

INTENT DETECTION AND SLOT FILLING ON HINDI DATASET

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Contents

- ▶ Introduction
- ▶ Model Architecture
- ▶ Training and Evaluation
- ▶ Fitness Function Design
- ▶ Genetic Algorithms
- ▶ Methodology
- ▶ Tech Stack

Introduction

- ▶ Intent detection
- ▶ Slot filling
- ▶ Important for NLU tasks

Model Architecture

- ▶ Components: Intent detection and slot filling
- ▶ Techniques: Transformers, BiLSTM
- ▶ Dataset Preprocessing:
 - ▶ Tokenization, numerical vectorization
- ▶ Data splitting for training , testing and validation

Training and Evaluation

- ▶ Train the model using the training set, monitoring performance on a validation set to prevent overfitting.
- ▶ Evaluate the model's performance on a held-out test set to ensure that it generalizes well to unseen data.
- ▶ Post-Training Optimization

Fitness Function Design

- ▶ Balancing intent detection and slot filling accuracy

Genetic Algorithms

- ▶ Initialization
- ▶ Chromosome Structure:{Learning rate , Batch Size, Epochs}
- ▶ Evaluation
- ▶ Selection
- ▶ Crossover
- ▶ Mutation
- ▶ Replacement
- ▶ Termination

Methodology

- ▶ GoogleTrans for Translating ATIS Dataset
- ▶ BERT for Embeddings:
- ▶ Intent Classification Head
- ▶ Slot Filling Head
- ▶ Training and Evaluation
- ▶ Post-Training Optimization

Tech Stack

- ▶ Programming Language: Python
- ▶ Machine Learning Frameworks: PyTorch, Transformers
- ▶ Data Processing and Analysis: Pandas/Numpy, Scikit-learn, Matplotlib

Thank You