Morteza Mostajab

Researcher and Fan of Computer Graphics and Visualization

Education

2012–2016 **Master of Computer Science**, *Technische Universität München*, Munich.
Specialization: Computer graphics and visualization
Thesis Title: Real-time Streamsurface Computation
Supervisor: Prof.Dr. Westermann
Advisors: Dr. Andreas Dietrich, Dr. Frank Michel

2006–2011 **Bacholer of Computer Engineering**, *Hamedan University of Technology*, Hamedan, Iran.
Specialization: Computer hardware engineering
Thesis Title: Incorporating affective state of players in video games
Supervisor: Dr. Muharram Mansoorizadeh

2002–2006 **Pre-University and High School**, *National Organization for Development of Exceptional Talents' Shahid Beheshti School*, Borujerd, Iran.
Major: Mathematics and physics

Research Interests

Real-time physically-based rendering (ray tracing and rasterization)

Virtual reality

SciVis techniques

Computer graphics and visualization

Object oriented programming

Publications

CSG Ray Tracing Revisited-Visualizing Massive Models
by Morteza Mostajab, Andreas Dietrich, Thomas Gierlinger, Frank Michel, Andre Stork (Accepted in GRAPP'17).

Real-Time Stream Surface Computation and Rendering Utilizing Heterogeneous Computing
by Morteza Mostajab, Andreas Dietrich, Thomas Gierlinger, Frank Michel, Andre Stork (The first draft is ready. It is being prepared for submission).

Kasinostr. 24 – 64293 Darmstadt – Germany
+49 (170) 548 5750 • *mmostajab@gmail.com*
www.mmostajab.com • *https://twitter.com/mmostajab*
https://github.com/mmostajab

Using The Open-Source VELaSSCo Platform for Post-Processing and Visualisation of Large-Scale DEM Simulation Data
by John P. Morrissey, Prabhat Totoo, Kevin J. Hanley, Stefanos-Aldo Papanicolopulos, Jin Y. Ooi, Ivan Cores Gonzalez, Bruno Raffin, Morteza Mostajab, Thomas Gierlinger (will be submitted to Transactions of The Society for Modeling and Simulation International).

Work Experiences

2016–Present **Researcher and developer**, *Fraunhofer IGD*, Darmstadt.
Research Area: Rendering Techniques, and Query-Based Visualization
Project:
- VELaSSco (Visualization For Extremely Large-Scale Scientific Computing) EC project (VELaSSco.eu).

University Projects and Research

2014–2016 **Student researcher and developer**, *Fraunhofer IGD*, Darmstadt.
Related to computer graphics research and developments.
- Involving into VELaSSCo EC project development.
- Higher-order primitive ray tracer implemented in Intel Embree and NVIDIA OptiX.
- Virtual reality development with LEAP Motion and Oculus SDK.
- Scientific visualization related: cross section of a simulation mesh, and streamline computation.
- Rendering related: software polygon rasterizer, very large OpenGL screenshot capturing component.

2014–2014 **Student researcher and developer**, *TUM's TUM's Foerdertechnik Materialfluss Logistik (FML) group*, Garching bei München.
- Working on 3D visualization of electromagnetic field strength distribution.

2013–2014 **Guided Research**, *TUM's Prof. Westermann's chair (Computer Graphics and Visualization)*, Garching bei München.
Topic: Measuring and Evaluating Impact of Ray Sorting Algorithms on Coherency of SIMDs in Voxel-Based Path Tracers.
Content:
- Implementing a single-threaded voxel-based path-tracer.
- Instrumentalize path tracer with a SIMD simulator to analyze instruction and data coherency on different processors.

2013–2014 **Student researcher and developer**, *TUM's Prof. Navab's chair (Computer Aided and Medical Procedures & Augmented Reality)*, Garching bei München.
- Working on OpenGL debugging tools.
- Implemnting advanced ray caster for volume rendering of medical data.

2013–2013 **Practical Course**, *TUM's Prof. Cremers's chair (Computer Vision)*, Garching bei München.
Topic:GPU Programming in Computer Vision. Implementing optical flow and super resolution algorithms on GPU using CUDA.

2012–2013 **Student researcher and developer**, *Metaio GmbH*, München.

- Developing different Metaio's Junaio browser channels using HTML5, JavaScript, PHP, and Metaio creator.
- Developing a hair-coloring C++ module using Metaio SDK.
- Participating into development of a game using Unity.
- 3D content creation and adjustments for mobile AR scenarios using 3D Studio Max.

2012–2013 **Practical Course**, *TUM's Prof. Westermann's chair (computer graphics and visualization)*, Garching bei München.

Topic:Interactive Visual Data Analysis using Direct3D 11 and C++.
Content:

- Implementing rendering technqiues to extract iso-surface, do direct volume rendering, GPU particle tracing and rendering, GPU streamline computation and rendering, and etc.

2012–2012 **Student researcher and developer**, *Fortiss GmbH*, München.

- Implementing an interface using windows message passing API to update the automotive system visualization in Ciros studio.

Teaching

2016 **Seminar Course Supervision**, *Technische Universitaet Darmstadt*, Germany.
Topics:

- Apex Point Map for Constant-Time Bounding Plane Approximation by Laine, Samuli. Karras, Tero.
- SIMD Parallel Ray Tracing of Homogeneous Polyhedral Grids by Rathke, Brad; Wald, Ingo; Chiu, Kenneth; Brownlee, Carson.

2008–2010 **Teacher Assistant**, *Hamedan University of Technology*, Hamedan, Iran.

- Teaching assistant, Introduction to Programming, Spring 2008.
- Teaching assistant, Advanced Programming, Autumn 2008.
- Teaching assistant, Introduction to Assembly 80x86 Programming, Spring 2009.
- Teaching assistant, Data Structures, Autumn 2009.
- Teaching assistant, Operating Systems, Spring 2010.
- Teaching assistant, Computer Graphics, Autumn 2010.

Honors, Awards, Fellowships

- Winning TUM's Scholarship for International Students in Summer 2013, Winter 2013-14, and Summer 2015.
- 1st Place (2009 and 2010), 2nd Place (2007) in Local Hamedan, Iran ACM Programming Contests

Languages

English Professional working proficiency
German Elementary
Persian Native

Computer skills

Programming Languages C/C++, and Python.

Kasinostr. 24 – 64293 Darmstadt – Germany
+49 (170) 548 5750 • *mmostajab@gmail.com*
www.mmostajab.com • *https://twitter.com/mmostajab*
https://github.com/mmostajab

Frameworks and Libraries	OpenGL, OpenCL, GLSL shader programming, Qt, Ray tracing libraries (NVIDIA Optix, Intel Embree), Vulkan, Direct3D 11 and HLSL shader programming, and CUDA programming
Operating Systems	Windows, and Linux.
Version Control	Git, SVN, and Perforce.
Documentation	Latex, and MarkDeep.
3D Software Package	3D Studio Max.

References

- **Prof. Dr. Ruediger Westermann**
  Homepage: http://wwwcg.in.tum.de/group/persons/westermann.html
  E-mail: westermann@tum.de

- **Dr. Andreas Dietrich**
  E-mail: andi.dietrich@googlemail.com