



# VIRTUAL SHOPPING WITH **MIRA**



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## ABOUT OUR PROJECT

Our project is a metaverse application developed using Unity, designed to provide users with a real-time and immersive shopping experience. Traditional shopping apps often involve mundane scrolling through product listings, lacking the interactive and engaging elements that users desire. With our application, users can step into a virtual reality environment, where they have the freedom to create their own avatars and choose their preferred store to explore. Through this virtual experience, users can browse products, interact with other users who are present in the same store, and make informed purchasing decisions. The application enables real-time interactions, allowing users to see and engage with each other as they navigate the virtual stores. We aim to revolutionize the way people shop by offering a dynamic and visually stimulating environment that replicates the atmosphere and ambiance of physical stores, eliminating the limitations of traditional shopping apps.



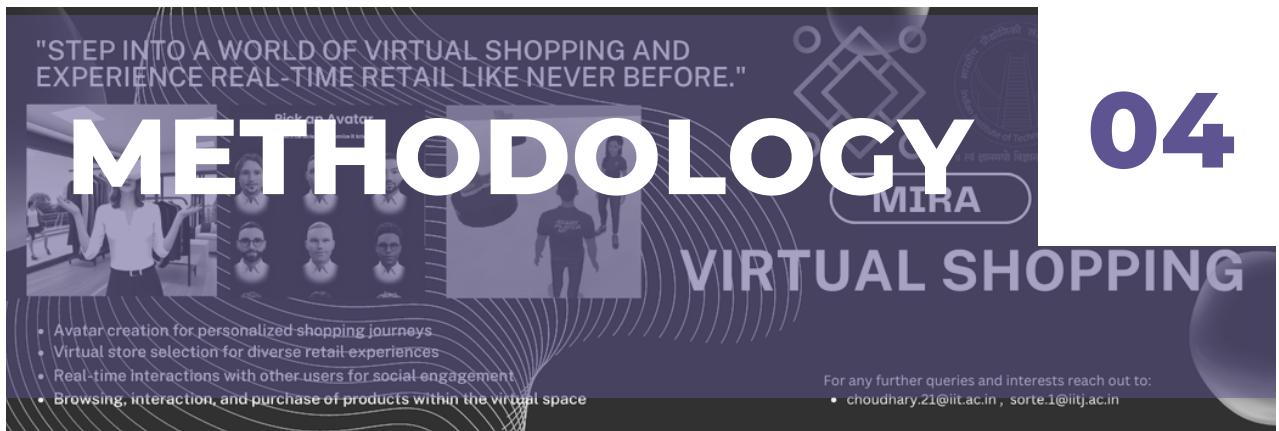
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## MOTIVATION

The motivation behind MIRA was driven by the vision to transform the shopping experience into something truly remarkable and unforgettable. We recognized that traditional shopping apps often fall short of delivering the excitement and engagement that comes with physical shopping. The mundane scrolling through product listings and the limited visual representation of products fail to capture the essence of the shopping journey. The motivation behind MIRA was to transport users into a world where the limitations of physical distance and time are eliminated. With real-time interactions and social engagement, users can connect with others, seek advice, and share their experiences, fostering a sense of community and enhancing the overall shopping journey.



