Using **LLMs** to Generate **Patient Journeys** in Portuguese: an **Experiment**

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INTRODUCTION

- This study leverages Gemini 1.5 Flash to create synthetic patient journeys in European Portuguese, tackling data scarcity.

- Ensures medical and linguistic accuracy by using real-world case reports as references during generation.

- The patient journey includes admission, daily progress reports, and discharge, forming a cohesive clinical narrative.

MOTIVATION & OBJECTIVE

- **Objective:** Generate synthetic patient journeys using LLMs.
- Motivation
  - **Generating synthetic medical datasets** capturing a patient's full journey.
  - **Mitigating the data scarcity** problem in the medical field.
  - Assessing LLMs' ability to **generate patient journeys in European Portuguese.**

METHODOLOGY

- Model: Google's Gemini 1.5 Flash.
- Real Case Reports: 285 case reports from SPMI.
- Generated Reports: Admission Report, Discharge Report, Full Patient Journey.
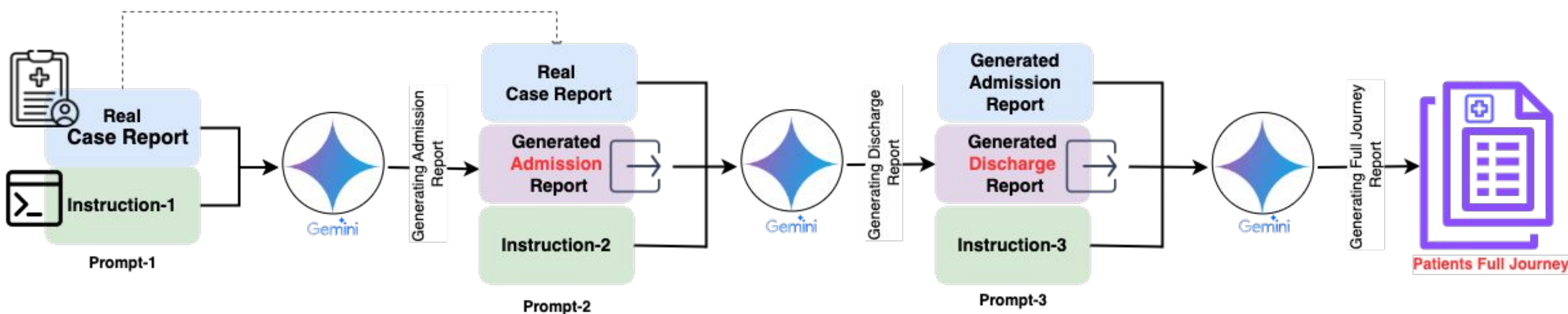
EVALUATION AND RESULTS

- Quantitative Assessment
  - NER Inclusion: 100% match.
  - BERTscores: 0.75-0.77.
  - BLEU Score: 0.025-0.14.
  - Language Variant: >95% European Portuguese.

- Qualitative Assessment
  - Expert evaluation by a linguistic and pharmaceutical sciences expert.
  - Parameters: coherence, narrative structure, and medical accuracy.

- Exploratory Results
  - **Admission Reports:** Focus on symptoms and initial assessments.
  - **Discharge Reports:** Emphasize treatment outcomes.
  - **Full Journey Reports:** Comprehensive documentation of hospitalization.

Report	PT-PT (%)	PT-BR (%)
Admission	98.24	1.76
Discharge	95.42	4.58
Full Journey	97.18	2.82

Metric	Score
Admission NER inclusive Score	1.00
Discharge NER inclusive Score	1.00
Full Journey NER inclusive Score	1.00
Admission BERTscore	0.75
Discharge BERTscore	0.76
Full Journey BERTscore	0.77
Admission BLEU score	0.025
Discharge BLEU score	0.13
Full Journey BLEU score	0.14

Quantitative Results

(a) Admission Report (b) Discharge Report (c) Full Journey Report

Exploratory Results

CONCLUSIONS

- Key Contributions:
  - Generated high-quality synthetic patient journeys.
  - Addressed data scarcity in European Portuguese.

- Limitations:
  - Limited dataset size.
  - Single-language focused.

- Future Work:
  - Expand the dataset.
  - Integrate multimodal data.
  - Adapt to other languages.