

**PROJECT TITLE:** Tracing the Emotional Roadmap of Depressive Users on Social Media Through Sequential Pattern Mining

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**TOOLS USED:** Python, PRAW,Prefixspan,Empath, emoji

**REFERENCE:** <https://ieeexplore.ieee.org/document/9477614>

## ABSTRACT

This project investigates the emotional transitions of users active on the **r/depression** subreddit by applying advanced natural language processing (NLP) techniques, emotion recognition, and sequential pattern mining. The goal is to understand how emotional states evolve over time in online mental health communities.

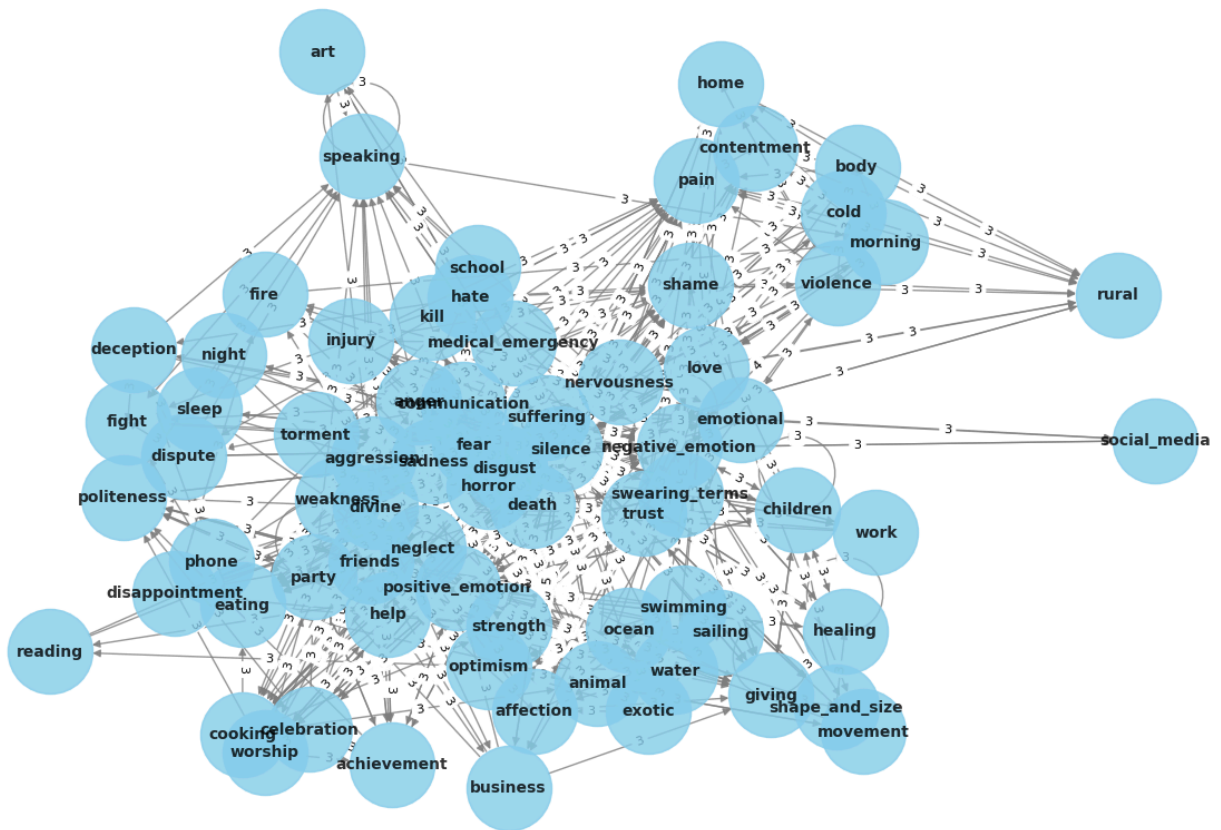
Using Reddit's API, we collected thousands of posts and comments from users, focusing on those with sustained activity across at least 15 unique days. Each text entry undergoes rigorous preprocessing—including emoji demojization, stemming, lemmatization, and stopword removal—before emotional attributes are extracted using the **Empath** lexicon, which categorizes text into over 200 emotion-related topics.

