# Elhadidi Hosni

Associate · Computational Design, Geometry Processing & Computer Vision

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London, UK · No sponsorship required

## PROFESSIONAL SUMMARY

Trained in architecture, now building geometry software: an award-winning architecture thesis and an MSc in Architectural Computation (UCL), then five years shipping production tools at Foster + Partners. I turn slow design workflows into software, from façades and daylight compliance to pedestrian simulation, VR and computer vision, in C++17 and .NET.

## EXPERIENCE

### Associate | Design Systems Analyst

2025 – Present

*Foster + Partners · London, UK*

GEOMETRY PIPELINE

- Lead a **six-person team** building **Geometry Pipeline**, managing the team's work and owning the feature roadmap. Used by **70 monthly active users** across the practice to tame heavy, unoptimised models through a CLI, web API and web app converting between Rhino, STEP, USD, GLB, FBX and more. Cut multi-day model preparation to **under one hour on models over 10 GB** through automated conversion, simplification and instancing.
- Helped expand the team by taking part in **interviewing** candidates and **mentoring and onboarding** new team members.
- Designed the cross-platform C++ core (Windows, Linux, macOS), built on **OpenCASCADE** for BReps and meshing, and on **CGAL**, **meshoptimizer** and other established open-source libraries for mesh operations and repair. It underpins all internal VR reviews, including a live airport project reviewed on **Apple Vision Pro from 26 GB+ of CAD assets**.
- Adding **computer vision** to Geometry Pipeline so it recognises what each object in a model is (a chair, a door, a column), the foundation for **automatic asset replacement** and **object-aware simplification**.
- Built **GeoAgent**, which mines the practice's archive of 3D models to train that recognition. It is **fully automated and low-cost**, labelling objects with AI models, and continuously grows the training data.

PROJECTS

- Built a parametric workflow on **Xicen Science & Technology Centre** that regenerates the entire complex façade system on every design update, eliminating hours of manual 3D modelling per iteration; built solar and view analysis workflows on **18 Blackfriars** for rapid option evaluation.
- Used **AI agents** to develop and prototype bespoke web apps, including a **stadium configurator** and an app for producing **early-stage design studies**.

### Design Systems Analyst

2021 – 2025

*Foster + Partners · London, UK*

- Developed an early-stage design analysis tool with a real-time Unity front end driven by Grasshopper, covering solar analysis, Waldram studies and side-by-side option comparison, giving teams real-time feedback on each option.
- Led development of a Unity pedestrian simulation tool, benchmarked against MassMotion with comparable accuracy at faster iteration speeds; deployed on a live airport project.
- Built a Grasshopper plugin for Waldram analysis and New York planning compliance on **350 Park Avenue** that cut analysis from hours to seconds. It matched external consultants' results, so independent validation moved from every design option to the final submission only, saving the practice thousands of pounds.
- Solely responsible for computational modelling of all dome geometries on **Innhub La Punt** to meet design intent and fabrication specifications; technical liaison between architects and the external engineering consultant.

## TECHNICAL SKILLS

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| **Languages** | C++17, C# / .NET 8, Python |
| **Geometry** | OpenCASCADE, OpenNURBS, CGAL, meshoptimizer, libigl, OpenVDB · 3dm, STEP, USD, glTF, FBX, IFC |
| **Graphics & ML** | CUDA, Metal, computer vision, vision-language models (Qwen3-VL), MLX, FastAPI, model training |
| **Infrastructure** | CMake, vcpkg, NuGet, Docker, Azure DevOps, Azure Blob Storage |
| **Design tools** | Rhino, Grasshopper, Revit, Unity, Blender |

## EDUCATION

**MSc Architectural Computation** · University College London (UCL) · Distinction — 2020 – 2021

**Master of Architecture** · University of the West of England · Distinction — 2018 – 2020

Thesis awards: RIBA President's Silver Medal nominee · RIBA South West Commendation · Chapman Taylor Best Overall Design Prize · Atkins Innovation Prize

**BEng / BArch Architecture** · Mansoura University, Egypt · Merit — 2011 – 2016