

Using Large Language Models to Identify Requirements and Emotional Requirements in Reddit Discussions

[Bachelor] [Masters]

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Online communities such as Reddit contain large volumes of user discussions about software and technology, where users describe problems, request features, and express how products make them feel. These discussions are a valuable source of both functional/quality requirements and emotional requirements, i.e., how users want to feel when using a system (e.g., safe, in control, respected). Identifying them manually, however, is slow, requires trained annotators, and does not scale well.

This thesis investigates whether large language models (LLMs) can support or automate this tagging process. Building on an existing manually annotated dataset of Reddit posts, the student will design an LLM-based pipeline that (1) detects whether a post contains a requirement, (2) classifies the type of requirement (e.g., functional, non-functional/quality, emotional), and (3) extracts the emotional requirements expressed. The student will experiment with prompting strategies such as zero-shot, few-shot, and chain-of-thought prompting, and evaluate the results against the human annotations using precision, recall, F1-score, and agreement measures such as Cohen's kappa. A qualitative error analysis will examine where and why the LLM disagrees with human annotators, for example with implicit, sarcastic, or ambiguous posts.

Expected outcomes: a reusable LLM-assisted pipeline for identifying requirements and emotional requirements from online discussions, an evaluation of its reliability compared to human tagging, and recommendations on how LLMs can be used in requirements elicitation from user-generated content.