Touchless Head-Control (THC): Head Gesture Recognition for Cursor and Orientation Control

WEEKLY PROJECT REPORT : 2
Date: 23 August 2023

Project Overview

This project enhances computer accessibility for people with limited mobility through a Touchless Head-Control (THC) system. Head movements and facial position control a cursor and 3D objects. Our efficient design uses deep neural networks to improve head pose prediction accuracy, simplifying usage for cursor movement and mouse button actions. This accessible HCI solution benefits individuals with disabilities.

Accomplishments this Week

- Also set up the software we need for the project. Installed tools and libraries.
- Attempted various code implementations to see how different approaches work
- Explored diverse coding strategies to meet the project's requirements.
- Identified potential areas for code optimization and efficiency improvement.

Challenges Faced

- Difficulty in gathering necessary resources.
- Navigating through different code possibilities and deciding on the best approach.
- Several related research papers inaccessible or paid.
- Realization: Training the project will likely take a minimum of 2 weeks.
- Concerns about laptop hardware sufficiency.

Plan for next week:

- Create various deep learning models which match the given specifications.
- Train the models and test it to select the best deep learning model among them.

Discussion and Decisions

During this week, our team focused on understanding the project's requirements and delved into experimenting with various code implementations. We gained valuable insights into the project's functioning and explored different coding approaches to optimize its development:

- Discussion about the project model and setting up for the project.

- Discussed and clarified any uncertainties regarding the project's requirements.

- Tried out multiple code variations to identify the most effective and efficient approach.

Progress Toward Overall Project Goals

This week was pivotal in enhancing our understanding of the project's intricacies. Through rigorous discussions and focused analysis, we gained a comprehensive grasp of the project's scope, requirements, and desired outcomes. This clarity will undoubtedly guide our future efforts.

Additional Comments

The research paper presented insufficient details about the model and its accompanying diagram, leading to confusion. Additionally, the paper contained limited information, contributing to the problem. Moreover, other research paper which is related to out topic is Limited access or paid/unavailable.

Upcoming Deadlines

- We would like to create the deep learning model by the upcoming week.

- We would like to complete the training, testing, and optimization in the upcoming two weeks.

Attachments

- The Research Paper

- Deep Head Pose used for reference to understand and to know how to design a deep learning model.

- Regressor Pose Detection used to understand the head pose detection using deep learning.

Next Weekly Report Due: 23 August 2023

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