I would like to join the WINLAB internship program for Summer 2025 because of my interest in computer vision algorithms and their applications to augmented reality. Over the past year, I have studied deep-convolutional computer vision techniques in-depth, as well as their potential applications towards many related fields. Specifically, the field of augmented reality has stood out to me because successful AR systems require 3-dimensional rendering of objects as well as simultaneous localization and mapping of the surrounding environment, while preserving computational efficiency. Recently, I have also studied state-of-the-art SLAM algorithms, such as ORB-SLAM3. Due to this, one of my top preferences would be the project *Visual Perception for AR Glasses*, as it involves implementing a high-efficiency augmented reality system with advanced computer vision techniques.

Some of the strengths I would bring to the WINLAB internship program include proficiency in Python and the Linux operating system, as well as an advanced knowledge of modern computer vision algorithms (especially those employing convolutional neural networks.) This was accomplished through studying homework and lecture videos from CS231n (offered by the Stanford Computer Science Department). Supplemental algorithms knowledge was obtained through lecture videos for MIT 6.006 (offered by the MIT CSAIL department.) Being an experienced participant in math competitions, I have achieved both a USAJMO index of 238 and I have participated in the MATHCOUNTS national competition. Besides that, I have been to mathematics competitions hosted at Pennsylvania State University, Yale University, and Princeton University, participating in the team from my local high school.

By being included in the WINLAB internship program, I hope to achieve a deeper and more thorough understanding of the state of the art in augmented reality. I also want to experience research at the graduate level (by designing and implementing an AR system), perhaps leading to a research paper if circumstances permit.