

Centre des Etudes Doctorales Sciences et Techniques
&
Sciences Médicales

THESIS DEFENSE

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CANDIDATE FOR DOCTOR SCIENCES AND TECHNIQUES

**An AI-Driven Framework for Advanced Sentiment
Analysis in Social Media: Integrating Fuzzy Logic and
Ontology-based Semantic Methods**

Date :	Saturday, January 13th, 2024
Time :	10.00 am
Location :	Conference Room, Building F, FST - Tangier

Committe Members

Pr. El Mokhtar EN-NAIMI	FST - Tangier	Chair
Pr. Abderrahim GHADI	FST - Tangier	Reviewer
Pr. Khalid HADDOUCH	ENSA - Fez	Reviewer
Pr. Lotfi ELAACHAK	FST - Tangier	Reviewer
Pr. Mohammed BOUHORMA	FST- Tangier	Examiner
Pr. Abdelhadi FENNAN	FST- Tangier	Supervisor

ABSTRACT

The amount of material that is now readily available on the internet has increased dramatically in recent years. Particularly, data generated from social media platforms like Twitter and Facebook has attracted the attention of researchers, governments, and stakeholders for developing strategies aimed at improving goods and services as well as implementing urbanisation projects to meet the expectations of Smart Cities, leading to improved overall citizen satisfaction and a more positive urban living experience.

Artificial intelligence (AI) and sentiment analysis, two advanced modern technologies, have become increasingly important in this context for making sense of this data. The ability to handle and analyse vast volumes of data, including social media posts, customer reviews, and citizen comments, is a feature of AI technologies including machine and deep learning algorithms, natural language processing, and data analytics. These technologies can be used to gather insightful information and identify patterns in the data.

In our work, we aim to leverage this rich social media data through a framework we proposed and developed. In this framework, we make use of data extraction technologies, artificial intelligence, sentiment analysis, and other advanced techniques, specifically the implementation of ontology and fuzzy logic to tackle the complexity and nuance of human emotions and opinions, in order to gain more accurate and nuanced sentiment analysis results, as well as insights into how people are using and experiencing social media.

The proposed framework was developed and enhanced along our research and findings journey, and address these major elements:

- Data extraction from social media platforms, which can include text and image contents
- Sentiment analysis using a variety of advanced artificial intelligence techniques
- Data visualization using different figures and shapes

Keywords : *Sentiment analysis, Fuzzy logic, Ontology, Apache Spark, Machine Learning, AI*