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| Johan Ospina |
| Engineer looking for opportunities to work on challenging 3D, CV, and complex problems |
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### **Education**

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| M.S.E Computer Science / Princeton University | Sept 2019 - May 2021 |

**GPA: 3.72 –** *Teaching Assistant, Fully Funded GEM University Fellow*

* *Focus on 3D* ***Computer Vision****,* ***Graphics****, and* ***Algorithm Design***

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| B.S Computer Engineering / Boston University | Sept 2013 - May 2017 |

**GPA: 3.65 –** *Magna Cum Laude, Research Assistant, Teaching Assistant, Academic Conduct Committee*

* Featured by ECE Department for acquiring ***Microsoft Garage*** as Senior Design Project Client.

# Skills

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| * **Languages:** C++, C#, JavaScript, Python, CSS, HTML, Bash, GLSL, Swift, LaTeX, Typescript * **Technologies:** Unity, Git, ReactJS, BabylonJS, OpenCV, ThreeJS, LITElement, Redux, Scenekit, OpenGL, CMake, Docker, CI/CD pipelines, Mocha Chai tests, Angular, Pytorch, Jupyter Notebooks, Google Collab, CUDA, NodeJS, NPM, ES6, JSX * **Math and Algorithms:** Optimization Techniques (LM, Newton’s Method, Linear Programming), Randomized Algorithms, Linear Algebra, High Dimensional Geometry. | * **Domain Knowledge**   + **Software Design:** Data structures, Design Patterns, Agile. Github + GitLab.   + **Interactive / Visualization / Data Driven Applications:** Mixed Reality, Computer Vision, Computer Graphics, 3D Printing, Machine Learning, Neural Networks.   + **Electronics:** Microcontrollers, Soldering, Simple Logic Design |

# Work Experience

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| Senior Prototyping & Computer Vision Tools Engineer / PTC - Vuforia | June 2021 – Present |
| Worked on a nimble team to create a viable prototype for a long term spatial digital twin effort.Validation Team:Used graph theory to manipulate a data structure of 3D locations and data in a Unity C# application as well as a ThreeJS, application.Productionized a JavaScript (LITElement, Redux, ThreeJS Typescript) library for 3D rendering useful for providing common services to 3D applications.Created 3D Manipulation Tools from scratch to be used in a 3D Viewer using understanding of Graphics Pipeline and Projective Geometry.Computer Vision Tools:Worked on tools to provide data to algorithms for visual SLAM systems and other Machine Learning SystemsLed architecture efforts for reworking a legacy codebase to meet new business needs.Optimized 3D renderers for e57 point clouds and glTF mesh models.Improved developer efficiency by adding formatting rules and other CI/CD systems. | |
| R & D Software Engineer II / Wayfair LLC | June 2017 – Aug 2019 |

Ideated on and developed experiences with emerging technology ranging from short-term prototypes for internal stakeholders to researching longer-term initiatives. Usually this meant organizing my own work and executing on it without much external supervision.

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| * Projects:   + Wayfair AR View in Room 3D     - Interfaced mobile apps with 3D model database as well as wrote logic to place 3D models within Augmented Reality experience.   + Real-time Material Conversion Pipeline     - Took loosely defined requirements for V-Ray to PBR material conversion and updated 3ds Max scripts to increase accuracy of previous Material Conversions | * + Dollhouse Projection Mapping System     - Led the creation of a self-contained projection mapping system that allowed users to move dollhouse size pieces of 3D printed furniture while optically tracking and projecting their patterns accordingly.     - **Published at CHI EA ’20:**   https://dl.acm.org/doi/10.1145/3334480.3383180   * + Magic Leap Wayfair AR Web Experience     - Wrote and Styled a ReactJS Web App shown in Mixed Reality | |
| Research Assistant / Princeton University: Visual Learning Lab | | Dec 2019 – May 2021 | |
| * + Worked on Structure from Motion Problems with a Machine Learning Lens. Used statistical methods to improve accuracy of image matches. | * + Created UI to allow users to mark their own images and derive the camera intrinsic parameters for each view. Implemented Self Calibration algorithms from scratch in Python. | |

# Teaching Experience

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| Teaching Assistant / Princeton University & Boston University | | Sept 2015 – May 2021 | |
| * + COS 126: introduction to computer science (PU, 4 semesters)     - Taught unsupervised and prepared materials, graded assignments   + EK 100: First year course for Incoming Engineers (BU) | * + EC 327: Introduction to Software Engineering (BU)     - Taught unsupervised and prepared materials, graded assignments   + EC 311: Introduction to Logic Design (BU) | |

# Activities & Honors & Extras

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| * Grand Prize at MIT Reality Virtually Hack 2017 * Gold Edison Award for Wayfair AR feature | * Work Published at CHI EA ’20 conference * Best Machine Learning Hack at Wayfair Hacks | * Workshop Speaker at BU/MIT/Wayfair * **Languages:** French, Spanish, Basic German |