Pavlos Makridis

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Profile

Research-oriented Computer Science Master's student with a passion for 3D reconstruction, radiance representations and rendering.

Research & Teaching Experience

Computer Graphics and Visualization Group - Technical University of Delft, *Teaching Assistant*
09/2022 – present | Delft, Netherlands
- Helped organize and teach Bachelor and Master's courses covering topics on rendering, animation and appearance capture.
- Courses: 3D Computer Graphics and Animation, Visual Data Processing (***Head Teaching Assistant***) and Computer Graphics.

Indian Institute of Science, *Research Intern*
07/2023 – 09/2023 | Bengaluru, India

- Established a long-distance haptic teleoperation link connecting The Netherlands to India.
- Responsible for the environment capture and robotics aspects of the project, using PCL, ROS2 and Bullet Physics

SERG Technical University of Delft, *Research Assistant*
04/2021 – 07/2022 | Delft, Netherlands
- Published at IEEE/ACM 44th International Conference on Software Engineering
- Core developer and designer of TestKnight, an open-source testing plugin for the IntelliJ IDEA IDE.
- Worked on static analysis applications with parsing technologies such as the IntelliJ PSI and ANTLR v4.

Industry Experience

Extension School Technical University of Delft,
Data Analytics Assistant
09/2021 – 09/2022 | Delft, Netherlands
- Worked on developing a data analytics ETL pipeline with Python, Pandas, SQL, Docker and Apache Airflow to analyse data from over 3.5 million learners.
- Developed various Python scripts for data analysis and delivery.
- Analysed learner data from platforms such as EdX to provide insights to the course designers.

Upstream, *Summer Software Engineering Intern*
07/2020 – 08/2020 | Athens, Greece
- Designed and implemented a set of different API endpoints using Java and the Spring Boot framework.
- Studied and used Java, Spring Boot, Docker, PostgreSQL and Git.
- Experienced how teams following Agile practices function and collaborate for large scale software system development.

Education

Master's Computer Science, *Delft University of Technology*
09/2022 – present
Member of the Honours Programme
Current GPA of 9.0/10 - top 1.1%.
Thesis (ongoing): ***Appearance and Physics Reconstruction with Gaussian Splatting***

Bachelor's Computer Science and Engineering,
Delft University of Technology
2019 – 2022
Cum Laude with a GPA of 8.54/10.
Thesis: ***Ambient Light Caching via Approximate Photon Mapping*****, awarded a 9/10.**

Projects

Appearance and Physics Reconstruction with Gaussian Splatting
11/2023 – present
Thesis project aimed at combining dynamic 3D Gaussians and inverse physics to reconstruct objects' appearance and physical behaviour.

Visualizing the Gaussian Splatting Optimization
10/2023 – 12/2023
Created a 3D visualizer demonstrating how the optimization proposed in 3D Gaussian Splatting optimizes the kernels for the underlying scene appearance and geometry.

Reproducing Bundle-Adjusting Neural Radiance Fields
04/2023 – 05/2024
Short project aimed at investigating the reproducibility and limitations of Bundle Adjusting Neural Radiance Fields.

The Unnamed Game Engine
04/2023 – present
OpenGL 3D game engine built with the ENTT entity component system with support for shadow mapping, physically based materials, SDF glyph rendering and Bézier curve animations.

Ambient Light Caching via Approximate Photon Mapping
05/2022 – 07/2022
Developed a photon mapping-based approach to create ambient light caches to improve the efficiency of physically based rendering.

Skills

PyTorch and PyTorch3D

OpenGL

Fluency in C++, Python and Java

Unity3D

ROS2

Blender 3D Scripting and Add-on Development

Software Design and Collaborative Development

Publications

TestKnight: An Interactive Assistant to Stimulate Test Engineering, *IEEE/ACM 44th International Conference on Software Engineering: Companion Proceedings*
05/2022

Awards

FAST Grant (€445/$490) for conducting research abroad,
FAST - Funding Ambitious Students TU Deflt

Center of Talented Youth Greece Talent Search Award,
Anatolia College/John Hopkins Center for Talented Youth.

Highest Grade and Excellence Awards in High School,
Hellenic Ministry of Education, Research and Religious Affairs

Certificates

- IELTS Academic (overall grade 8.5/9)
- PADI Rescue Diver
- Primary & Secondary Care CPR/AED/First Aid - Adult