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In Collaboration with

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**ReadReview: A Predictive System for Research Paper  
Acceptance at Academic Conferences Using Machine Learning  
and Natural Language Processing.**

A Thesis by

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**Abstract**

The Research Paper Acceptance Prediction System leverages machine learning (ML) and natural language processing (NLP) to predict the likelihood of research paper acceptance at academic conferences. The traditional peer review process is often subjective, time-consuming, and prone to inconsistencies, leading to challenges in ensuring fairness and transparency. This research aims to address these limitations by developing a predictive system that evaluates papers based on multiple factors, including content quality, relevance, novelty, and peer review sentiment.

The system utilizes TF-IDF and BERT-based embeddings for feature extraction, combined with Logistic Regression and advanced ML models for classification. Additionally, explainable AI (SHAP/LIME) techniques are integrated to provide justifications for acceptance or rejection, enhancing interpretability. The project follows a modular design, ensuring scalability, efficiency, and usability, with a user-friendly interface for paper submission and feedback generation.

This study contributes to automating and improving the research paper evaluation process, offering researchers insights into their submissions and constructive feedback for refinement. The model's performance is evaluated using accuracy, precision, recall, and F1-score, ensuring robustness and reliability. By bridging the gap between human peer review and AI-driven analysis, this system has the potential to enhance decision-making in academic paper selection while maintaining fairness and transparency.

**Subject Descriptions:**

- Natural Language Processing → Machine Learning → Research Paper Evaluation

**Key Words:**

Research paper acceptance, Peer review prediction, BERT classifier, Hybrid model, NLP, Novelty detection, Sentiment analysis, Explainable AI