

Next Generation NLP Technologies Applications and Ethical Imperatives in AI Driven Language Systems

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Abstract: *Natural Language Processing (NLP) has experienced rapid growth, largely propelled by breakthroughs in Artificial Intelligence (AI). This paper explores critical innovations shaping modern NLP, with an emphasis on deep learning, transformer architectures, and semantic representation techniques. These advancements have transformed capabilities in areas such as machine translation, sentiment analysis, and automated question answering. We also address persistent issues including algorithmic bias, ethical deployment, and fairness. Furthermore, the paper highlights the increasing influence of NLP across specialized fields such as healthcare, finance, and legal services, offering a broad overview of current trends and emerging directions*

Keywords: Natural Language Processing, Artificial Intelligence, Deep Learning, Transformers, Contextual Embeddings, Machine Translation, Sentiment Analysis, Ethics in AI, Bias Mitigation, Healthcare NLP, Financial NLP, Conversational Systems

