

KOSTAS VARDIS

Profession	Computer Scientist (BSc, MSc, PhD)
E-mail	kvardis@hotmail.com
Web	kostasvardis.com
GitHub	github.com/kvarcg
GitLab	gitlab.com/kvarcg
Google Scholar	scholar.google.gr
Location	Zürich, Switzerland
Military Obligations	Fullfilled (11/2010 - 07/2011)

Professional Experience

2024 - now **Huawei, Zürich, Switzerland**

Principal Researcher at the [Cloud Rendering Research Group](#)

- Research at the intersection of computer graphics, vision and machine learning.
- Development of robust algorithms for improved efficiency and visual fidelity.

2019 - 2023 **Athens University of Economics and Business, Athens, Greece**

Postdoctoral Researcher/Developer at [AUEB Computer Graphics Group](#)

Research and development on interactive rendering and illumination algorithms.

Projects:

- Lumibricks (2020-2021)
Modular Illumination Transfer for Photorealistic Visualization on Commodity Hardware
15-month research program co-funded by the European Union and Greek National Funds.
- Interactive Photorealistic Image Synthesis (2020)
12-month research program funded by the AUEB Research Center.
- Proof-of-concept implementation of coarse shading technologies for the ARM Mali-G76 Bifrost architecture (2019)

Technologies: C++, Java, OpenGL, WebGL, CUDA, etc.

2020 - 2022 **NeuroPublic S.A., Athens, Greece**

Senior Software Engineer - Contract

Software development and machine learning on the extraction, analysis and manipulation of satellite imagery (visible, invisible spectrum and radar).

Technologies: C++, Python, GDAL, TensorFlow, etc.

2018 - 2018 **Think Silicon, Athens, Greece**

Senior Software Engineer

Development of drivers and software tools of ultra-low power GPUs.

Research Projects:

- [GPU-WEAR](#) (2016-2018)
Ultra-low power heterogeneous GPUs for Wearable/IoT devices.
EU-funded H2020 project (GID: 717850).
Main task: R&D on the open-source software [GLOVE \(GL Over Vulkan\)](#).

Technologies: C, C++, OpenGL ES, EGL, Vulkan

- 2016 - 2018** **Athens University of Economics and Business, Athens, Greece**
Postdoctoral Researcher/Developer at [AUEB Computer Graphics Group](#)
 Research and development on interactive rendering and illumination algorithms.
 Projects:
 - Visualization Engine for the CostOS software of [Nomitech Ltd.](#) (2016-2017)
 Research, design and development of a high-performance, real-time visualization solution for large-volume 3D datasets.
 Position: Senior researcher/developer
Technologies: C++, C#, OpenGL, WebGL, CUDA, Qt, etc.
- 2011 - 2016** **Athens University of Economics and Business, Athens, Greece**
Doctoral Researcher/Developer at [AUEB Computer Graphics Group](#)
 Research and development on interactive rendering and illumination algorithms.
 Projects:
 - [GLIDE](#) (2014-2015)
 Goal-driven Lighting for Dynamic 3D Environments (ARISTEIA II programme).
 18-month research project co-funded by the General Secretariat of Research and Technology and the European Union.
 Position: Researcher/developer
 - [PRESIOUS](#) (2013-2016)
 Predictive digitization, restoration and degradation assessment of cultural heritage objects.
 3-year EU-funded STREP project (GID: 600533).
 Position: Researcher/lead developer for Computer Graphics AUEB Group
Technologies: C++, C#, OpenGL, WebGL, CUDA, Qt, etc.
- 2008 - 2013** **Oraton Simulation Intelligence Technologies, Athens, Greece**
Senior Software Engineer – Contract
 Development of desktop- and web-based systems for map data visualization in the private and public sector.
Technologies: C#, ASP.NET, PHP, Javascript, Silverlight, etc.
- 2008 - 2009** **Evorad, Athens, Greece**
Graphics and Medical Visualization Software Engineer
 Development of GPU- and GPGPU-based software for the visualization of 3D medical images. Technical direction in 3D Graphics.
Technologies: Java, OpenGL, CUDA
- 2006 - 2008** **SEGA – The Creative Assembly, Horsham, UK**
Programmer
 Graphics Engine and UI Programmer on Empire: Total War (released in March 2009).
Technologies: C++, DirectX, SpeedTree, Lua

Selected Personal and Freelance Projects

- 2010** **TMS - Tailor-made Medical Software**
 A client-server medical support application designed to present experts with quick and informative data of their patients on a mobile platform.
Technologies: Objective-C
- 2009 - 2011** **Ingame FMScout/FM Assistant**
 Real-time scouting/editing utility for Sports Interactive's Football Manager 2009-2011.
Technologies: C#

