Nikolaos **Zioulis**

Computer Vision · Computer Graphics · Machine Learning · XR

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"A research engineer working at the intersection of computer graphics, computer (3D) vision and machine learning technologies, flexibly combining low-level technical and high-level scientific backgrounds to innovate and add value to existing or new products and solutions"

Positions

Visual Computing Lab, Information Technologies Institute, Centre for Research and Technology Hellas — *Thessaloniki, Greece*

R&D Engineer — *Oct. 2013 - Dec. 2021*

- Research and development using computer vision, computer graphics and machine learning technologies.
- Internal project management in collaborative R&D projects (Hyper360, 5G-Media, ATLANTIS, RESCUER)
- Use case leader (adaptive streaming tele-immersion pilot) of the 5G-Media H2020 project
- Technical work-package leader (3D scene reconstruction, diminished reality) in the ATLANTIS H2020 project.
- Technical work-package leader (Visual localization) in the RESCUER H2020 project.
- Lead the design and development of a low-cost volumetric capture system in the Hyper360 H2020 project.
- Lead a small team of research assistants resulting in over 30 publications during a three year period (2017 – 2020).
- Successful and significant participation in the lab's funding acquisition.

Education

Aristotle University of Thessaloniki, School of Electrical and Computer Engineering — *Thessaloniki, Greece*

Diploma in Electrical and Computer Engineering (B.S & M.Sc.) — *June 2012*

Selected Publications

For a complete and up to date list please check my Google Scholar profile.

Hybrid Skip: A Biologically Inspired Skip Connection for the UNet Architecture **[paper]** — *IEEE Access*

Nikolaos Zioulis, Georgios Albanis, Petros Drakoulis, Federico Alvarez, Dimitrios Zarpalas, Petros Daras — *May 2022*

Monocular spherical depth estimation with explicitly connected weak layout cues **[paper]** — *ISPRS Journal of Photogrammetry & Remote Sensing*

Nikolaos Zioulis, Federico Alvarez, Dimitrios Zarpalas, Petros Daras — *Jan. 2022*

Zeroth-Order Optimizer Benchmarking for 3D Performance Capture **[paper]** **[project page]** **[code]** — *GECCO*

Alexandros Doumanoglou, Petros Drakoulis *, Kyriaki Christaki *, Nikolaos Zioulis *, Vladimiros Sterzentsenko, Antonis Karakottas, Dimitrios Zarpalas, Petros Daras. — *Jul. 2021*

Pano3D: A Holistic Benchmark and a Solid Baseline for 360^o Depth Estimation. **[paper]** **[project page]** **[code]** **[data]** **[demo]** — *CVPRW*

Georgios Albanis *, Nikolaos Zioulis *, Petros Drakoulis, Vasileios Gkitsas, Vladimiros Sterzentsenko, Federico Alvarez, Dimitrios Zarpalas, Petros Daras. — *Jun. 2021*

PanoDR: Spherical Panorama Diminished Reality for Indoor Scenes. **[paper]** **[project page]** **[code]** — *CVPRW*

Vasileios Gkitsas, Vladimiros Sterzentsenko, Nikolaos Zioulis, Georgios Albanis, Dimitrios Zarpalas. — *Jun. 2021*

Single-shot cuboids: Geodesics-based end-to-end Manhattan aligned layout estimation from spherical panoramas. [paper] [project page] [code]
Nikolaos Zioulis, Federico Alvarez, Dimitrios Zarpalas, Petros Daras.
Image and Vision Computing
Mar. 2021

DronePose: Photorealistic UAV-Assistant Dataset Synthesis for 3D Pose Estimation via a Smooth Silhouette Loss. [paper] [project page] [code] [data]
Georgios Albanis *, Nikolaos Zioulis *, Anastasios Dimou, Dimitrios Zarpalas, Petros Daras
ECCVW
Aug. 2020

Deep Soft Procrustes for Markerless Volumetric Sensor Alignment. [paper] [project page] [code]
Vladimiros Sterzentsenko, Alexandros Doumanoglou, Spyridon Thermos, Nikolaos Zioulis, Dimitrios Zarpalas, Petros Daras
IEEE VR
Mar. 2020

Deep Lighting Environment Map Estimation from Spherical Panoramas. [paper] [project page] [code]
Vasileios Gkitsas *, Nikolaos Zioulis *, Federico Alvarez, Dimitrios Zarpalas, Petros Daras
CVPRW
Jun. 2020

Spherical View Synthesis for Self-Supervised 360 Depth Estimation. [paper] [project page] [code] [data]
Nikolaos Zioulis, Antonis Karakottas, Dimitrios Zarpalas, Federico Alvarez, Petros Daras
3DV
Sep. 2019

