Ali C. Demiralp

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Education

RWTH Aachen   *Aachen, Germany*

M.S. 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.S. IN COMPUTER SCIENCE   *December 2012*

Cum Laude

Experience

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

RESEARCH ASSISTANT   *January 2017 - Current*

- Developed *Polarized Light Imaging (PLI) Viewer*, a tool for visualizing 3D-PLI transmittance, retardation, direction and inclination maps. Also contains parallelized implementations of streamline tractography and fiber ODF computation.
- Developed *cuSH*, an open source Cuda library for Spherical Harmonics (SH) which contains functionality for projecting spherical functions to finite SH expansions as well as common arithmetic in the SH basis.
  https://devhub.vr.rwth-aachen.de/VR-Group/cuSH
- Supervised students in the Current Topics in the Field of Virtual Reality seminar.

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

STUDENT ASSISTANT   *February 2016 - December 2016*

- Contributed to the development of *pvt*, an open-source library for visualizing computation performance data.
  https://devhub.vr.rwth-aachen.de/VR-Group/pvt

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

INTERNET OF THINGS (IOT) PROGRAMMER   *February 2014 - June 2015*

- Developed an automotive construction pipeline demo under the *ebbits (enabling Business-based Internet of Things and Services)* EU research project.
- Developed a bluetooth module for triage bracelets under the *BRIDGE (Bridging resource and agencies in large-scale emergency management)* EU research project.
- Extended an ad-hoc distress beacon prototype for mobile phones, increasing signal detection range in situations with multiple victims.

Startup Kitchen   *Istanbul, Turkey*

GAME PROGRAMMER   *February 2013 - August 2013*

- Contributed to the development of *Kixel*, a real-time multiplayer football game for Facebook.
- Developed a match-three game prototype for Facebook.

Chyron   *New York, United States*

INTERN GRAPHICS PROGRAMMER   *May 2012 - August 2012*

- Implemented a Collada digital asset exchange file importer for loading scene data into *Chyron Lyric PRO*.
- Contributed to the implementation of an Alembic interchange file importer for loading visual effects into *Chyron Lyric PRO*.

Grupanya   *Istanbul, Turkey*

INTERN WEB PROGRAMMER   *June 2011 - August 2011*

- Implemented a typographical error checker using Damerau-Levenshtein edit distance.
- Developed a tool for relating user demographics to the offers they are interested in.

Publications

Interactive Level-of-Detail Visualization of 3D-Polarized Light Imaging Data Using Spherical Harmonics   *Barcelona, Spain*

SHORT PAPER IN EUROGRAPHICS CONFERENCE ON VISUALIZATION 2017 (HONORABLE MENTION)   *June 2017*

- Claudia Hanel, Ali Demiralp, Markus Axer, David Gräßel, Bernd Hentschel, Torsten W. Kuhlen

Programming Languages & Libraries

C++	Assimp, Boost, Box2D, Bullet, CGAL, Cinder, EASTL, Eigen, FBX SDK, FFMPEG, FMOD, FreeImage, FreeType, GLM, GSL, HDF5, LibCurl, OpenSceneGraph, OpenVR, Qt5, RakNet, SDL2, STL 11/14/17, V8, VTK, Windows API
C#.NET	Xamarin
Cuda	cuBLAS, cuFFT, cuSolver, cuSparse, NPP, Thrust
Java	Android SDK, Arduino SDK, Hibernate, OSGi, Swing
Node.js	Async, AWS SDK, Express, Facebook Graph API, Lodash, Mongoose, Socket.io

Technologies

Build Systems	Cmake, Conan
Databases	MongoDB, MySQL
Game Engines	Unity3D, Unreal Engine 4
Graphics APIs	OpenGL (2.0 → 4.6), Vulkan
Version Control	Git, SVN
Web	Amazon Web Services (API Gateway, Cognito, EC2, Elasticache, Elastic Beanstalk, Lambda, S3, SNS)

Languages

Turkish	Native Proficiency
English	Full Professional Proficiency
German	Elementary Proficiency

Extracurricular

GL *C++*

HTTPS://GITHUB.COM/ACDEMIRALP/GL *2017*

- An OpenGL 4.6 Core Profile wrapper written in C++11.
- Featured on the Khronos website: https://www.khronos.org/news/archives/2017/08/.

Nano Engine *C++*

HTTPS://GITHUB.COM/ACDEMIRALP/NANO_ENGINE *2017*

- A concise platform-independent display, input and graphics abstraction based on SDL2.

Vulkan SDL *C++*

HTTPS://GITHUB.COM/ACDEMIRALP/VULKAN_SDL *2017*

- An utility for creating Vulkan surfaces platform-independently based on SDL2.
- Supports all windowing systems supported by Vulkan: Android, Mir, Wayland, Win32, XCB, Xlib.

Unity Data Binding *C#*

HTTPS://GITHUB.COM/ACDEMIRALP/UNITY_DATA_BINDING *2015*

- A data and event binding plugin for Unity 4.6 and above. The implementation is loosely based on .NET System.Windows.Data.
- Bundled with Unity editor scripts, making it possible to use without writing additional code.

Framegraph *C++*

HTTPS://GITHUB.COM/ACDEMIRALP/FRAMEGRAPH (PRIVATE UNTIL RELEASE) *In Progress*

- A high-level rendering abstraction which describes a frame as a directed acyclic graph consisting of render passes and resources.
- Based on the Game Developers Conference (GDC) presentation by Yuriy O'Donnell on EA Frostbite's rendering architecture.

Makina *C++*

HTTPS://GITHUB.COM/ACDEMIRALP/MAKINA (PRIVATE UNTIL RELEASE) *In Progress*

- A "not-game engine" which provides a subset of common game engine features such as audio, input, physics, rendering, scripting but in contrary to most game engines, is easily extendable with prototypical computer graphics and virtual reality research ideas.