Research

- [1] I. Evangelou, G. Papaioannou, **K. Vardis**, and A. Gkaravelis, “**A Neural Builder for Spatial Subdivision Hierarchies**,” *The Visual Computer*, Jul. 2023, ISSN: 1432-2315.
URL: <https://doi.org/10.1007/s00371-023-02975-y>.
- [2] N. Vitsas, **K. Vardis**, and G. Papaioannou, “**Sampling Clear Sky Models using Truncated Gaussian Mixtures**,” in *Eurographics Symposium on Rendering - DL-only Track*, A. Bousseau and M. McGuire, Eds., The Eurographics Association, 2021, ISBN: 978-3-03868-157-1.
URL: <https://diglib.org/handle/10.2312/sr20211288>.
- [3] **K. Vardis**, A. A. Vasilakis, and G. Papaioannou, “**Illumination-driven Light Probe Placement**,” in *Eurographics 2021 - Posters*, J. Bittner and M. Waldner, Eds., The Eurographics Association, 2021, ISBN: 978-3-03868-134-2.
URL: <https://diglib.org/handle/10.2312/egp20211026>.
- [4] I. Evangelou, G. Papaioannou, **K. Vardis**, and A. A. Vasilakis, “**Fast Radius Search Exploiting Ray Tracing Frameworks**,” *Journal of Computer Graphics Techniques (JCGT)*, vol. 10, no. 1, pp. 25–48, Feb. 2021, ISSN: 2331-7418.
URL: <http://jcgt.org/published/0010/01/02/>.
- [5] I. Evangelou, G. Papaioannou, **K. Vardis**, and A. A. Vasilakis, “**Rasterisation-based Progressive Photon Mapping**,” *The Visual Computer*, Jul. 2020.
URL: <https://doi.org/10.1007/s00371-020-01897-3>.
- [6] A. A. Vasilakis*, **K. Vardis***, and G. Papaioannou, “**A Survey of Multifragment Rendering**,” *Computer Graphics Forum*, 2020 (*these authors contributed equally to this work).
URL: <https://diglib.org/handle/10.1111/cgf14019>,
Presented in: *Eurographics 2020*. Norrköping, Sweden.
- [7] N. Vitsas, A. Gkaravelis, A. A. Vasilakis, **K. Vardis**, and G. Papaioannou, “**Rayground: An Online Educational Tool for Ray Tracing**,” in *Eurographics 2020 - Education Papers*, M. Romero and B. Sousa Santos, Eds., The Eurographics Association, 2020.
URL: <https://diglib.org/handle/10.2312/eged20201027>.
- [8] A. A. Vasilakis*, **K. Vardis***, G. Papaioannou*, and K. Moustakas, “**Variable k -Buffer using Importance Maps**,” in *EG 2017 - Short Papers*, A. Peytavie and C. Bosch, Eds., The Eurographics Association, 2017 (*these authors contributed equally to this work).
URL: <https://diglib.org/handle/10.2312/egsh20171005>.
- [9] G. Papaioannou, T. Schreck, A. Andreadis, P. Mavridis, R. Gregor, I. Sipiran, and **K. Vardis**, “**From Reassembly to Object Completion: A Complete Systems Pipeline**,” *Journal on Computing and Cultural Heritage*, vol. 10, no. 2, 8:1–8:22, Mar. 2017.
URL: <http://doi.acm.org/10.1145/3009905>.
- [10] **K. Vardis**, “**Efficient Illumination Algorithms for Global Illumination In Interactive and Real-Time Rendering**,” Ph.D. dissertation, Department of Informatics, Athens University of Economics and Business, 2016.
URL: <http://hdl.handle.net/10442/hedi/41947>.
- [11] **K. Vardis**, A. A. Vasilakis, and G. Papaioannou, “**DIRT: Deferred Image-based Ray Tracing**,” in *Eurographics/ACM SIGGRAPH Symposium on High Performance Graphics*, Dublin, Ireland: The Eurographics Association, 2016.
URL: <https://diglib.org/handle/10.2312/hpg20161193>.
- [12] **K. Vardis**, A. A. Vasilakis, and G. Papaioannou, “**A Multiview and Multilayer Approach for Interactive Ray Tracing**,” in *Proceedings of the ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games*, ser. I3D '16, Redmond, Washington: ACM, 2016.
URL: <http://doi.acm.org/10.1145/2856400.2856401>.
- [13] **K. Vardis**, G. Papaioannou, and A. Gkaravelis, “**Real-time Radiance Caching using Chrominance Compression**,” *Journal of Computer Graphics Techniques (JCGT)*, Dec. 2014.
URL: <http://jcgt.org/published/0003/04/06>,
Presented in: *Proceedings of the ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games*. I3D'15. San Francisco, California.

- [14] A. Gkaravelis*, C. Kalampokis*, G. Papaioannou*, **K. Vardis***, and A. A. Vasilakis*, “**STAR on Interactive Global Illumination Techniques and Inverse Lighting Problems**,” Athens University of Economics and Business, Tech. Rep., Aug. 2014 (*authors listed in alphabetical order), GLIDE: Goal-driven Lighting for Dynamic 3D Environments, Deliverable 1.1.
URL: <http://graphics.cs.aueb.gr/graphics/docs/GLIDE-D1.1.pdf>.
- [15] **K. Vardis**, G. Papaioannou, and A. Gaitatzes, “**Multi-view Ambient Occlusion with Importance Sampling**,” in *Proceedings of the ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games*, ser. I3D '13, Orlando, Florida: ACM, 2013.
URL: <http://doi.acm.org/10.1145/2448196.2448214>.

Teaching Experience

2012 - 2015 **Athens University of Economics and Business**
Teaching Assistant - Computer Science BSc

Computer Graphics	Winter semester	4th year course
Databases	Eastern semester	2nd year course

Research Interests

Interactive graphics, rendering techniques, illumination algorithms

Reviewer

SIGGRAPH, SIGGRAPH Asia, Eurographics, Eurographics Symposium on Rendering (part of IPC 2023, 2024), High-Performance Graphics (also part of IPC 2021, 2022, 2023, 2024)

Education

2011 - 2016 **PhD in Computer Graphics**
Athens University of Economics and Business, Athens, Greece. Adv: Prof. G. Papaioannou

2004 - 2005 **MSc in Virtual Environments and Visualization**
University of Hull, Hull, UK

2001 - 2004 **BSc (Hons) in Computer Science**
University of Sussex, Brighton, UK

Languages

Greek Native
English Fluent
German Basic