Report of Task-1

Paper Title: Class Diagram Extraction from Textual Requirements Using NLP Techniques

PaperLink: https://sci-hub.se/https://ieeexplore.ieee.org/abstract/document/5489508

1. Summery:

1.1 Motivation: The paper focuses on automating class diagram generation from natural language requirements using NLP and Domain Ontology techniques, addressing the challenges and inefficiencies in manual analysis.

1.2 Contribution: Introduces the "Requirements Analysis and Class Diagram Extraction (RACE)" tool to facilitate class diagram extraction, offering an innovative approach combining NLP and Domain Ontology.

1.3 Methodology: Describes the RACE system's architecture, including its use of OpenNLP for parsing, a custom stemming algorithm, WordNet for semantic correctness, and detailed rules for class, attribute, and relationship extraction.

1.4 Conclusion: The RACE system demonstrates effective class diagram extraction from informal requirements, but currently lacks certain relationship identification capabilities and is restricted to Windows platforms.

2. Limitations:

2.1 First Limitation: RACE's inability to identify complex relationships like one-to-one, one-to-many, and many-to-many, limiting its applicability in more intricate analysis scenarios.

2.2 Second Limitation: The tool's restriction to Windows platforms, hindering its use in diverse computing environments, particularly those using UNIX-based systems.

3. Synthesis: The paper's insights into automated class diagram generation from natural language can greatly enhance software engineering, particularly in requirements analysis. Future applications could see RACE integrated into broader software development tools, potentially expanding to support various platforms and more complex relationship mappings, thereby streamlining the software design process in diverse environments.