Group 31

ENHANCING MEDICAL SERVICES THROUGH NATURAL LANGUAGE PROCESSING: AN ANALYSIS OF CHATBOTS' EFFECTIVENESS AND OPTIMIZATION STRATEGIES

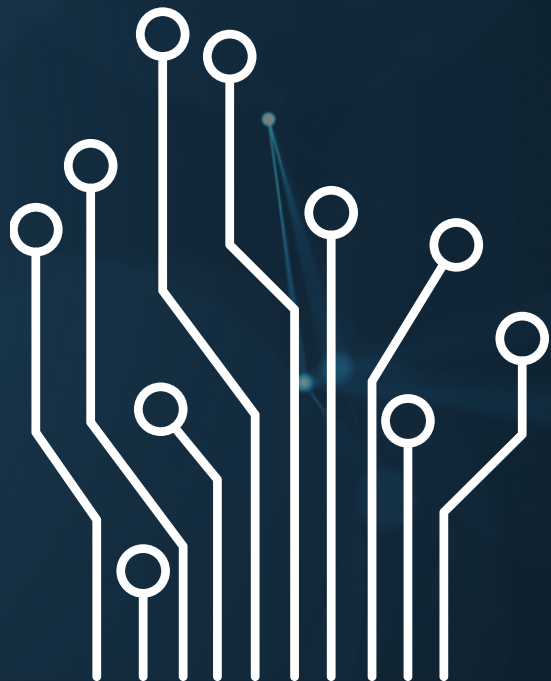MD. Mustakin Alam (ST)
MD. Sabbir Hossain (RA)

Zulkar Nain (20101226)
Rezwan Ahmed (20101235)
Sumaiya Sultana (20101151)

Introduction

- AI and ML improve decision-making and information processing.
- Chatbots are conversational agents driven by AI and ML.
- Chatbots have evolved and integrated into various fields, including healthcare.
- Chatbots in healthcare may reduce costs, improve workflow efficiencies, and increase patient outcomes.
- A systematic review paper explores the effectiveness and optimization of chatbots in healthcare from a natural language processing perspective.
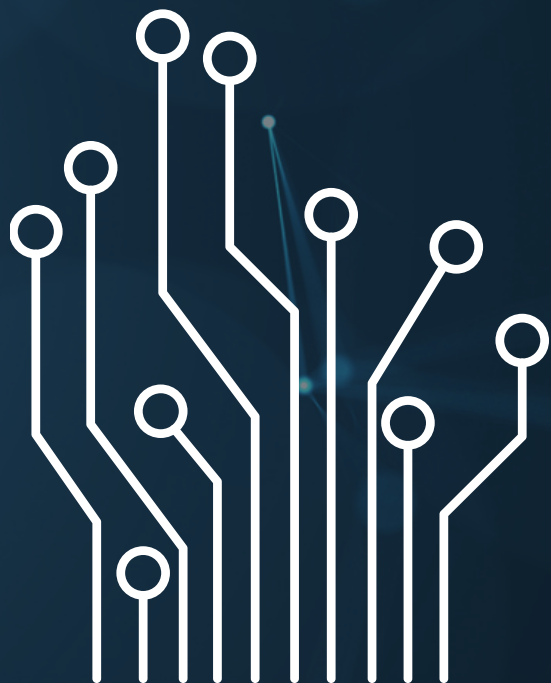
METHODOLOGY

- Search strategy
1. Google Scholar
2. IEEE Xplore
3. Sage Journals
- Study selection criteria – Inclusion + exclusion
- Data extraction, screening and synthesis
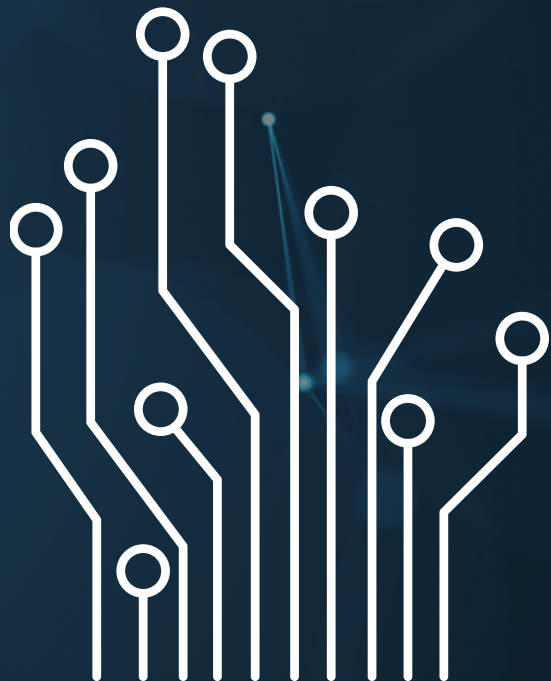 – Google sheet + PyScript

RESULTS

- Effectiveness of chatbots in medical services:
- Patient satisfaction and engagement
- Efficiency and cost-effectiveness:

