MARTIN GARCIA, POL

Informatics Engineering | Computer graphics

@ **polmrgc@gmail.com** **SirKoto** **sirkoto.github.io/**

EXPERIENCE

Research and Development • UPC - HP Inc.

High-Resolution 3D Printing

April 2019 – Present Barcelona, Spain

- Research and development of algorithmic solutions (C++) for state-of-the-art high-resolution 3D printing for HP Inc.
- Working on high performant geometry processing, data structures and rasterization algorithms.
- I delivered crucial enhancements to multiple time-critical components, including the whole slicing pipeline with speedups up to x2.5, for memory and performance feasibility.
- I designed novel integrations for volumetric models and constructive solid geometry in 3D printing for the 3MF volumetric extension.

ACHIEVEMENTS

- Award to best Spanish Computer Graphics bachelor final thesis 2019-2021, by the Spanish Congress of Computer Graphics (CEIG).
- Award to the best informatics engineering bachelor final thesis 2019-2020 of the faculty, by FIB Alumni.
- Co-inventor of 2 different patents:
  - WO2021011049A1: On Beam Lattice processing for high-resolution additive manufacturing.
  - WO2021011077A1: On detection and protection of small features in additive manufacturing.

PROJECTS

To check out my personal projects, I highly encourage you to look at my webpage or my GitHub profile:
sirkoto.github.io/ github.com/SirKoto
Here are some remarkable projects:

Simulator of deformable materials with MPM

Bachelor thesis
github.com/SirKoto/MPMSimulator

- Research and develop a simulator for deformable, elastic and plastic, objects using the Material Point Method. With explicit integration. CPU and GPU implementation.
- Wrote an introductory document to simulation using hybrid representations (both Eulerian and Lagrangian) from the point of view of a Computer Scientist.

GPU Mass-Spring Simulator

github.com/SirKoto/particle_sim

- Interactive real-time simulator of mass-spring systems, entirely implemented on the GPU, with external collisions.
- Hair and Cloth rendering and simulation, with B-spline tessellation.

EDUCATION

MS in Innovation and Research in Informatics - Computer Graphics

Universitat Politècnica de Catalunya

2020 – Present

BS in Informatics Engineering
Major: Computer Science

Universitat Politècnica de Catalunya

2016 – 2020

SKILLS

“Hard” skills

- *Well-versed*: Computer Graphics • Geometry Processing • Linear Algebra
- *Versed*: Computer Vision • Logic • Computational Physics • GPGPU programming • Deep Learning

Programming Languages

- *Proficient*: C++ • C
- *Familiar*: Python • Java • Rust • CUDA

Libraries and Tools

- *Proficient*: C++ Standard Library • Git • OpenGL
- *Familiar*: Vulkan • OpenMP • CMake

Languages

- *Spanish* - Native
- *Catalan* - Native
- *English* - Professional working proficiency

PERSONAL SKILLS

- Strong drive for self-improvement, to learn and grow professionally.
- Organized and methodic at individual and collaborative work.
- Good communication and teamwork aptitudes.
- Aware and understanding of my responsibilities.