IBM NAAN MUDHALVAN

Applied Data Science

Project: Credit card fraud detection

Phase 1:

Problem Definition:

Design thinking is a human-centered approach to problem-solving that can be applied to various domains, including credit card fraud detection. When using design thinking to tackle the problem of credit card fraud, it's important to focus on both the technical and user aspects of the solution.

1. Understand the Problem: Begin by thoroughly understanding the issue of credit card fraud. Gather data on the current state of fraud, the common fraud patterns, and the impact on customers and businesses.

2. Define the Problem Statement: Clearly define the problem statement. For example, "How might we improve credit card fraud detection to reduce false positives and enhance the user experience?"

3. Identify Stakeholders: Identify the key stakeholders involved, including customers, financial institutions, and fraud analysts. Understand their perspectives and needs.

Design Thinking:

1. Empathize (Understand the User): Conduct interviews, surveys, or observations to understand the pain points and concerns of customers who have experienced false positives or fraudulent transactions. Empathize with fraud analysts and understand their challenges in managing fraud detection systems.

2. Define (Frame the Problem): Summarize the insights from your research to create a user persona or journey map to represent the user's perspective. Clearly define the problem, considering both technical and user aspects. For example, the problem might be framed as improving the accuracy of fraud detection while minimizing disruptions for legitimate customers.

3. Ideate (Generate Ideas): Brainstorm ideas and solutions with a cross-functional team that includes engineers, data scientists, designers, and business analysts. Explore various technical approaches, such as machine learning algorithms, anomaly detection techniques, and rule-based systems. Consider user-centric ideas, such as real-time notifications, user-friendly interfaces, and personalized fraud alerts.

4. Prototype (Create Solutions): Create prototypes of potential solutions. For the technical aspect, this might involve developing and testing machine learning models. For the user aspect, create wireframes or mockups of user interfaces.

5. Test (Gather Feedback): Collect feedback from users and stakeholders on both the technical and user-centric solutions. Iterate on the prototypes based on feedback, making necessary adjustments to improve the system's effectiveness and user experience.

6. Implement (Deliver the Solution): Develop the final solution based on the refined prototypes and feedback. Implement the machine learning models, user interfaces, and any other components necessary for credit card fraud detection. Integrate the solution into the existing infrastructure of financial institutions.

7. Evaluate (Measure Impact): Continuously monitor the performance of the fraud detection system, tracking metrics such as false positives, false negatives, and user satisfaction. Make ongoing improvements to the system based on the measured impact and evolving fraud patterns.