Self-supervised Deep Depth Denoising. [paper] [project page] [code]
Vladimiros Sterzentsenko *, Leonidas Saroglou *, Anargyros Chatzitofis *, Spyridon Thermos *, Nikolaos Zioulis *, Alexandros Doumanoglou, Dimitrios Zarpalas, Petros Daras
ICCV
Oct. 2019

A Low-cost, Flexible and Portable Volumetric Capturing System. [paper] [project page] [software]
Vladimiros Sterzentsenko *, Antonis Karakottas *, Alexandros Papachristou *, Nikolaos Zioulis *, Alexandros Doumanoglou, Dimitrios Zarpalas, Petros Daras
SITIS
Nov. 2018

Fast Deformable Model-based Human Performance Capture and FVV using Consumer-grade RGB-D Sensors. [paper] [supplementary] [project page] [data]
Dimitrios S Alexiadis, Nikolaos Zioulis, Dimitrios Zarpalas, Petros Daras
Pattern Recognition
Jul. 2018

OmniDepth: Dense Depth Estimation for Indoors Spherical Panoramas. [paper] [project page]
Nikolaos Zioulis *, Antonis Karakottas *, Dimitrios Zarpalas, Petros Daras
ECCV
Sep. 2018

Improving Camera Pose Estimation via Temporal EWA Surfel Splatting. [paper]
Nikolaos Zioulis *, Alexandros Papachristou *, Dimitris Zarpalas, Petros Daras
ISMAR
Oct. 2017

An integrated platform for live 3D human reconstruction and motion capturing. [paper] [project page] [data]
Dimitrios S Alexiadis, Anargyros Chatzitofis, Nikolaos Zioulis, Olga Zoidi, Georgios Louizis, Dimitrios Zarpalas, Petros Daras
IEEE TCSVT
Apr. 2017

Awards

International

2020 **2nd Prize**, Open Optimization Competition [link] *Online*
2019 **1st Place**, Best Demo Award at the International Conference on Multimedia Modeling [link] *Thessaloniki, GR*

Talks

Tutorial on Volumetric Video *Online*

Eurographics Conference *May. 2021*

- Presented our work on low-cost volumetric video with consumer grade sensors.

The Atlantis Project *Online*

Stereopsia Conference *Dec. 2020*

- Presented the technical challenges of the Atlantis H2020 project.

Exploring serverless service deployment in 5G for next generation media applications *Thessaloniki, GR*

IEEE 5G and IoT Thessaloniki Summit 2018. *Oct. 2018*

- Presented our developments in the 5G-MEDIA H2020 project at the Training School on Emerging Technologies for 5G and Internet of Things.

Academic Services

2023 **Reviewer**, IEEE Winter Conference of Applications on Computer Vision (IEEE WACV)
2022 **Reviewer**, IEEE Transactions on Visualization and Computer Graphics (IEEE TVCG)
2022 **Reviewer**, IEEE Transactions on Circuits and Systems for Video Technology (IEEE TCSVT)
2022 **Reviewer**, European Conference on Computer Vision (ECCV)
2022 **Reviewer**, Elsevier ISPRS Journal of Photogrammetry and Remote Sensing (PHOTO)
2022 **Reviewer**, IEEE 2022 International Symposium on Mixed and Augmented Reality (IEEE ISMAR)
2022 **Reviewer**, IEEE Conference on Computer Vision and Pattern Recognition (IEEE CVPR)
2022 **Reviewer**, Elsevier Computers & Graphics (CAG)
2022 **Reviewer**, IEEE Winter Conference of Applications on Computer Vision (IEEE WACV)
2022 **Reviewer**, IEEE Virtual Reality Conference (IEEE VR)
2021 **Reviewer**, Elsevier Computers in Industry (COMIND)
2021 **Reviewer**, IEEE Virtual Reality Conference (IEEE VR)
2021 **Reviewer**, IEEE Winter Conference of Applications on Computer Vision (IEEE WACV)
2020 **Reviewer**, IEEE Communications Magazine (IEEE COMMAG)
2020 **Reviewer**, IEEE Conference on Computer Vision and Pattern Recognition (IEEE CVPR)
2020 **Reviewer**, IEEE International Conference on Multimedia & Expo (IEEE ICME)
2019 **Reviewer**, IEEE Trans. Circuits, Systems and Video Technology (IEEE TCSVT)

Development

Programming	C++11/14/17/20, Python, CUDA, C#
Machine Learning	PyTorch, Caffe, ONNX
Computer Vision	OpenCV, Eigen, g2o, Microsoft Kinect, Intel RealSense, OAK-D
Computer Graphics	OpenGL, GLSL, GLFW, GLEW, Blender, Unity3D, CG, ImGui
IDE	Visual Studio, Visual Studio Code
Documentation	LaTeX, MkDocs, Microsoft Office
Other Tools	Git, Docker, MeshLab, RabbitMQ, CloudCompare
Languages	English, Greek