

Nikolaos Zioulis

COMPUTER VISION · COMPUTER GRAPHICS · MACHINE LEARNING · XR

Prasakaki 79, 55535, Thessaloniki, Greece

☎ (+30) 6972217169 | ✉ nzioulis@gmail.com | 🏠 zokin.github.io | 📺 [zokin](#) | 📺 [nikolaos-zioulis](#) | 📄 [publications](#)

“An engineer and scientist working at the intersection of computer vision, machine learning and computer graphics. He is currently on a path to unify of volumetric capture, AI and body simulation technology. His research interests have set him on the pursuit of data-driven priors, latent optimization, and efficient neural processing and generative AI.”

Positions

Moverse P.C.

Thessaloniki, Greece

CHIEF TECHNOLOGY OFFICER

Feb. 2023 - Present

- Principal Scientist
- Roadmap Development
- Technical Lead
- Intellectual Property

Klothed Technologies Inc.

Remote, U.S.A

COMPUTER VISION, GRAPHICS & MACHINE LEARNING ENGINEER

Nov. 2021 - Feb 2023

- Monocular body fitting
- Proof-of-concept to public beta release
- Autonomously navigated a fast-paced start-up environment

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](#))
- Technical work-package leader (3D scene reconstruction, diminished reality) in the ATLANTIS H2020 project.
- Lead the design and development of a low-cost volumetric capture system in the Hyper360 H2020 project.
- Use case leader (adaptive streaming tele-immersion pilot) of the 5G-Media H2020 project
- Technical work-package leader (Visual localization) in the RESCUER 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

Universidad Politécnica de Madrid

Madrid, Spain

DATA-DRIVEN MONOCULAR DEPTH ESTIMATION FROM SPHERICAL PANORAMAS (PHD)

Mar. 2019 - Jun 2023

Aristotle University of Thessaloniki

Thessaloniki, Greece

EECS (BSc & MSc)

Sep 2002 - June 2012

Selected Publications

For a complete and up to date list please check my [Google Scholar](#) profile.

From bias to balance: Leverage representation learning for bias-free MoCap solving [\[paper\]](#)

CVIU

GEORGIOS ALBANIS, [NIKOLAOS ZIOULIS](#), SPYRIDON THERMOS, ANARGYROS CHATZITOFIS, KOSTAS KOLOMVATSOS

Feb. 2025

BundleMoCap++: Efficient, robust and smooth motion capture from sparse multiview videos [\[paper\]](#)

CVIU

GEORGIOS ALBANIS, [NIKOLAOS ZIOULIS](#), KOSTAS KOLOMVATSOS

Dec. 2024

Towards Practical Single-shot Motion Synthesis

CVPRW

[\[paper\]](#) [\[project page\]](#)

KONSTANTINOS RODITAKIS, SPYRIDON THERMOS, [NIKOLAOS ZIOULIS](#)

Jun. 2024

BundleMoCap: Efficient, Robust and Smooth Motion Capture from Sparse Multiview

Videos [\[paper\]](#) [\[project page\]](#)

GEORGIOS ALBANIS, [NIKOLAOS ZIOULIS](#), KOSTAS KOLOMVATSOS

[CVMP](#)

Nov. 2023

Noise-in, Bias-out: Balanced and Real-time MoCap Solving

[\[paper\]](#) [\[project page\]](#)

GEORGIOS ALBANIS, [NIKOLAOS ZIOULIS](#), SPYRIDON THERMOS, ANARGYROS CHATZITOFIS, KOSTAS KOLOMVATSOS

[ICCVW](#)

Oct. 2023

KBODY: Towards general, robust, and aligned monocular whole-body estimation

[\[paper\]](#) [\[project page\]](#)

[NIKOLAOS ZIOULIS](#), JAMES F. O'BRIEN

[CVPRW](#)

Jun. 2023

Hybrid Skip: A Biologically Inspired Skip Connection for the UNet Architecture

[\[paper\]](#)

[NIKOLAOS ZIOULIS](#), GEORGIOS ALBANIS, PETROS DRAKOULIS, FEDERICO ALVAREZ, DIMITRIOS ZARPALAS, PETROS DARAS

[IEEE Access](#)

May 2022

Monocular spherical depth estimation with explicitly connected weak layout cues

[\[paper\]](#)

[NIKOLAOS ZIOULIS](#), FEDERICO ALVAREZ, DIMITRIOS ZARPALAS, PETROS DARAS

[ISPRS Journal of Photogrammetry & Remote Sensing](#)

Jan. 2022

Zerth-Order Optimizer Benchmarking for 3D Performance Capture

[\[paper\]](#) [\[project page\]](#) [\[code\]](#)

ALEXANDROS DOUMANOGLOU, PETROS DRAKOULIS *, KYRIAKI CHRISTAKI *, [NIKOLAOS ZIOULIS *](#), VLADIMIRO
STERZENTSENKO, ANTONIS KARAKOTTAS, DIMITRIOS ZARPALAS, PETROS DARAS.

