الجمهورية الشعبية الديمقراطية الجزائرية
People's Democratic Republic of Algeria
وزارة التعليم العالي و البحث العلمي
Ministry of Higher Education and Scientific Research
المدرسة العليا للإعلام الآلي 8 ماي 1945 - سيدي بلعباس
Higher School of Computer Science
8 Mai 1945 - Sidi Bel Abbes

Master's Thesis

To obtain the diploma of **Master's Degree**

Field of Study: **Computer Science**

Specialization: **Computer Systems Engineering (ISI)**

A Comparative Analysis of Named Entity Recognition Methods on Financial Texts

---

Presented by **Mohamed Miloudi**
Defended on: **September, 2025** *In front of the jury composed of*

Dr. BELALIA Amina	President of the Jury
Dr. SERHANE Oussama	Examiner
Dr. BEDJAOUI Mohamed	Supervisor
Dr. BOUZIDI Khalil	Co-Supervisor

Academic Year: 2024/2025

Abstract

Financial institutions process large volumes of text data requiring automated entity extraction. Named Entity Recognition systems must handle domain-specific terminology and specialized entity types found in financial documents. Existing NER evaluations focus primarily on general-purpose texts, leaving performance on financial content insufficiently understood.

This master's thesis evaluates 16 Named Entity Recognition models across four paradigms on financial texts using the FiNER-ORD dataset. We tested traditional methods, advanced contextual models, transformer-based approaches, and large language models. All models were evaluated on 300 financial text samples using standardized F1 scoring and processing speed measurements.

Results show performance differences across model categories. Large language models achieved the highest accuracy, followed by advanced contextual models. Traditional methods demonstrated superior processing speeds. Location entities proved most difficult to recognize across all approaches, while person entities showed consistently higher recognition rates.

This work establishes performance benchmarks for NER systems on financial texts and provides guidance for model selection based on accuracy and speed requirements. The evaluation framework and results support informed decision-making for financial text processing applications.

Keywords — Named Entity Recognition, Financial NLP, Benchmarking, spaCy, BERT, RoBERTa, Flair, GLiNER, Large Language Models, F1 scores, Performance Comparison