

A series of thin, black, overlapping geometric lines and polygons that create a complex, abstract pattern in the upper left portion of the slide. The lines vary in length and orientation, some forming sharp angles and others creating more open, irregular shapes.

HUMAN FACTORS IN AI- DUKE UNIVERSITY

**PROJECT TOPIC:
OPTIMIZING ONLINE CUSTOMER SUPPORT WITH
MACHINE LEARNING**

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AGENDA

- Problem Statement
- Key Features and Objectives
- Task analysis
- User Experience design
- Privacy considerations
- Ethical considerations

PROBLEM STATEMENT

Problem: Online customer support systems often face challenges in efficiently addressing customer queries and concerns while maintaining high levels of satisfaction.

Manual categorization and routing of incoming support tickets can be time-consuming and prone to errors, leading to delays in response times and customer frustration.

An opportunity exists to leverage machine learning **to automate and optimize this process**, ultimately **improving the overall customer support experience**.

The project aims to develop a machine learning solution that can accurately classify incoming support tickets based on their content and route them to the most appropriate support agent or department. By automating ticket classification and routing, **the system can help reduce response times, ensure tickets are handled by the most qualified personnel, and improve overall customer satisfaction.**

KEY FEATURES AND OBJECTIVES

Automated Ticket Classification: Implement a machine learning model capable of accurately classifying incoming support tickets into predefined categories such as technical issues, billing inquiries, product feedback, etc.

Dynamic Routing: Develop a routing system that dynamically assigns classified tickets to the most suitable support agent or department based on factors such as expertise, workload, and historical performance.

Continuous Learning: Incorporate mechanisms for continuous learning and improvement, allowing the system to adapt to evolving patterns in customer inquiries and feedback.

Feedback Loop: Integrate a feedback loop mechanism where support agents can provide feedback on the accuracy of ticket classification and routing, enabling the system to self-correct and improve over time.

Performance Metrics: Define and track key performance metrics such as response time, resolution time, customer satisfaction scores, and agent productivity to evaluate the effectiveness of the machine learning solution.

Scalability and Integration: Ensure scalability and seamless integration with existing customer support platforms and workflows, enabling easy deployment across different channels and support teams.

TASK ANALYSIS

Describe the problem: Online customer support inefficiencies due to manual ticket classification and routing.

Key task: Automating ticket classification and routing using machine learning.

Insights: **Simplifying the task flow** by automating ticket classification can reduce response times and improve customer satisfaction. **Providing accurate routing based on content analysis** can ensure tickets are handled by the most suitable agents, enhancing the overall support experience.

USER EXPERIENCE DESIGN

- **Interaction:** Users submit support tickets through an online platform. The machine learning system processes the tickets and routes them to appropriate agents.
- **Key considerations:**
 - **User inputs:** Users provide **text descriptions of their issues**. **Feedback loops involve agents confirming or correcting ticket classifications**.
 - **Transparency:** Users are informed **that their tickets are classified and routed using machine learning**. The system provides explanations for classifications and offers options for users to escalate or provide feedback.
 - **Communicating uncertainty:** The system indicates when confidence **in classifications is low and allows users to request human intervention** if needed.

PRIVACY CONSIDERATIONS

- **Privacy concerns:** Data collected includes support ticket content, which **may contain sensitive information**. Use of this data in an AI system raises concerns about privacy and data protection.
- **Applicable laws:** GDPR, CCPA, etc. create obligations to ensure proper handling, storage, and processing of user data. **Users must be informed about data usage and have control over their personal information.**

ETHICAL CONSIDERATIONS

Potential bias sources: Bias may arise from **historical data used for training**, leading to unfair treatment of certain customer segments.

Meeting ethical goals:

- **Fairness:** Implement **bias detection and mitigation techniques** to ensure equitable treatment of all users.
- **Accountability:** **Maintain logs of system decisions and actions**, enabling traceability and accountability.
- **Transparency:** Provide explanations for system decisions and **ensure users understand how their data is used and protected.**

SUMMARY

In conclusion, **our project aims to revolutionize online customer support through the power of machine learning.**

By automating ticket classification and routing, we can significantly **improve response times, streamline workflows, and enhance overall customer satisfaction.**

With a **user-centric design approach**, we **prioritize transparency, privacy, and ethical considerations** to ensure a fair and accountable AI product.

Together, we can transform the support experience for both customers and agents, paving the way for more efficient and empathetic interactions in the digital age.