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Adaptive Critic Design for Event-Triggered Tracking Control in Discrete-Time on Linear Systems with Observers

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Abstract: *This research pioneers an innovative methodology for the bespoke manufacturing of SquidSkin safety products, meticulously tailored to the distinct requisites of diverse industries encompassing medical, military, and defense sectors. The triple DES algorithm is a three instance of DES on same plain text in blocks of 64 bits and converts them to cipher text using keys of 168 bits. The triple DES encryption process creates cipher text, which is an unreadable, effectively indecipherable conversion of plaintext data, the version of information that humanscan read and understand. The output of the encryption process, the triple DES cipher text, cannot be read until a secret triple DES key is used to decrypt it. The delineation of industry- specific manufacturing parameters mandates a nuanced approach to material composition and production processes, culminating in a paradigmatic advancement in safety product customization. Integral to this methodology is a rigorous analysis of industry-specific requirements, guiding the selection of optimal material compositions. This selection is underpinned by a meticulously designed material testing phase, ensuring adherence to exacting industry standards and performance benchmarks. Augmenting this paradigm is an imperative emphasis on fortifying the security framework underpinning the handling of proprietary manufacturing data. The proposal introduces an advanced cryptographic architecture, featuring encryption and decryption protocols. Approach assures heightened efficiency, unwavering reliability, and the preservationof proprietary information across varied industry sectors.*

Keywords: Bespoke manufacturing, triple DES algorithm, production processes , Encryption , Security framework

I. INTRODUCTION

In our comprehensive approach to industry manufacturing processes, we meticulously orchestrate their integration into the application, thereby not only ensuring operational efficiency but also fostering an environment conducive to the evolution and enhancement of manufacturing ideas. This strategic synergy between processes and technology forms the bedrock of our commitment to innovation and excellence.Within this framework, the secure storage of managerial processes takes center stage. Leveraging the Triple DES algorithm, renowned for its robustness in the realm of secured processes, we implement a spectrum of techniques to fortify and authenticate the data pertaining to managerial workflows. This not only bolsters data security but also establishes a foundation of trust and reliability in the application's architecture. The Triple DES algorithm utilization transcends conventional security measures by embedding data in a secure manner, imparting an immutable quality to the stored managerial processes, ensuring their integrity remains intact, free from unauthorized alterations.

II. LITERATURE SURVEY

Observer-based sliding mode control for discrete nonlinear systems with packet losses: an event-triggered method" by M. D. Fragoso et al. (2020),

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The authors address the challenge of controlling discrete-time nonlinear systems with limitations like packet losses during data transmission. Their approach utilizes an observer- based sliding mode control technique. Sliding mode control offers advantages in dealing with system uncertainties, but it typically requires continuous state information. The authors addressthis by incorporating an observer to estimate the unmeasured states. Additionally, they employan event-triggered control mechanism to reduce communication overhead. This method considers packet losses, a practical limitation in communication channels.

The research contributes to designing robust control strategies for systems with uncertainties and communication constraints.

Observer-Based Event-Triggered Tracking Control for Discrete-Time Nonlinear Systems

Observer-based event-triggered tracking control for discrete-time nonlinear systems is an emerging area that tackles control challenges in systems with limited state information andresource constraints. Traditional control methods rely on continuous full-state feedback, which might not be available or desirable due to sensor limitations. This research area addresses this by employing observers, like Luenberger observers, to estimate unmeasured states based on system outputs. Event-triggered control comes into play to reduce communication burden. Unlike time-triggered control with fixed intervals, data transmission only occurs when a pre-defined eventcondition is met. This can significantly improve efficiency, especially in resource-constrainedenvironments.

