**Class:**.

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Project Proposal

Matching recruiters with the best candidates based on their skills, education, and experience in their resume.

**Introduction**

In the quest to streamline recruitment, our project targets the automation of candidate selection through NLP. By analyzing resumes, we aim to match candidates to roles they fit best, based on their skills, education, and experience. This approach promises to refine the hiring process, saving time for recruiters and aligning job seekers with suitable opportunities more effectively.

**Database**

[**https://www.onetcenter.org/database.html#all-files**](https://www.onetcenter.org/database.html#all-files)

**NLP methods**

We will employ classical NLP methods such as vectorization techniques—namely, Bag of Words or TF-IDF. Then apply cosine similarity to score and rank candidates against job descriptions. In addition to BERT to generate embeddings that capture the context around each skill or job requirement.

**Packages used**

Pandas, NumPy, Scikit-learn, NLTK

**NLP tasks**

Feature extraction, Similarity calculation, Ranking, Evaluation, Iteration and optimization, Contextual embedding generation, Fine-tuning of pre-trained models.

**Performance evaluation**

Manual Evaluation: manually review the recommendations for a sample of job descriptions to assess their relevance and quality.

**Schedule**

***Day 1 - Day 2: Data Acquisition and Setup***

- Obtain and load the resume dataset.

- Install necessary Python packages.

***Day 3 - Day 4: Feature Extraction***

- Apply TF-IDF to the resume data.

- Implement initial cosine similarity scoring.

***Day 5 - Day 6: Evaluation Framework***

- Set up a manual evaluation process.

- Define key performance metrics.

***Day 7 - Day 8: System Refinement***

- Refine feature vectors and similarity calculations.

- Gather initial feedback and adjust the model.

***Day 9 - Day 10: Performance Tuning***

- Analyze system performance and tune parameters.

- Implement recruiter feedback loop.

***Day 11 - Day 12: Final Evaluation***

- Conduct final evaluations with expanded job descriptions.

- Prepare the system for a pilot deployment.

***Day 13: Reporting***

- Document the methodology, system setup, and performance.

- Compile and finalize the project report.