STRATEGIES FOR THE OPTIMISATION OF CHATBOTS IN MEDICAL SERVICES:

- NLP for processing of medical records and clinical notes
- Reinforcement Learning algorithms for handling complex and dynamic conversations
- Emotion detection and sentiment analysis
- Transfer learning / reinforcement learning to adapt new or uncommon scenarios
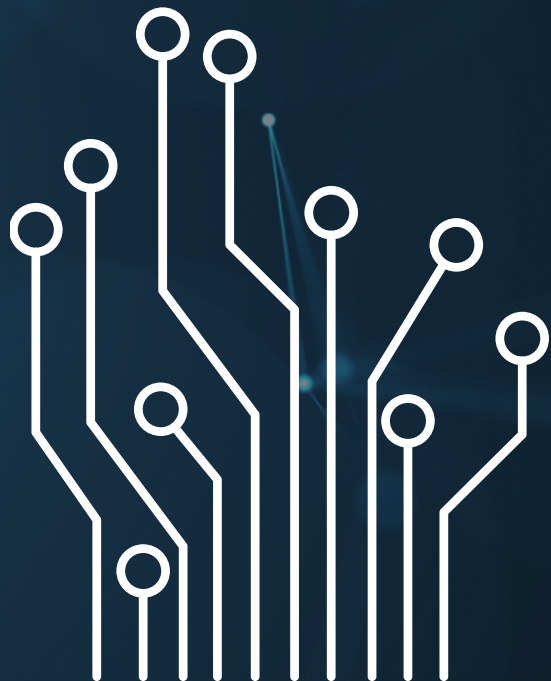
DISCUSSION

- The research is based on previous studies from respected journals.
- The study touches on topics related to NLP but does not compromise its integrity.
- Trust is a fundamental point in healthcare, and confidentiality is crucial in encouraging patients to seek treatment.
- Medical chatbots must provide data privacy and security to gain users' trust.
- Further research can be done on NLP techniques to process symptoms without misinterpretation.
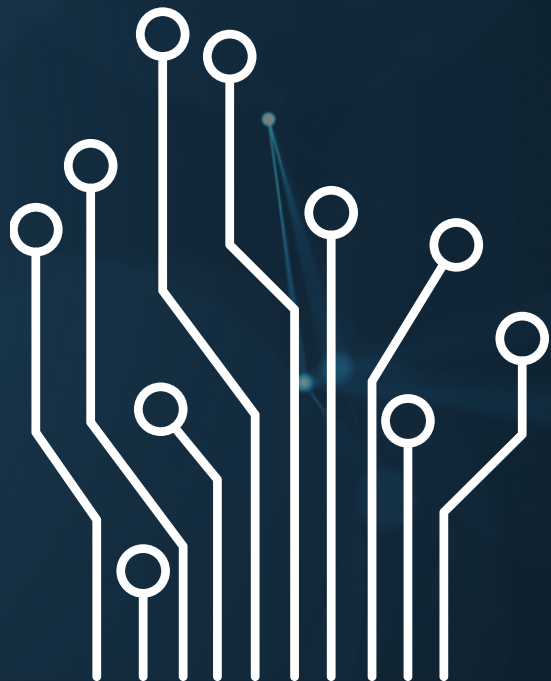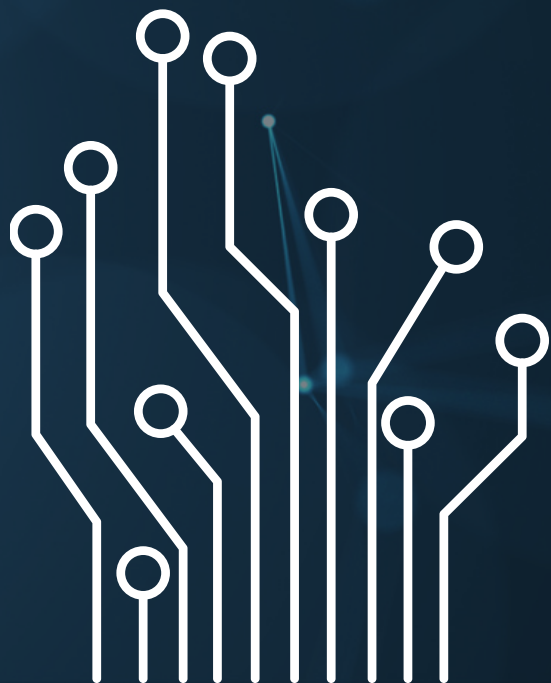
CONCLUSION

- The research aims to explain the effectiveness and optimize chatbots in medical healthcare using Natural Language Processing
- Technical issues were identified as hindering the peak performance of existing chatbots, but the research indicated a promising future market for healthcare chatbots.
- Efficiency and cost-effectiveness of healthcare chatbots must be improved.
- NLP and machine learning techniques were suggested to solve the identified technical issues
- Further analysis is required to find the effectiveness of different optimization strategies and see the clinical outcomes.

Thank You!