VIERJAHN, T.W. KUHLEN

IEEE LNAV 2019

October 2019

## Interactive Level-of-Detail Visualization of 3D-Polarized Light Imaging Data Using Spherical Harmonics

C. HÄNEL, A.C. DEMIRALP, M. AXER, D. GRÄBEL, B. HENTSCHEL, T.W. KUHLEN

EuroVis 2017

June 2017

## Programming Languages & Libraries

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<b>C++</b>	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
<b>C#</b>	Unity SDK, WPF
<b>CUDA</b>	cuBLAS, cuFFT, cuSolver, cuSparse, OptiX
<b>Java</b>	Android SDK, Arduino SDK, Hibernate, OSGi, Swing
<b>Node.js</b>	Async, AWS SDK, Express, Facebook Graph API, Mongoose, Socket.io, Swagger
<b>Python</b>	Numpy, Pandas, Scipy, Matplotlib

## Technologies

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

## Languages

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