We model users' emotional trajectories using a **sliding window approach** and apply **PrefixSpan**, a sequential pattern mining algorithm, to discover frequently occurring emotional sequences. In a novel extension, we also introduce "silent periods" (inactivity longer than 3 days) as explicit tokens to examine their influence on emotional dynamics.

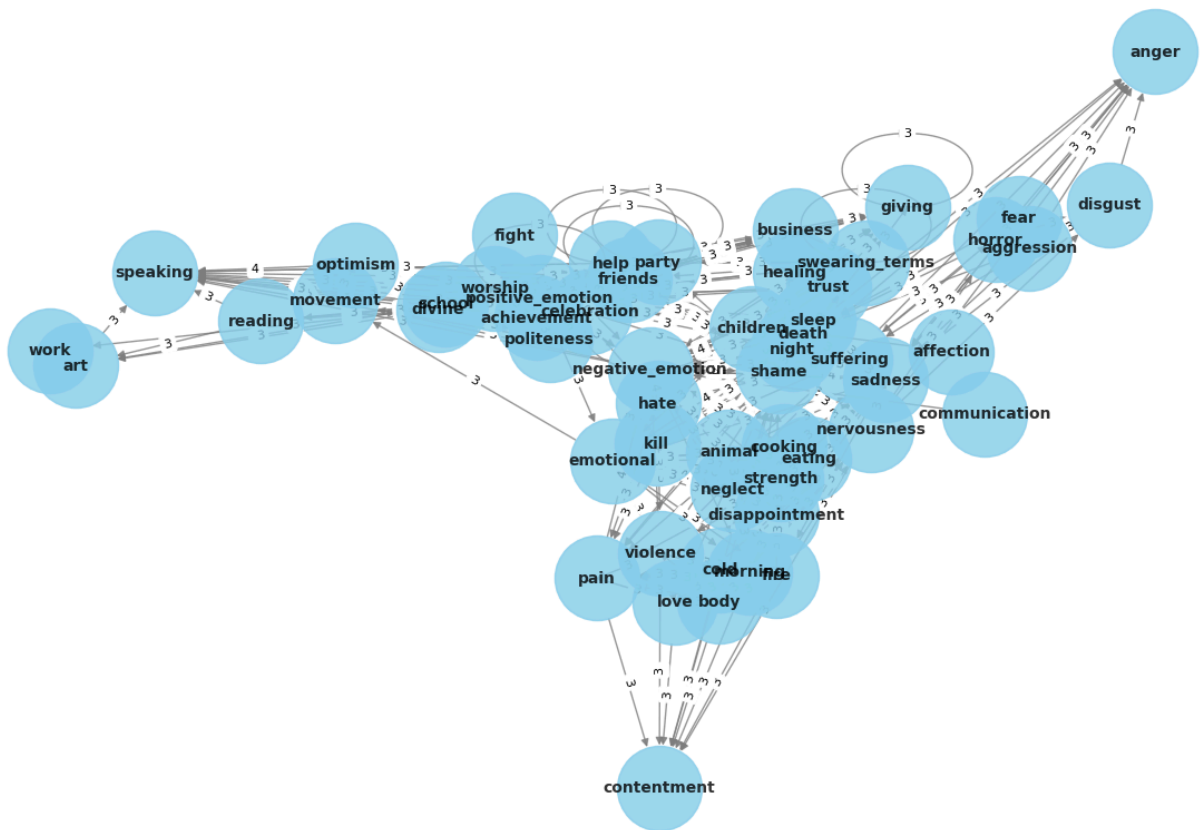
The results highlight recurrent emotional patterns and reveal how inactivity often correlates with shifts in emotional tone. This analysis offers a deeper understanding of digital emotional expression and may support future tools for early detection and intervention in mental health discourse online.

