GIACOMO NAZZARO

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EXPERIENCE

Ph.D. student — 2018 - now

Sapienza, University of Rome
Research in rendering, geometry processing and editing, under the supervision of Prof. Fabio Pellacini.

Graduate researcher — 2017

Sapienza, University of Rome
Research activity for Computational Design Lab at Sapienza, subsidized by scholarship.

PUBLICATIONS

DecoSurf: Recursive Geodesic Patterns on Triangle Meshes

in review SIGGRAPH 2020

G. Nazzaro, E. Puppo, F. Pellacini

video: youtu.be/mxjaGVY9TBI
paper: google.drive
In this work, we show that many complex patterns can be generated directly on surfaces by the recursive application of few operators based on geodesic distances. The real-time implementation of our formulation supports interactive editing on meshes of a few million triangles.

Yocto/GL: A Data-Oriented Library for Physically-Based Graphics

STAG 2019

F. Pellacini, G. Nazzaro, E. Carra

paper: diglib.eg.org/stag20191373
Yocto/GL is a C++ library for computer graphics research and education, featuring graphics utilities, support for fast I/O, algorithms for geometry processing and a physically-based renderer. Its minimalistic design and data-oriented programming style makes it readable, extensible, and efficient.

EDUCATION

MSc in Computer Science — 2016 - 2018

Sapienza, Rome — 110/110 *with honors*

BS in Applied Mathematics — 2013 - 2016

Tor Vergata, Rome — 110/110 *with honors*

PROJECTS

Real-time Rendering of Clouds

Rendering system for real-time volumetric cloudscapes, developed for Milestone s.r.l, the largest game company in Italy. The rendering core is a raymarcher implemented as a compute shader inside the Unreal Engine pipeline.

Geodesic Graph

github.com/giacomonazzaro/geodesic-graph
A novel graph-based geodesic solver for massive datasets. It provides state-of-the-art performance on meshes with a few millions triangles and supports parallel execution.

Volumetric Path Tracing

github.com/xelatihy/yocto-gl
Implementation of a volumetric path tracer inside Yocto/GL, featuring MIS and delta/ratio tracking.

CSG Explorer

github.com/giacomonazzaro/csg-explorer
Parser, evaluator and renderer of CSG trees of signed distance fields.

CSP Solver

github.com/giacomonazzaro/csp_solver
A simple constraint satisfaction problem solver. The library is designed to be completely self-contained and implements custom memory allocation to maximize performance.

Serialize

github.com/giacomonazzaro/serialize
Minimal header-only library for binary serialization of simple data structures.

Split-Sum IBL

Implementation from the ground-up (in OpenGL) of the split-sum rendering technique for physically based image-based-lighting in real-time.

SKILLS

Development
C++, GPU shaders, Python

Computer graphics
Rendering, Geometry processing

Computer science
Data structures, Numerical methods