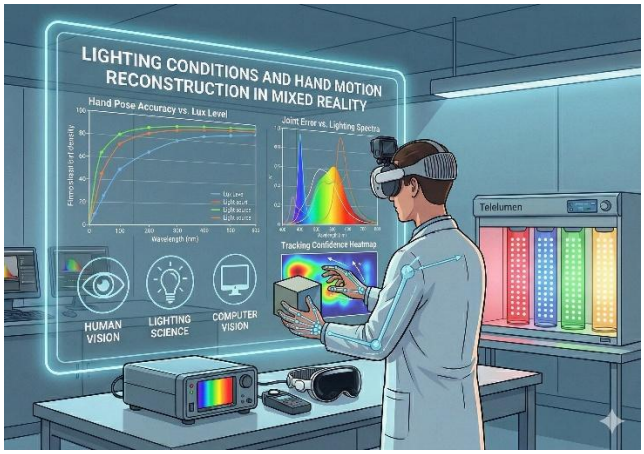
LIGHTING CONDITIONS AND HAND MOTION RECONSTRUCTION IN MIXED REALITY

IMLEX

GOAL

The project aims to investigate how lighting conditions affect hand movements during object manipulation in mixed reality environments.



HOW?

Video data will be captured from a head-mounted camera (GoPro) worn by the participants while performing a series of object manipulation tasks inside a mixed reality setup under different lighting conditions. The recorded videos will be processed offline using state-of-the-art computer vision methods. Results will be compared across lighting conditions to understand their impact on movement accuracy.

RESEARCH TOPICS ASSOCIATED

HUMAN VISION

- 3D perception
- Psychophysical experiments

LIGHTING SCIENCE

- Spectral properties of light and illumination

COMPUTER GRAPHICS

- Wearable video capture systems
- Display technologies and head-mounted displays

COMPUTER VISION

- Hand tracking and pose estimation

AVAILABLE EQUIPMENT'S

- GoPro, Quest 3, Vision Pro
- Spectroradiometer
- Telelumen light booths
- Workstations

GO FURTHER

The project could be extended by developing adaptive lighting strategies to improve hand movement accuracy or applying the methods to ergonomic assessment and training in industrial, medical, or educational environments.