

# Sprint 1 – Skills and Resource Audit

## Team 9

Dennis, Dhruv, Josh, Isaac, Matthew, Rodney

### 1. Introduction

Diving into project regarding Simplified Small-Molecule Dynamics for Education in Virtual Reality, the need for fluency in C# and some insight into the program Unity3D, multithreading and vector mathematics is very important. Our client has made his objectives clear for what we as a team will need to deliver, as well as the technical requirements for the project.

### 2. Skills Audit

The members of our teams' skills and experience are as follows:

Group Member	Skills/Experience
Dennis	<ul style="list-style-type: none"><li>• Studying Data Science and Marketing</li><li>• Experience with Object Orientated Programming such as Java and python</li><li>• Physics experience</li><li>• Unfamiliar with Unity and C#</li><li>• Familiar with 3D graphics and animation concepts</li></ul>
Dhruv	<ul style="list-style-type: none"><li>• Studying Engineering Science (Software) and Computer Science</li><li>• Experience with Object Orientated Programming such as python and Java</li><li>• Proficient with using Git</li><li>• Physics experience</li><li>• Unfamiliar with Unity and C#</li><li>• Familiar with 3D graphics and animation concepts</li></ul>
Isaac	<ul style="list-style-type: none"><li>• Studying Computer Science and Applied Mathematics</li><li>• Knowledge of 3D graphics</li><li>• Experience with physics and particle systems</li><li>• Experience with vector calculus</li><li>• Experience with Git</li><li>• Familiar with Object Orientated Languages such as Java and python</li><li>• Unfamiliar with Unity and C#</li><li>•</li></ul>

Josh	<ul style="list-style-type: none"> <li>• Studying Computer Science and Data Science</li> <li>• Experience in Object Orientated Languages such as Java and Python</li> <li>• Unfamiliar with Unity and C#</li> <li>• Interest in 3D animation and game design</li> <li>• Experience using Git</li> <li>• Familiar with 3D graphics and animation concepts</li> </ul>
Matthew	<ul style="list-style-type: none"> <li>• Studying Computer Science and Electronic Music and Sound Design</li> <li>• Familiar with Object Orientated Programming such as Java</li> <li>• Good with communication and UI Design</li> <li>• Proficient in Blender (3D animation/modelling) Photoshop, Illustrator and Adobe Creative Suite</li> <li>• Familiar with 3D graphics and animation concepts</li> </ul>
Rodney	<ul style="list-style-type: none"> <li>• Studying Computer Science and Data Science</li> <li>• Experience in C++, C, HTML, CSS and Javascript</li> <li>• Collision knowledge</li> <li>• Interests in 3D and game design</li> <li>• Experience running a game in Unity smoothly</li> <li>• Experienced in shader programming</li> </ul>

### 3. Resource Audit

The resources needed for this project are minimal. We are required to operate the program using minimum specs (specified in the Scope of Work) and all our team's members have the required equipment. Furthermore, our client has offered to lend his laptop for any group member who is having difficulty using their own machine. The VR component will additionally be provided by UWA library.

### 4. Final Remarks

With these skills of the team and the scope of the project in mind, we have decided that the main skills and tools the team will need to acquire for the project are:

- Data structures and Algorithms in Unity and C#
- Comfort operating within the Unity3D program
- Efficient use of shaders for framerate optimization
- Entity Component System (ECS)
- Designing framework code (compared to producing code that runs a program)
- Version control (Git)

And an understanding of the following:

- Vector fields (Coulomb potential, Lennard-Jones potential and Morse Potential)
- Vector Calculus
- Multi-threaded Code
- Basic Newtonian physics
- Collision correction in Unity3D
- Multithreaded Code

The current knowledgebase of our team collectively is broad enough to encompass many of these areas, however hours will need to be dedicated towards learning these new skills as this project requires a proficient understanding of all the areas.