III. IMPLEMENTATION WORK

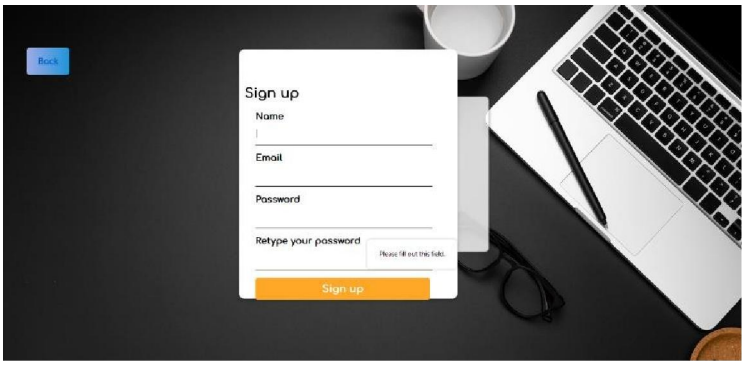

Fig.1 Signup Page

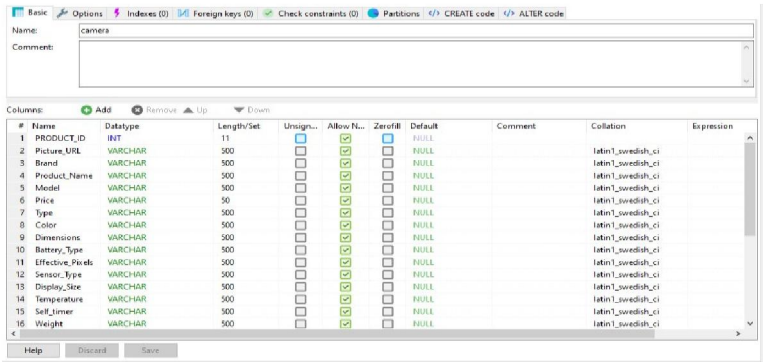

Fig.2 Data

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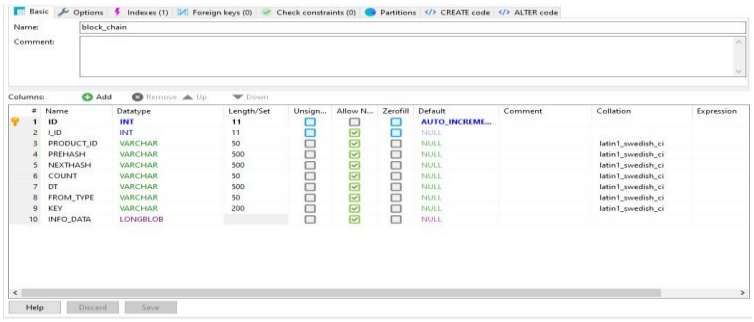

