

## Exploring Tweet Geolocation: Leveraging Large Language Models for Post-Hoc Explanations

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**Abstract :** In recent years, location prediction on social networks has gained significant attention, with short and unstructured texts like tweets posing additional challenges. Advanced geolocation models have been proposed, increasing the need to explain their predictions. In this paper, we provide explanations for a geolocation black-box model using LIME and SHAP, two state-of-the-art XAI (eXplainable Artificial Intelligence) methods. We extend our evaluations to Large Language Models (LLMs) as post hoc explainers for tweet geolocation. Our preliminary results show that LLMs outperform LIME and SHAP by generating more accurate explanations. Additionally, we demonstrate that prompts with examples and meta-prompts containing phonetic spelling rules improve the interpretability of these models, even with informal input data. This approach highlights the potential of advanced prompt engineering techniques to enhance the effectiveness of black-box models in geolocation tasks on social networks.

**Keywords :** large language model, post hoc explainer, prompt engineering, local explanation, tweet geolocation

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