Subject: Phase 1 - Song: Building a Physics Engine From Scratch
Phase 1 Project Selection Status Report
Name: Jiayou Song
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Director of Studies: Richard Sharp
1. Please write 100 words on your current project ideas.

Physics Engine, a term frequently used in video game industry, is a tool that simulates physical phenomena using a computer. At its core, it is nothing more than some clever numerical methods that approximate what we observe in real life. I consider building such an engine from scratch as a way of learning more about physics and computer vision as well as practicing setting up a project on my own. Plus, the engine can be easy to showcase and extend upon, making it a great candidate for a pure programming project topic. The wide range of features I could implement - collision detection, friction, fluid simulation, etc. could be split into core and extension. In the end, I could demonstrate my physics engine by comparing it with popular open source engines.

2. Please list names of potential project supervisors, indicating any interactions you have had with them, for example: not contacted, awaiting reply, in discussion, agreed to supervise.

Joe March (jgm45@cam.ac.uk) - agreed to supervise

3. Is there any chance that your project will involve any computing resources other than the Computing Service's MCS and software that is already installed there, for example: your own machine, machines in College, special peripherals, imported software packages, special hardware, network access, substantial extra disc space on the MCS.

If so indicate below what, and what it is needed for.

My laptop - all the main programming

My spare laptop - backup machine in case my main laptop breaks

Blender, or a competent rendering library - visualise the physics engine and render the outcome into video