Fig.3 data types

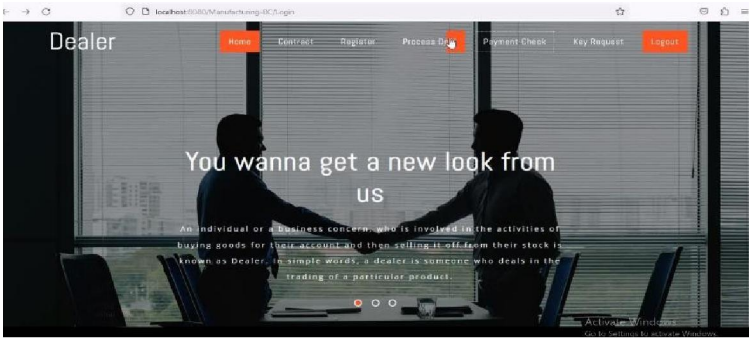

Fig.4 Main page

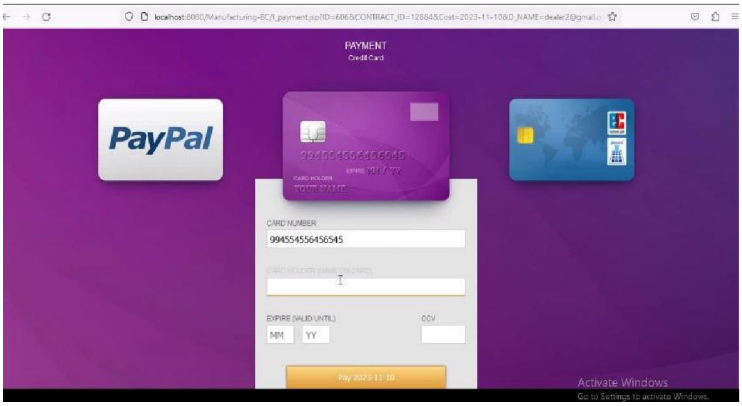

Fig.5 Card details entering page

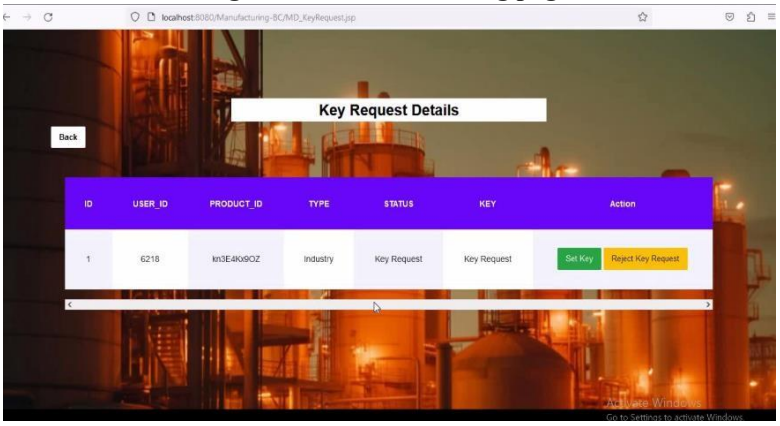

Fig.7 Key request details

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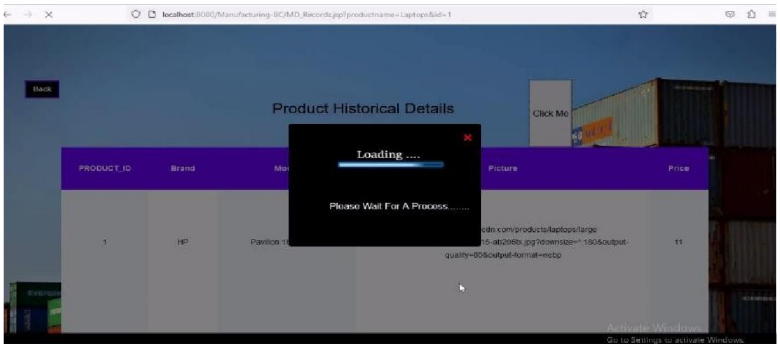

Fig.8 Product historical details

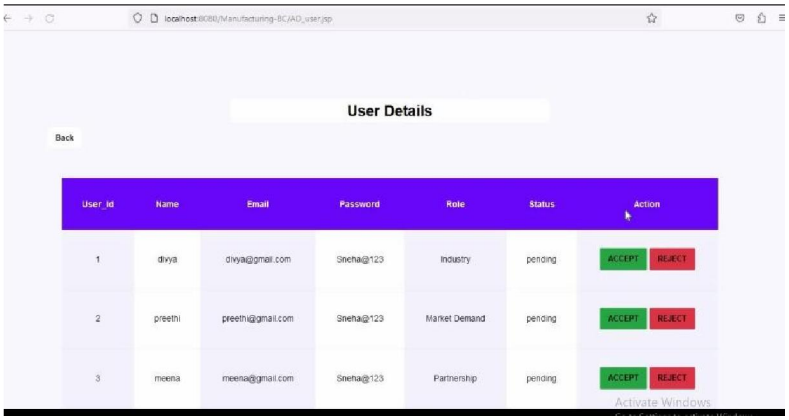

Fig.9. User details

IV. CONCLUSION

Effectively managing complexity and cost, while prioritizing data accuracy and addressing limitations like limited customization, is crucial for the success of any system or project. Striking a balance between sophistication and simplicity, and optimizing resource allocation, ensures a cost-effective and robust solution. To enhance future iterations, a focus on expanding customization options could empower users to tailor the system to their unique requirements. Integrating advanced technologies for real-time data validation and implementing machine learning algorithms could further improve data accuracy. Additionally, exploring ways to simplify complex processes without compromising functionality would contribute to a more user-friendly experience. Continuous evaluation and adaptation to emerging technologies and market trends will be essential for staying ahead in the ever- evolving landscape of system development and management

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