# 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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## 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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Portfolio: abugeat.github.io/Me

## 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. These tools are mainly web applications and Rhino/GH plugins and serve various company departments.
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 auth / 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 / Pyodide / Docker / Git

- **Other ongoing projects:**
GD Structure: tool to quickly perfom structural simulation.
GD Toolkit: wrapper of several environmental tool (as laybug and honeybee)
GD Earthworks: tool to optimize project site topology
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.

## 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, pyodide, 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)