Internship Report – Indianapolis School of Science (Prof. Susan Walsh's Lab)

During my internship at the Indianapolis School of Science under the supervision of Professor Susan Walsh, I had the opportunity to work on an interdisciplinary research project at the intersection of digital imaging and bioinformatics. This internship played a crucial role in expanding my technical skills and deepening my understanding of modern forensic genetic analysis methods in terms of factors affecting human face shape.

My primary focus was on learning and applying 3D image processing techniques using MeshMonk, a powerful tool for non-rigid registration and dense correspondence of 3D facial scans. I gained hands-on experience in preparing, aligning, and processing 3D facial images, which are essential for downstream phenotypic and statistical analyses for the databases gathered by our team. This involved tasks such as mesh cleaning, landmark placement, template registration, and visualization.

In parallel, I was also able to test my skills and learn new ones in bioinformatic analysis of genetic data, with emphasis on its integration with phenotypic information. I learned how to manage and analyze large-scale genetic datasets, perform quality control, and use statistical tools to uncover associations between genotypes and facial features.

A particularly rewarding aspect of the internship was the collaboration with Professor Susan Walsh, whose guidance, expertise, and constructive feedback were invaluable throughout the entire experience. Her mentorship not only helped me overcome technical and analytical challenges, but also gave me a broader perspective on scientific thinking and research integrity. I greatly appreciated her openness, encouragement, and stimulating discussions we had.

The internship was conducted as part of a collaborative research initiative and is expected to lead to a scientific publication as a joint effort of both teams. Throughout the internship, I contributed to data preparation, and discussed results and interpretations with team members, further strengthening my research communication skills.

This experience not only enhanced my technical competencies but also gave me valuable insight into interdisciplinary scientific work, collaboration in an international academic setting, and the process of developing publishable scientific research. I would like to thank the ISFG Fellowship Review Board for awarding me this scholarship which enabled me to perform this project.