

## TESTIMONIAL

### Summer program of the ISSI Weizmann Institute

From July 11th – August 5th 2021, I had the privilege of participating in the International Summer Science Institute (ISSI) program organised by the Weizmann Institute. I had heard about the Weizmann Institute from one of my lecturers in university, who praised the Weizmann as an exciting place to conduct multidisciplinary research. I was therefore very excited for this opportunity.

The 4-week ISSI program involved participating in a research project, attending various scientific lectures, interacting with Weizmann scientists, as well as participating in social events. This year, the program was fully virtual, so most events were through zoom, whilst the social side of the program was conducted through the “Discord” platform.

The main part of the program entailed working with a group of eight other students from a wide variety of backgrounds. Mentored by Dr. Slava Kalchenko, a head scientist specialising in optical imaging, our group project was titled “Optimization of Medical Image Perception in Multiple Modalities Using Colour Mapping and AI”. The aim of this project was to develop ‘colour maps’, or colour schemes, that would help enhance black and white medical images, in an attempt to minimise visual perception errors which occur when diagnosing lesions in a clinical context. To do so, we used image analysis programs such as Fiji to manipulate “Look Up Tables (LUTs)”. Applying a LUT to a black and white image enables one to colourise that image. We tested different LUTs on MRI scans of brain lesions, to find which colour scheme was best to detect abnormalities in brain scans. This latter part of the project gave us opportunities to experiment with python codes and delve into machine learning algorithms.

I found this research project fascinating— reading about the issues in medical diagnostic processes, causing hundreds of misdiagnoses a year, made this research project very exciting. It was definitely a challenge to become familiar with image analysis softwares, and therefore a very rewarding experience when I was able to create my own colour scheme (LUT), with colours adapted to people with red-green colorblindness.

Apart from the research project, daily lectures or talks were organised. The themes of the lectures varied from archaeology and bioengineering, to astrophysics, introducing us to some of the different areas of research that exist at the Weizmann. One of my favourite lectures was by Dr. Filipe Natalio, a scientist who currently works in scientific archaeology. He has a background in chemistry, marine biology and other fields. Combining all these interests, one of his research projects led him to the Amazonian forest, where he studied siliceous spicules in ceramics.

After each lecture, I appreciated that we were able to ask questions and interact with the lectures in a very personalised way. I was also inspired by questions asked by other students in the program, sparking interesting discussions between all participants after the lectures. In terms of the social activities, the “Discord” platform made it easy to meet people from different projects in a “virtual” way. Participants were from Mexico all the way to Bangladesh, so setting

up social activities to match everyone's time zone was quite funny. We had opportunities to talk about each other's interests: in the last week of the program, participants could organise and get involved in an art exhibition, debate, and music, amongst other activities.

Despite being online, I met some great friends and hope that I can keep in touch with my group project members. Recently, I met up with some UK ISSI participants in London!