**RESULTS:** 📄 Results Of TROAD

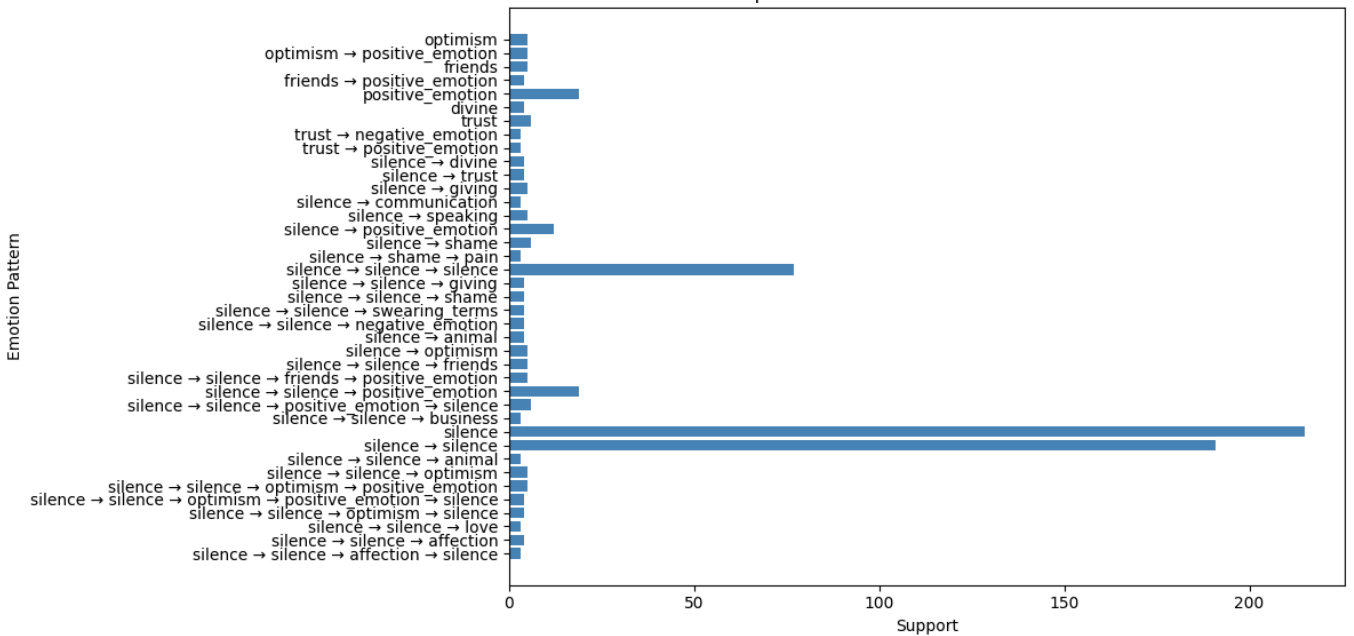
### Emotion Transitions With Silent Periods

