

Exploration Task



The images imply the advantages of **ray tracing** against **pure rasterization**.

First, the characters, the ball, and the grass-covered ground likely interact with light in a way that causes global illumination. Ray tracing simulates these light bounces accurately. Pure rasterization calculates direct lighting only and ignores the complex behavior of light bouncing from one surface to another.

Second, the characters are casting shadows on the ground and inside the goal. Ray tracing would simulate soft shadows based on how far they are from the light source and how objects block the light, creating more realistic shadow gradation. Rasterization typically uses shadow maps, which produce sharp, hard-edged shadows.

Third, ambient occlusion can be seen in the way the soccer ball interacts with the ground. Ray tracing naturally darkens areas where objects are close to each other, enhancing realism by adding depth to the scene. While pure rasterization doesn't inherently account for the occlusion of ambient light by geometry.

In general, while rasterization is efficient for real-time applications, ray tracing provides superior realism in terms of lighting, shadows, reflections, and global illumination.