Imperial College London

STUDENTSHAPERS

StudentShapers Recruitment: Calling all Life Science, Biochemistry, Biomedical Science or similar disciplines students

VR DIF: Developing of teaching scenario for a novel VR micropipette controller to teach pipetting skills

Bursary: *£60/week for about 3 hours per week from 25.03.2024 to 14.06.2024 (total of 12 weeks) One position available.*

Who should apply: *Students with previous wet lab experience in Life Science, Biochemistry, Biomedical Sciences, and similar disciplines who have experience in how to use a micropipette but have only recently been introduced or haven't reached mastery.*

Campus/Location: *South Kensington with options to work partly collaboratively online.*

Project details:

This project, called "Developing of a VR micropipette controller to teach pipetting skills" is funded by the Imperial College Digital Innovation Fund (total funding ~£100,000). Learning how to operate a micropipette is an essential skill for every life science scientist. Micropipettes are the most important tool used in almost all research labs. However, mastery of correct pipetting is a challenging task for most students. We have secured grants to develop and produce 20 unique VR controllers that resemble the shape and function of a micropipette to train students how to correctly operate this essential tool.

To enable students to learn this essential practical skill in a safe, low-cost environment, we have designed a VR controller add-on that can mimic the physical properties of a real micropipette with a small simulation built in Unreal Engine. The add-on consists of a micropipette model equipped with a position sensor, momentary switch, and springs. The pipette add-on can be attached to any VR controller model (i.e. PICO or Oculus), which provides the precise position of the pipette within the virtual reality laboratory simulation. Meanwhile, the add-on measures the correct operation of the micropipette and provides physical feedback. With this controller it is possible to train motor skills (specifically finger muscles) to allow correct operation (e.g., slow and controlled release of the plunger) while providing students with real-time feedback about their performance.

This way students can experience the full procedure without the risk of damaging the micropipette or wasting material. The combination of VR with this unique controller allows students to practice this essential skill in any classroom without any prior safety training. Therefore, reducing cost, plastic waste as well as anxieties within students that might be associated with the foreign laboratory environment. As the use of micropipettes is one of the most essential skills for researchers that is widely taught among various courses and faculties (Medicine, Chemistry & Life Sciences), this project has the potential to be widely beneficial to many students. Its implementation could also be beneficiary for MOOCs and online courses offered by the College to enable students access to some practical training.

We are looking for a student that has experience in how to operate a micropipette to support the Digital Media Lab (DML) and our controller engineer in designing a training scenario for students that helps them learn how to operate the pipette. This will include the lab environment and different tasks or games that needs to be performed. We are especially looking for students who have just recently learned how to use a pipette and can enrich this project with their experience and/or struggles they might have encountered to create a realistic scenario with instant feedback. Experience in VR/game design is not necessary but can be advantageous.

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How to apply:

Applications (300-500 words) should be made via the 'Student Expression of Interest' form on the StudentShapers website (here) or accessed using the above QR code. This will then be distributed directly to the appropriate staff partner.

Deadline: *15.03.2024 5pm, with initial conversations with students held in the w/c 17.03.2024.*

Contact details: *If you have any questions about this project, please contact Silke Donahue at s.donahue@imperial.ac.uk or Olesea Bortniac at o.bortniac@imperial.ac.uk.*