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**TensorIOT: End-to-End Manufacturing Simulation App**

Our project, the End-to-End Manufacturing Simulation Application, focuses on revolutionizing manufacturing processes. Our project revolves around the creation of a comprehensive simulation application designed to embody the essence of a digital "smart factory." Through this initiative, we aim to provide stakeholders with the ability to visualize and optimize production workflows, harnessing the potential of advanced digital technologies to drive efficiency, sustainability, and operational excellence.

The primary goal for the project is the development of an intuitive platform that enables users to craft virtual representations of manufacturing processes spanning multiple sites. At its core, the application would facilitate seamless configuration of throughput rates for various machines, granting users to gauge the intricate interplay between production parameters and overall output.

So we really wanted to simulate real-world manufacturing environments, allowing users to analyze the efficiency, output, and potential issues in the manufacturing process. We intend that this application will serve as a tool for

process optimization, predictive maintenance, and strategic planning in manufacturing operations. As well as achieving comprehensive implementation, ensuring that users could set factory locations, define factory assets, create asset models, and visualize data seamlessly within the application. By encompassing these aspects, we aspired to provide a holistic platform for modeling and optimizing manufacturing operations across diverse industrial settings.

The whole team aspires that this application is viewed not merely as a simulation tool, but as a basis for process optimization, predictive maintenance, and strategic planning within manufacturing operations. With the ability to configure factory locations and assets, users have control over simulation scenarios, enabling them to explore various production configurations and assess their impact on key performance indicators. By allowing predictive maintenance, the application empowers users to preemptively identify and address potential equipment failures, thereby minimizing downtime and enhancing operational efficiency. Additionally, strategic planning benefits from the application's capacity to generate insightful data visualizations, offering stakeholders actionable insights into production trends, resource utilization, and sustainability metrics.

In essence, we wanted to transcend the traditional boundaries of manufacturing simulation, coming up with a versatile tool that not only replicates real-world scenarios but also helps users to innovate, optimize, and thrive in the dynamic landscape of modern manufacturing.

As for challenges we've faced, one of our biggest hurdles at least at the beginning was trying to measure what was expected for us. We had conflicting opinions that came from both the Professors and our Sponsor. However, we were able to overcome this issue by learning to always ask questions to both parties since they are both our clients to some extent. We learned that it was better to be persistent and give a product that is close to what the client expects than to not ask any questions and give a wasteful product.

Midway through the project, we encountered the challenge with pacing, despite a strong start. Initially, we made significant strides, particularly in developing the factory dashboard. However, as we transitioned to working on the factory form and creating asset model pages, our progress slowed quite a bit, and we found ourselves facing a plateau. To overcome this hurdle, we sought guidance from both our professors and sponsors, recognizing the need for external input to navigate through the roadblock.

For what we are proud of I would say it would be the practicality of our project and how it looks. When we first started our project I was heavily intimidated. I thought it was gonna be incredibly difficult and my thoughts were made worse hearing that the previous team with a similar project only made it to creating the map. Yet, our team really pushed through and while we did not make the complete project, we were able to not only get further than the team in the past but also made a satisfactory product for our sponsors. Although there were

issues with pacing, we were able to make something that I believe we all would be proud of to almost anyone and make it across the finish line.