SHP Student Interns for Research and Scholarly Activities
Application of Project Proposal Form

Instructions:
Please fill out the form and return via email to Nipa Sahasrabuddhe
(ns1115@sph.rutgers.edu) by April 1, 2022. Please fill each box to the right of
each required field. If you are sending attachments, please ensure your contact
information is added to all your forms.

Faculty Contact Information:
Date submitted: 4-4-2022
Faculty Name: Jean-Francois Daneault
Department/Program: Rehabilitation and Movement Sciences
Telephone number: 973-972-8482
E-mail: jf.daneault@rutgers.edu

Project Detail:
Project Title: (56 characters max) Development of a normative 3D kinematic dataset for
upper-limb daily activities
Hypothesis:
We hypothesize that there is little variability in how healthy individuals perform upper-limb daily activities.

Description:
(Include design, methodology, data collection, techniques, data analysis to be employed, evaluation and
interpretation methodology for research component)
We will ask 15 healthy individuals to perform a battery of upper-limb motor tasks (e.g., picking up and transporting
objects, etc.). These tasks will be performed in the gait lab using the 3D motion capture system. Small reflective
markers will be placed on the participants’ body, on specific anatomical landmarks, to track their movement
patterns while they perform the tasks. Also, small wearable sensors that collect acceleration and angular
velocity will be placed on the participants’ forearms. The 3D kinematic data will be pre-processed to filter noise and
remove gaps and the wearable sensor data will also be pre-processed to filter noise and align with the 3D
kinematic data. Average movement trajectories for every tasks will then be computed. Once the data is collected
and analyzed, it will be used as a benchmark for other studies.

Specific Student Responsibilities:
Under faculty and/or graduate student supervision, the student will complete the following activities, including
but not limited to:
1. Recruit subjects
2. Perform data collection
3. Organize data
4. Perform data pre-processing using pre-established analysis pipelines
5. Perform basic statistical analyses on the dataset.

Start / end date of project: June 15 2022/August 15 2022

Educational:

WHAT OTHER EDUCATIONAL OPPORTUNITIES ARE AVAILABLE TO STUDENTS? (e.g., journal club, seminars, clinic, rounds)

The student will learn about the collection and analysis of 3D motion capture as well as wearable sensor data. The student will also be invited to join lab meetings pertaining to other research projects. The student will also be encouraged to allocate some amount of time to participate in the numerous other research projects currently being performed in the lab.

WHERE DO YOU PLAN TO PRESENT OR PUBLISH THE FINDINGS WITH THE STUDENT? (e.g., national or state meetings, newsletter or journal, SHP poster day)

The dataset will be used for several studies such that the results will potentially be published in several scientific journals. We also plan to make the dataset available to the scientific community so, a dataset descriptor paper may be published. Finally, the data may also be presented at an appropriate conference.

CHECK ALL APPROPRIATE BOXES BELOW AND PROVIDE REQUESTED INFORMATION.

This project is: ☒ clinical ☑ laboratory ☒ behavioral ☑ survey ☑ educational

☐ Other: please specify__________________________________________

☒ This project involves the use of human subjects (including chart review, retrospective studies and questionnaires).

Pending ☐  Approved ☐  IRB Protocol Number ________________

IRB approval must be obtained by June 2022

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Signature of Department Chair 4-4-2022
Date