Discussion 4.1: Engineering Design Process

Students started their project by recognizing the necessity to bridge the communication barrier between the speech-impaired society and the uninitiated. Knowing they had limitations in terms of time, resources, and technical capabilities as engineering students, they wanted to create a feasible and effective solution within those limits. As a preparation step, the team performed extensive research on wearable technology and sign language. In this stage, they learned that earlier, similar gloves had been invented but insisted that their idea was created on their own. They utilized their own techniques, processors, and algorithms to make it original in implementation.

Armed with their research, they came up with potential solutions and finally chose to create intelligent gloves that could interpret sign language into spoken language. Inspired by a suggestion by a brother of one member, they developed the concept and proceeded on with a well-worked plan. This included choosing specific pieces like flex sensors, MPU-6050 chips, and WiFi modules to make a functioning system. The team then built a working prototype by combining the chosen sensors and microchips into gloves. They programmed these gloves to identify gestures of hands and transmit information to a computer system, where a machine learning algorithm would translate the information and give voice output through a speaker. They demonstrated its potential in a video presentation.

They then tested the functionality of their prototype and got positive feedback, especially from the deaf-mute community. The prototype was able to successfully translate a limited number of signs, but they recognized its limitations in terms of vocabulary and real-time accuracy. This analysis encouraged the team to continue developing it. Dedicated to improvement, the team intends to improve the functionality of the system with further research and testing. Their intention is to further develop the glove's sign recognition capabilities and achieve greater translation accuracy, thereby building a more holistic device for empowering the speech-impaired.

I have learned that innovative thinking, technical knowledge, and perseverance can form a potent formula for creating significant solutions to genuine social problems. And every step in the engineering design process is important in addressing real-world challenges from recognizing a significant need to developing innovative solutions and continually refining them through testing and feedback