

Project Report : Graphics and Visual Computing Lab

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Introduction:

The Graphics and Visual Computing Lab project, led by Aratrika Chakrabarti and Archita Agrahari, aimed to create a dynamic motion view of a soccer goalkeeper placing the ball into the goalpost. The project incorporated various elements, including a detailed soccer ground, a goalpost mesh, a football, and a rigged character animation sourced from Mixamo. The team applied advanced graphics techniques, careful keyframe animation, and strategic use of lighting to achieve a realistic and visually appealing simulation.

Components and Design:

The project featured a meticulously designed soccer ground, complete with accurate markings and textures, enhancing the overall realism of the scene. The goal post mesh and football were intricately modelled, adding to the authenticity of the simulation. The use of a pre-rigged character animation from Mixamo significantly expedited the animation process, allowing the team to focus on refining the specific actions of the goalkeeper.

One notable aspect was the careful integration of colour and texture on the field, simulating a natural grass surface. This attention to detail not only showcased the team's dedication but also contributed to the overall immersive experience of the animation. The keyframes were thoughtfully placed, ensuring smooth and realistic movements of the football, goalkeeper, and other elements in the scene.

Lighting and Atmosphere:

The project utilized two types of lighting—area and sky dome lights. The area lights were positioned to illuminate specific areas of the scene, mimicking the effect of focused stadium floodlights. The dome light, coupled with a sky background texture, created an outdoor environment, contributing to the overall ambiance of the simulation. The thoughtful use of lighting not only highlighted key elements but also added a layer of depth and immersion to the entire animation.

Camera and Motion:

The project incorporated a well-defined camera system with a motion curve to capture the dynamic movement of the soccer ball. The aim was to create a visually engaging sequence that followed the action smoothly. The team demonstrated a keen understanding of camera dynamics, allowing the audience to experience the scene from various angles, heightening the overall viewing experience.

Rendering:

The culmination of the project involved a high-resolution rendering of the animated soccer scene. The attention to detail in the rendering phase showcased the team's commitment to achieving a polished and professional outcome.

Conclusion:

This project successfully realized its aim of creating a dynamic motion view of a soccer goalkeeper in action. The meticulous design and seamless integration of various elements, coupled with the high-resolution rendering, resulted in a visually immersive experience. The project serves as a testament to the team's proficiency in graphics and visual computing, showcasing their ability to combine technical expertise with creative flair.