

Mahmoud Zeidan

Institute for Visualization and Data Analysis (IVD)
Karlsruhe Institute of Technology (KIT)
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PERSONAL DATA

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Institute homepage : https://cg.ivd.kit.edu/staff/research/zeidan/mitarbeiter_zeidan.php

EXECUTIVE SUMMARY

Resourceful **Computer Graphics Researcher and Developer** with extensive experience in scientific visualization, GPU programming, and real-time rendering. Skilled in **C++**, **Python**, and parallel computing frameworks such as **CUDA**, **OpenGL**, and **Vulkan**. Demonstrates strong problem-solving and system design skills in developing scalable visualization systems, geometric flow representations, and performance-critical rendering pipelines. Combines research-driven thinking with practical software engineering expertise to deliver efficient, interactive, and data-intensive computational solutions that drive innovation in science and technology.

RESEARCH INTERESTS

Computer graphics, scientific visualization, parallel processing, and real-time interactive rendering.

EXPERIENCE

Karlsruhe Institute of Technology (KIT) August 2016 – Present
Research and Teaching Assistant
Developed software solutions and visualization frameworks for scientific data analysis and real-time rendering within research projects at the Institute for Visualization and Data Analysis (IVD).
February 2016 – February 2020: Assisted in practical sessions and coursework for General-Purpose Computation on GPUs, GPU Computing, Graphics Programming, and Game Development.

Faculty of Computer and Information Sciences, Ain Shams University December 2005 - February 2016
Research and Teaching Assistant Cairo, Egypt
Assisted in teaching the following courses: Math I & II (Calculus), Math III (Linear Algebra), Math IV (Differential Equations), Physics, Probability and Statistics, and Structured Programming.

Microsoft Research, Advanced Technology Labs (ATLC) October 2012 - March 2013
Research Assistant Cairo, Egypt
Developed computer vision tools.
Mentor: Dr. Motaz El-Saban.

Ractors Inc. May 2007 - December 2007
Web Developer Cairo, Egypt
Worked as a back-end web developer for social media applications using PHP.

quTIP Software Company November 2006 - April 2007
Software Developer Cairo, Egypt
Worked as a software developer using Microsoft .NET tools.
Company website: <http://www.qutip.com>

EDUCATION

Karlsruhe Institute of Technology (KIT)

PhD Candidate in Computer Science

Computer Graphics Group, Institute for Visualization and Data Analysis (IVD)

Thesis: Glyph-based Display and Level-of-Detail Particle Rendering for Interactive Scientific Visualization

Supervisor: Prof. Dr.-Ing. Carsten Dachsbacher

February 2016 – Present

Expected Graduation: December 2025

Faculty of Computer and Information Sciences, Ain Shams University, Egypt

June 2009 – July 2011

MSc in Computer Science

Thesis: Applying Parallel Processing Approach for Interactive Global Illumination, [link](#)

Supervisors: Prof. Dr. Taymour Nazmy, Prof. Dr. Mohamed Hashem, and Dr. Haytham El-Messiry

Faculty of Computer and Information Sciences, Ain Shams University, Egypt

September 2005 – June 2006

Pre-Master

Overall courses grade: Very Good (75%-85%)

Faculty of Computer and Information Sciences, Ain Shams University, Egypt

September 2000 – June 2004

BSc in Computer Science

Overall grade: Excellent with Honors ($\geq 85\%$)

Senior Thesis: Ahmed Zakaria, Mahmoud Zeidan, and Ahmed Hamdy, "Photonix, a 3D Modeling Tool for Realistic Image Synthesis Using Photon Mapping", [link](#)

General Secondary Education, Egypt

June 2000

Math Section

Overall grade: 98%

PUBLICATIONS

Mahmoud Zeidan. "Large Particle Datasets Visualization on GPUs." IVD - KIT, under submission.

Mahmoud Zeidan, Christoph Peters, Tobias Rapp, and Carsten Dachsbacher. "Versatile Geometric Flow Visualization by Controllable Shape and Volumetric Appearance." In Proceedings of Smart Tools and Applications in Graphics (STAG), 2022. [paper link](#).

Mahmoud Zeidan, Tobias Rapp, Christoph Peters, and Carsten Dachsbacher. "Moment-based Opacity Optimization." In Proceedings of Eurographics Symposium on Parallel Graphics and Visualization (EGPGV), 2020. [paper link](#).

Mahmoud Zeidan, Taymour Nazmy, and Mostafa Aref. "GPU-based Out-of-Core HLBVH Construction." In Proceedings of Eurographics Symposium on Rendering (EGSR) – Experimental Ideas & Implementation (EI&I), 2015. [paper link](#).

TECHNICAL STRENGTHS

Programming Languages : C/C++, Matlab, and Python

Research Tools : OpenGL, GLSL, Vulkan, and CUDA

Software Tools : GIMP, Clip Studio Paint, Blender, Inkscape, Git, Vim, and Bash scripting

Operating Systems : Linux and Windows

HOBBIES AND PERSONAL INTERESTS

Painting and modeling on physical and digital media, woodworking, nature walks, and writing and blogging in Arabic.

LANGUAGES

Arabic (Egypt) : Native

English : Professional working proficiency

German : Daily life interactions