[GECCO](#)

Jul. 2021

Pano3D: A Holistic Benchmark and a Solid Baseline for 360° Depth Estimation.

[\[paper\]](#) [\[project page\]](#) [\[code\]](#) [\[data\]](#) [\[demo\]](#)

GEORGIOS ALBANIS *, [NIKOLAOS ZIOULIS *](#), PETROS DRAKOULIS, VASILEIOS GKITSAS, VLADIMIRO
STERZENTSENKO, FEDERICO ALVAREZ, DIMITRIOS ZARPALAS, PETROS DARAS.

[CVPRW](#)

Jun. 2021

PanoDR: Spherical Panorama Diminished Reality for Indoor Scenes.

[\[paper\]](#) [\[project page\]](#) [\[code\]](#)

VASILEIOS GKITSAS, VLADIMIRO STERZENTSENKO, [NIKOLAOS ZIOULIS](#), GEORGIOS ALBANIS, DIMITRIOS ZARPALAS.

[CVPRW](#)

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.

[\[paper\]](#) [\[project page\]](#) [\[code\]](#)

VLADIMIRO 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.

[\[paper\]](#) [\[project page\]](#) [\[code\]](#)

VLADIMIRO STERZENTSENKO *, LEONIDAS SAROGLUO *, ANARGYROS CHATZITOFIS *, SPYRIDON THERMOS *,
NIKOLAOS ZIOULIS *, ALEXANDROS DOUMANOGLOU, DIMITRIOS ZARPALAS, PETROS DARAS

ICCV

Oct. 2019

A Low-cost, Flexible and Portable Volumetric Capturing System.

[\[paper\]](#) [\[project page\]](#) [\[software\]](#)

VLADIMIRO 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 *, DIMITRIOS 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

Selected Projects

SNAP: Solving Neural Articulated Performances

LEAD RESEARCHER & DEVELOPER

- Knowledge base & projects for Gaussian Avatars
- Open-source, MIT licensed.

GitHub

Nov. 2024 - Present

moai: Accelerating modern data-driven workflows

LEAD DESIGNER & DEVELOPER, TEAM LEADER

- PyTorch-based AI Model Development Kit (MDK) that aims to improve data-driven model workflows, design and understanding.
- Open-source, Apache 2.0 licensed.
- Presented in [PyTorch Developer's Day 2021](#). [\[poster\]](#)

GitHub

Jan. 2021 - Present

VolCap: A Portable, Flexible and Facile Volumetric Capture System

LEAD DESIGNER & DEVELOPER, TEAM LEADER

- Multi-sensor volumetric capturing system.
- Kinect for Azure and Intel RealSense sensors supported (hybrid setups too).
- Structure-based multi-sensor spatial alignment.

GitHub

Jun. 2018 - Oct. 2020

rerun-animation: A rerun-sdk plugin & toolset to visualize 3D animation data.

LEAD DESIGNER & DEVELOPER

- rerun-animation turns the rerun-sdk viewer to a 3D animation viewer.
- Open-source, Apache 2.0 licensed.

GitHub

Sep. 2024 - Present

Awards

INTERNATIONAL

2020 **2nd Prize**, Open Optimization Competition [\[link\]](#)

2019 **1st Place**, Best Demo Award at the International Conference on Multimedia Modeling [\[link\]](#)

Online

Thessaloniki, GR

Talks

Bringing Lifelike Motion to Virtual Worlds

Laval, France

LAVAL VIRTUAL

Apr. 2025

- Presented our next-gen motion capture tools for high-quality animations and a unique generative library of endless animation variations.

Tutorial on Volumetric Video

Online

EUROGRAPHICS CONFERENCE

May. 2021

- Presented our work on low-cost volumetric video with consumer grade sensors. [\[video\]](#) [\[paper\]](#)

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.

Development

Programming	C++11/14/17/20, Python, CUDA, C#, Reactive Extensions
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, bgfx, ImGui
IDE	Visual Studio, Visual Studio Code
Documentation	LaTeX, MkDocs, Microsoft Office, Excalidraw
Other Tools	Git, Docker, GitHub, MeshLab, RabbitMQ, CloudCompare
Languages	English, Greek

Academic Services

2025	Reviewer , EuroXR International Conference (EuroXR)
2025	Reviewer , IEEE Winter Conference of Applications on Computer Vision (IEEE WACV)
2024	Reviewer , Asian Conference on Computer Vision (ACCV)
2024	Reviewer , European Conference on Computer Vision (ECCV)
2024	Reviewer , IEEE Conference on Computer Vision and Pattern Recognition (IEEE CVPR)
2024	Reviewer , IEEE Winter Conference of Applications on Computer Vision (IEEE WACV)
2023	Reviewer , IEEE International Conference on Computer Vision (IEEE ICCV)
2023	Reviewer , Omnidirectional Computer Vision Workshop (OmniCV @ CVPR)
2023	Reviewer , IEEE/RSJ International Conference on Intelligent Robots and Systems (IEEE IROS)
2023	Reviewer , IEEE Conference on Computer Vision and Pattern Recognition (IEEE CVPR)
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)