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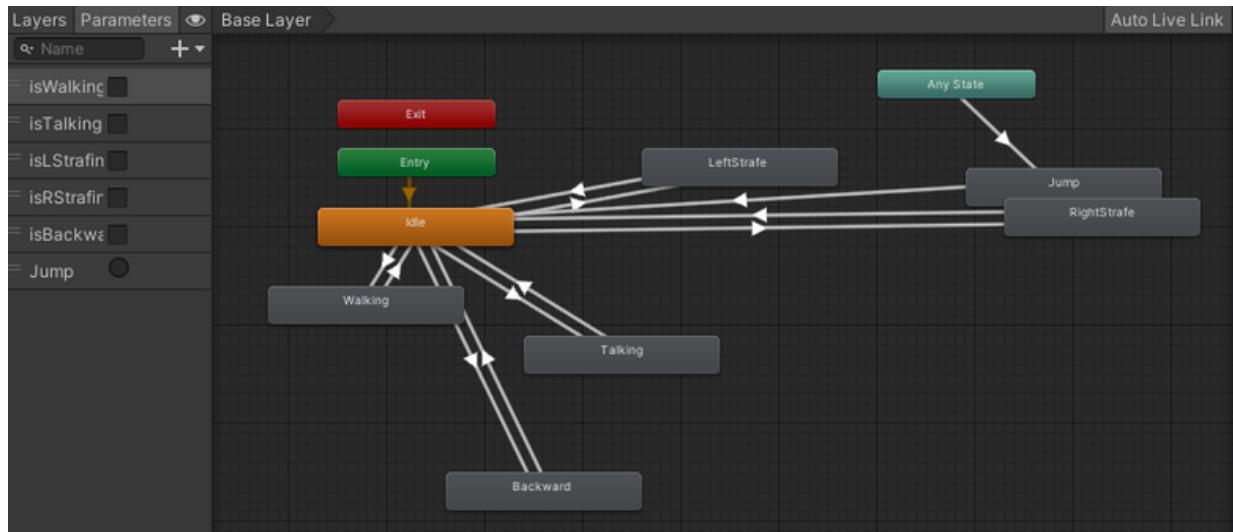


## Application Design and Development:

In this phase, we employed Unity Game Engine, a powerful and versatile platform, to create a metaverse app that offers a real-time shopping experience. Leveraging the capabilities of Unity, we focused on developing an intuitive user interface (UI) design that allows users to seamlessly navigate through the virtual environment. The integration of virtual reality (VR) development tools enabled us to provide an immersive shopping experience where users can interact with the environment and browse products in a visually stimulating manner.

## Networking and Real-Time Communication:

To facilitate real-time interactions and social engagement, we utilized networking and communication technologies. The implementation of Photon Unity Networking (PUN) allowed multiple users to join the same virtual store simultaneously, creating a shared experience. Through PUN, users could create their own avatars and interact with others, enhancing the sense of community within the virtual shopping environment. Additionally, the use of networking and real-time communication ensured the smooth synchronization of user actions, enabling seamless interactions between avatars. The various states governing the actions of the avatar are defined in the unity package script and the finite state machine approach has been followed. More and more states could be added if needed for the gamification. Such an FSM for the basic modeling and movement of the avatar is shown below.



## Graphics, Rendering, and Integration:

To deliver a visually appealing and realistic experience, we focused on graphics and rendering techniques. The integration of WebGL: JavaScript API enabled us to render high-quality graphics and create immersive virtual environments. Through advanced rendering techniques, we achieved realistic lighting, textures, and visual effects, enhancing the overall visual fidelity of the application. Additionally, the integration of Newtonsoft.Json facilitated efficient data serialization and deserialization, enabling seamless communication between the application and external data sources.



# THE RESULTS

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## **Enhanced Shopping Experience:**

The implementation of MIRA resulted in a significant improvement in the shopping experience for users. By providing a real-time and immersive environment, users were able to transcend the limitations of traditional shopping apps. The ability to create personalized avatars and explore virtual stores in virtual reality added a new level of engagement and excitement. Users reported feeling more connected to the products and the shopping process, resulting in increased satisfaction and a heightened sense of immersion.

## **Improved Brand Perception and Customer Perception:**

The introduction of MIRA will positively impact the brand perception and customer perception of participating stores. By providing a cutting-edge shopping experience that embraces technology and innovation, the stores associated with MIRA will be seen as forward-thinking and customer-centric. Users will appreciate the opportunity to experience the atmosphere and ambiance of physical stores in a virtual environment.



# Create Room

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## Conclusion

In conclusion, MIRA has successfully created a metaverse app using Unity and an array of technologies. The project aimed to provide users with a real-time shopping experience that surpasses the limitations of traditional shopping apps. By enabling users to create avatars, select stores, and explore virtual environments, the application has transformed the shopping journey into an immersive and engaging process. The integration of virtual reality, graphics rendering, networking, and real-time communication has facilitated a dynamic and interactive shopping experience for users. With positive feedback, improved brand perception, and a vision for future enhancements, [Your Application Name] is poised to reshape the way users shop and connect in the virtual realm.