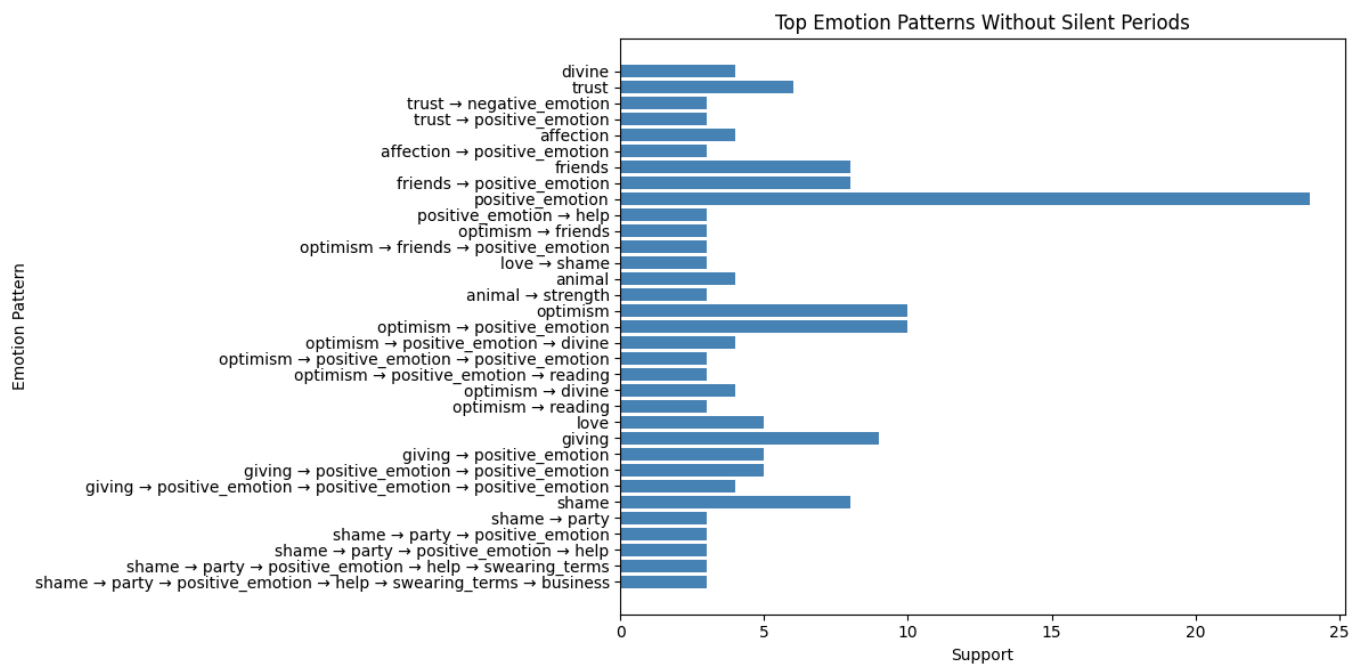


Emotion Transitions Without Silent Periods

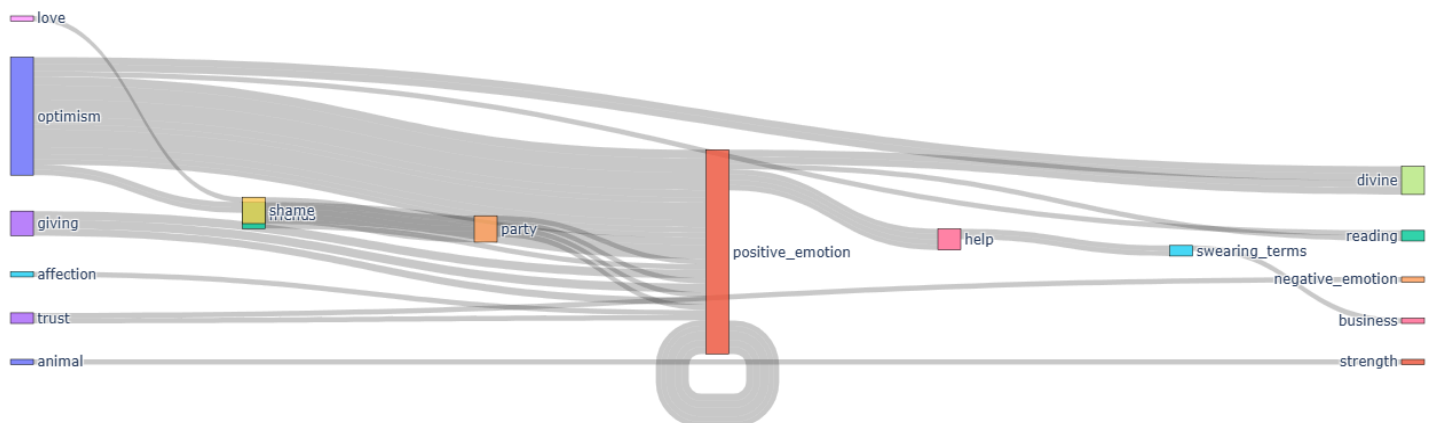


Top Emotion Patterns With Silent Periods





Emotion Flow in Depression Subreddit (Without Silent Periods)



Emotion Flow in Depression Subreddit (With Silent Periods)

