

# Jacqueline Alex

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## SKILLS

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**Programming :** C++, Python, Javascript, ReactJS, OpenGL, GLSL, C#, Java, SQL, Git, Agile

**Software Proficiencies :** Maya, Blender, UE4, Unity, ZBrush, Substance Painter, Houdini, Nuke,

## EXPERIENCE

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### Human Movement Neuroscience Lab

**Boston, MA**

*Computer Graphics Software Engineer Intern (Part time),*

August 2020 - Present

*VR | AR | Motion Capture Technical Engineer Co-op*

January - August 2020

- Constructed skeleton and created full-body human animations using Python, Blender's API, and parsed data collected through marker and markerless motion capture sessions.
- Used computer vision and neural networks to auto-detect parts of human body across frames and other objects in rgb video and perform 3D reconstruction for markerless mocap system.
- Automated systems to clean up large amounts of mocap data - for example an automated system that uses camera frustum information, far and near clipping planes, 3D marker data, and RGB video pixel locations of markers to auto-label the unlabeled marker trajectories.
- Calculate vectors and matrices related to position and rotation, quaternions in 3D space, perform calibrations, project rays, manipulate cameras and rigid bodies.

### Bare Tree Media

**Boston, MA**

*Computer Graphics Technical Director (Freelance)*

March 2020 - Present

- Use Javascript to build components of AR filters such as custom shaders, particle effects, 3D and 2D animations, user interactivity, games, lighting, cameras, and more for Instagram, Facebook, and Snapchat.

### Bank of America

**Jersey City, NJ**

*Global Technology Analyst Intern*

June - August 2019

- Used ReactJS and NodeJS to design and build 10+ features on the front-end and API.
- Collaborated on an Agile team of experienced developers and designers to create new application approaching UAT, Distribute, which facilitates data transfer in Credit Risk.
- Wrote extensive unit testing including mocking, participated in code review.

## EDUCATION

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### Northeastern University, Khoury College of Computer Sciences

**Boston, MA**

*Candidate for Bachelor of Science in Computer Science and Media Arts*

May 2022

GPA: 3.7 / 4.0 (Dean's List Placement for Academic Excellence)

Coursework: Object Oriented Programming, Animation, Algorithms, Linear Algebra, Discrete Structures

Activities: Scout Studio Developer, NU Women in Technology, Animation Club Mentor

## PROJECTS

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### Raytracer

- Renders realistic images through ray tracing techniques on 3D scenes.
- Used C++ to implement space-time raytracing, motion blur, AABBs, BVH volumes, image textures, perlin noise, Vector3 math operations, rays, shaders, lights, geometry in a scene, normal determination, antialiasing, materials with refraction and reflection, and cameras

### Physics Engine

- A project in progress, using C++ to create a realistic depiction of certain physical systems including rigid body dynamics, soft body dynamics, and fluid dynamics
- Implement simulation, collision detection, and collision response for various types of matter