Smart CV Filter: AI-Powered Recruitment

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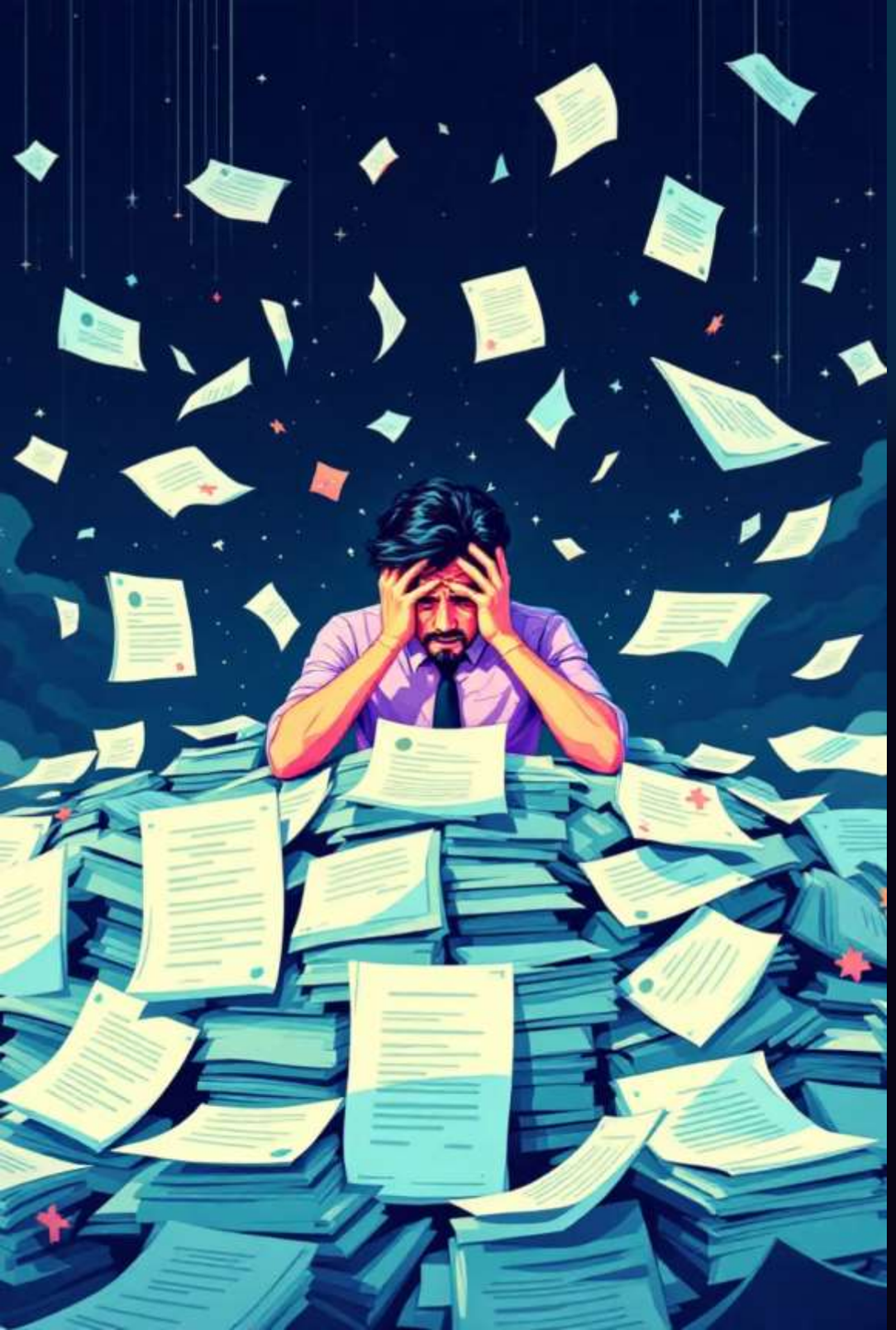

The Recruitment Challenge

Overwhelmed HR

HR departments face an overwhelming volume of PDF resumes in the digital age.

Time Inefficiency

Manually reviewing 100 CVs can take approximately 16 hours.

Human Fatigue

Tired recruiters lead to mistakes and overlooked talent.

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Project Goal: Automate & Optimize

Desktop Application

Develop a Python-based desktop application.

AI-Powered Analysis

Utilize NLP to read and understand resumes.

Automated Ranking

Automate the ranking process to save time and reduce bias.

Methodology: The AI Engine

We use Unsupervised Learning to convert text into mathematical vectors.

TF-IDF Vectorizer

Converts words into numbers based on their importance within the text.

Cosine Similarity

Calculates the match percentage between resumes (0-100%).

```
# 1. Convert Text to Vectors
vectorizer =
TfidfVectorizer(stop_words='eng
lish')
tfidf_matrix =
vectorizer.fit_transform(all_te
xts)

# 2. Calculate Similarity
(Math)
matches =
cosine_similarity(tfidf_matrix
[0], tfidf_matrix [1:])

# 3. Store Base Score
df['Base Score'] = [round(score
* 100, 2) for score in matches
[0]]
```

Custom Logic: Fairness Algorithm

A Weighted Scoring System (+10 / -10) enhances fairness.

Reward (+10)

Awarded if a candidate possesses a required skill.

Penalty (-10)

Applied if a candidate lacks a required skill.

```
for skill in required_skills:
 if skill.lower() in
text.lower():
 skill_bonus += 10 # Reward
 matched_skills.append(skill)
 else:
 skill_bonus -= 10 # Penalty
(Equal weight)

# Final Calculation
df['Final Score'] = df['Base
Score'] + df['Bonus']
```

Results & Performance

Tested on a synthetic dataset of 100 Generated Resumes.

5s

Speed

Processed 100 PDF files in under 5 seconds.

100%

Precision

Accurately ranked "Senior" profiles for Senior roles.

✓

Filtering

"Block List" removed unqualified candidates (e.g., Interns).

✓

Strict Mode

"Max Priority" acted as a hard filter for location requirements.

Conclusion: A Powerful HR Tool

The Smart CV Filter combines Unsupervised AI (TF-IDF) with Rule-Based Logic for powerful HR automation.

01

Unsupervised AI

Efficiently processes and understands resume text.

02

Rule-Based Logic

Adds fairness and customizability to the ranking.

Future Improvements

OCR Integration

Add Optical Character Recognition for image-based PDFs.

Web Database

Implement a web database to store candidate history and profiles.

Thank You!

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