Mahmoud Zeidan

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

EMail	:	zeidan.mahmoud@protonmail.com ◇ mahmoud.zeidan@kit.edu
Personal homepage	:	https://mahmoudsvirtualcorner.github.io/
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, scientific computing, 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) February 2016 – Present
PhD Candidate in Computer Science Expected Graduation: December 2025
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

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

Last updated: November 3, 2025