Antoine **Bugeat**

PhD-Engineer and Developer skilled in urban physics, sustainability, and computational design, with a growing focus on web development and Three.js. Passionate about creating simple solutions to complex problems.

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RELATED EXPERIENCES

Computational Design Developer

Strabag, SID – *December 2021 to Present – Vienna, Austria*

I develop tools for architects, engineers, and designers, aiding in informed design decisions. This tools are mainly Web applications and Rhino/GH plugins. Our interdisciplinary team's tools serve various company departments, including real estate, architecture, and engineering.
Here are the main projects I lead:

- **GD Excavation Pit**

Software for designing excavation pit walls in both parametric and generative modes. The parametric mode offers a quick assessment of costs, CO_2 impact, and structural feedback. Meanwhile, the generative mode employs optimization technics, delivering automatic and efficient design alternatives.
Python (back) / JavaScript (front) / Eel / Plotly.js / Azure AD authentication / Optimization Algorithms / Parametric design / Design Explorer / Git

- **GD Parking Layout**

Tool with intuitive 'Smart Sketching' of parking layouts, autonomously allocating slots and ensuring compliance with regulations. Includes Tractrix smart sketch. Available as a web app and a Rhino plugin.
Python / TypeScript / Rhino-GH / Three.js / Flask / Shapely / Docker / Git

- **Other ongoing projects:**

GD Structure: tool to quickly perfom structural simulation.
GD Toolkit: wrapper of several environmental tool (as laybug and honeybee) to facilitate the connections with our other tools.
GD Earthworks: tool to generate project site topology to optimize earth movement and ensure geotechnical compliance.
C# / Python / Rhino-GH / Ladybug / Honeybee / NetworkX / Optimization Algorithms / Git

Sustainable Building Engineer

Vizea Sud-Ouest – *March 2021 to December 2021 – Bordeaux, France*

- Advised on environmental performance and occupant comfort for architects, engineers, and building owners.
- Managed internal tool development and industry software maintenance.

Environmental engineering / Building energy simulation / Comfort analysis / Autocad / Rhino-GH

Researcher on Radiation Simulation - *PhD Candidate*

UPPA (Uni.) & UdelaR (Uni.) & NOBATEK/INEF4 (Research Center)
September 2017 to December 2020 – Anglet, France
« Development of a radiosity model for the study of solar radiation in urban areas »

- Developed daylight and thermal radiation simulation methods for urban architectural applications. (Check ResearchGate profile for publications)
- Applied rendering techniques (radiosity, ray-tracing, path-tracing) to architecture and building engineering.
- Collaborated in an international (France, Spain, Uruguay and Belgium) and multidisciplinary team (Architecture, Physics, Computer Science)
- Two-month research fellow at UdelaR – Computer Science Department, focused on enhancing skills in code development and computer science.

C++ / Matlab / RADIANCE / Embree-Intel API / Ray-tracing / Solar radiation simulation / Daylight simulation / OOP / Computer science basics / Git

Assistant Sustainable Building Engineer

NOBATEK/INEF4 – *April to August 2017 – Anglet, France*

- Contributed to design and environmental certification studies for diverse projects (collective housing, offices, schools).
- Monitored regulations, certifications, and daylighting simulation tools.

INFO

Born in France (29/01/1994)
Currently living in Vienna

Fluent in French and English
Basic Spanish with notions in German

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EDUCATION

PhD – Urban Physics

December 2020
Architecture & Urban Physics
UPPA, Nobatek/Inef4 & UdelaR
Anglet (France) & Montevideo (Uruguay)

Building and Civil Engineer

September 2017
Aquitaine Institute of Construction
ISABTP, Anglet (France)

2-Year University Degree in Civil Engineering

September 2014 – IUT Égletons (France)

Scientific Bachelor's degree

June 2012 – Ussel (France)

SKILLS

Code

- **Typescript / JavaScript** (Three.js, Vue, plotly, D3)
- **Python** (flask, eel, shapely, Rhino/GH scripting)
- **C#** (Rhino/GH plugins)
- **Git** (+ Github, Gitlab)
- Matlab
- C++ (Embree INTEL ray tracing API)
- Ruby (SketchUp scripts)

Solar Radiation & Daylighting

- **RADIANCE**
- **Self-made softwares**
- Ladybug / Honeybee

2D and 3D

- **Three.js**
- **Rhino 3D / Grasshopper**
- Blender
- Sketchup

Soft skills

- Problem-solver
- Autonomous and Autodidact
- Good communicator
- Curious and Rigorous

SIDE PROJECTS

List of apps and experiments
****all available on my Github****

SkyViewFactor-three (Three.js, WebGL shaders)
HorizonPainter (Three.js, D3)
BeckersMesher (D3)
Simple3DCAD (Three.js)
raytracingTester (Three.js, web workers)
ColombiaConGusto (TikTok-like Vlog)