# EyeShift: Eye Care and Posture Control Device With an Intuitive Interface for Glasses

Khosla, Shaurya (School: Saint John's High School)

Myopia is the most common eyesight problem faced by most students. India has more than 10 million cases yearly, affecting almost 30-40% of the population. It is expected that by 2050 it will affect 50% of the world's population. High myopia is a problem that can lead to other problems like retinal detachment, myopic retinopathy, and glaucoma. These problems can cause blindness. My experience with eyeglasses inspired me to design a novel device, EyeShift. EyeShift helps avoid eye strain by correcting the user's posture, informing them of the optimal distance from their eyes to any viewing object (laptop, phone etc.), and detecting whether their surroundings are adequately lit, along with giving reminders for periodic breaks set by the user that serves as a gentle reminder. EyeShift is a multi-faceted, user-friendly device that encapsulates an embedded PCB circuit and microchips, making it lightweight and portable. After four stages of prototyping, the final stage prototype is compact and lightweight. The prototype has a broad front and back to encapsulate all the components that consume more surface area, such as the development board(TTGO), battery management which includes protection IC, C-type charging, and gyroscope housed on the main PCB(motherboard). The lux and lidar sensor chips check the distance, and lighting, housed in the device's small circular opening on the daughter board. Eye Shift is unique because it addresses three critical challenges: 1. EyeShift can be used as a stand-alone device in schools/workplaces. 2. EyeShift can be magnetically attached using flexible bands to the side rim of the existing spectacle frame, making it appropriate for a wide range of spectacles 3. EyeShift is mounted at the best position for greater precision and accuracy.

**Awards Won:**
Third Award of $1,000