Question Answering Systems in NLP

This repository contains a Jupyter notebook that explores various types of Question Answering (QA) systems using Natural Language Processing (NLP) techniques. The project is a part of the Self-Directed Learning (SDL) module and demonstrates both theoretical understanding and practical implementation.

File Structure

- QA_systems_NLP_SD.ipynb - The main notebook showcasing:
  - Closed-domain and open-domain QA
  - Extractive QA using HuggingFace Transformers
  - Reader-Ranker pipeline
  - Pre-trained models and pipelines
  - Sample evaluations and outputs

Getting Started

Prerequisites:

```
pip install transformers
pip install torch
pip install datasets
pip install jupyter
```

Running the Notebook:

1. Clone this repository:

   git clone https://github.com/yourusername/qa-systems-nlp.git

   cd qa-systems-nlp

2. Launch the Jupyter Notebook:

   jupyter notebook QA_systems_NLP_SD.ipynb

Key Concepts Covered

- Extractive Question Answering
- Closed vs Open-domain QA
- HuggingFace Pipelines: Using pipeline("question-answering")
- Pre-trained Models: distilbert-base-cased-distilled-squad, bert-large-uncased-whole-word-masking-finetuned-squad, etc.
- Answer Extraction from contexts using modern transformers

References

- Hugging Face Documentation: https://huggingface.co/docs
- SQuAD Dataset: https://rajpurkar.github.io/SQuAD-explorer/