14.07.2023

ARXperience

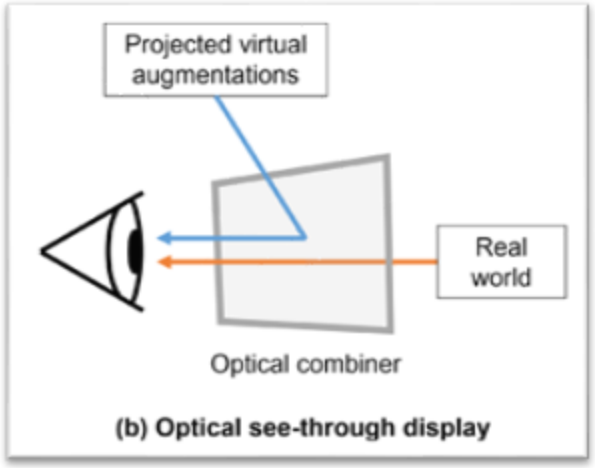
Teaching Case #5

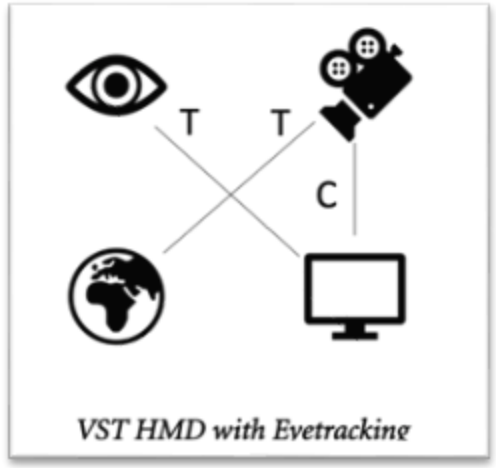
Augmented Reality in Industrial Assembly

Divyangana Kothari

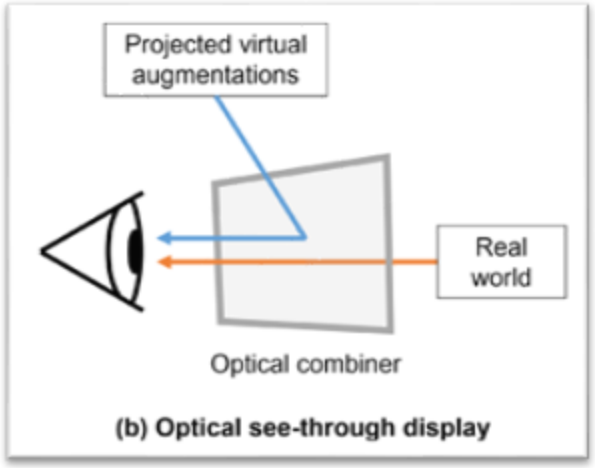
Yusra Abdulrahman

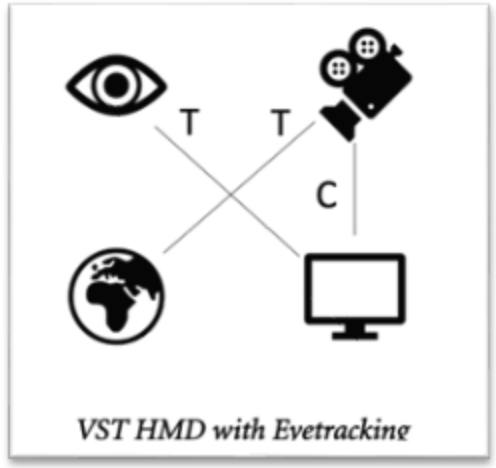
- Augmented Reality Concept:
  1. Technology: Optical See-Through (OST) AR technology will be used
  2. Contextual Information Integration: overlaying step-by-step assembly instructions, annotations, and 3D component models directly onto the physical workspace.
  3. Interaction with Digital Content: through gestures, touchscreens, or handheld devices.
  4. Enhanced Communication Channels: A real-time communication channel between the assembly workstation and the design department to provide feedback, report issues, and receive assistance from the design team through video communication.





- Prototype Development:
  1. Hardware for the Prototype Phase:
     - **Head-Mounted Display (HMD)**: that supports Optical See-Through technology, provides a comfortable viewing experience, and enables interaction with the digital content.
     - **Camera**: The chosen HMD should include a built-in camera or support the use of an external camera to capture the real-world environment for overlaying digital content.
     - **Sensors**: Incorporate sensors such as gyroscopes and accelerometers to track head movements and gestures, enabling intuitive interaction.





- Prototype Development:
  2. Prioritizing the following aspects:
     - Develop the prototype utilizing OST technology to enable real-time video capture and overlay of digital content onto the live feed.
     - Implement the overlay of step-by-step assembly instructions, annotations, and 3D models onto the physical workspace.
     - Enable basic gesture recognition functionality for interacting with the digital content, including selecting, moving, and rotating virtual objects.
     - Establish a rudimentary communication channel between the assembly workstation and the design department, facilitating problem reporting.
     - Allow assembly employees to record and share their solutions in video format.