AI-Powered Résumés and Recommendations Screening

INNOV8-2.0 Finals
ARIES - IIT Delhi and Eightfold.AI

1 Introduction

Meet Satya, the latest innovation in AI-powered HR decision-making. Satya is designed to tackle one of the most complex tasks in the modern workplace—helping HR teams sift through endless résumés and recommendations to find the right talent. In a world where careers are built on networks, connections, and credibility, Satya's goal is to uncover hidden patterns, verify credentials, and ultimately change the way HR operates.

At the heart of this competition lies a key question: can AI, like Satya, truly assess the quality of a candidate, not just from their résumé but also from their professional network and recommendations? And if so, can we detect patterns that might indicate fraud or bias in the process?

This project, co-organized by ARIES (IIT Delhi) and Eightfold AI, is about pushing the boundaries of what AI can do in HR. You will help Satya grow smarter by building the tools she needs to analyze résumés, recommendations, and career paths.

2 The Dataset

Satya will have access to data from 1000 professionals. Imagine each person as a unique story—what they've accomplished, who they've worked with, and how they've been endorsed by others.
The dataset includes:

- **Personal Information**: Basic details like name and contact info.
- **résumés**: Work experience, education, skills, projects, and achievements.
- **Recommenders**: Who vouched for them and how many times.
- **Recommendation Letters**: Full-text letters from their peers, colleagues, and supervisors.

Each entry tells a tale, but are all tales true? That's where Satya will need your help.

2.1 Sample Dataset Entries

Field	**Data**
Name	John Doe
Résumé	• Current: Senior Software Engineer, Innovation Inc • Previous: Software Engineer, Tech Corp (2015-2020) • Education: M.S. Computer Science, XYZ University (2015) • Skills: Python, Java, Machine Learning, Cloud Computing • Projects: Led AI-powered recommendation system development
Recommenders	Jane Smith, Mike Johnson, Sarah Lee

Table 1: Sample Personal Information, Résumé, and Recommenders

Here's a snippet from one of John's recommendation letters:

> "I had the pleasure of working with John Doe for three years at Tech Corp. John consistently demonstrated exceptional problem-solving skills and a deep understanding of complex software architectures..."

Sounds convincing? Satya might think so too. But you'll help her dig deeper.

3 The Mission

Satya's mission is not just about analyzing résumés; it's about safeguarding companies from costly mistakes. In the past, a fraudulent candidate slipped through the hiring process at a major firm. They had glowing recommendation letters from influential people, a spotless résumé, and impressive claims. But when the company finally realized the truth, it was too late — the damage had been done. Their experience had been fabricated, and the recommendation letters were part of a network of reciprocal endorsements between colleagues. This scenario is what Satya aims to prevent.

Satya's goal is to go beyond the surface, to peer into the nuances that might be missed by the human eye, and to ensure that HR teams never fall victim to such a situation again.
Here's how she does it:

3.1 Fraud Detection

Satya is on the lookout for discrepancies and patterns that signal fraud. She cross-checks every claim in a candidate's Résumé against the content of their recommendation letters. No more blind trust — if a letter of recommendation contains exaggerated claims, Satya flags it immediately. In the case of reciprocal recommendations, where two colleagues repeatedly endorse each other to manipulate credibility, Satya can detect these circular endorsements.

Satya uses advanced language analysis to detect vague or suspicious wording. Words like "great potential" or "incredible enthusiasm," though positive, might be masking a lack of specific achievements. Additionally, Satya identifies patterns that just don't add up. For example, if a candidate claims to have held an executive position at an age when most are just starting their careers, Satya knows something's off.

To ensure no fraudulent candidate slips through, Satya develops a risk scoring system, flagging those who may need further investigation by the HR team.

3.2 Data Analysis

But fraud detection is just the beginning. Satya also provides deep insights into the dataset to help HR teams understand the underlying patterns. She identifies individuals who are influential and well-connected within their professional circles. These are often the candidates with the potential to drive change within an organization.

Satya also analyzes the strength and quality of these connections. A strong connection between two professionals isn't just about quantity but about the meaningfulness of their interactions. By detecting natural clusters or communities — individuals who have worked together or share common networks — Satya helps HR visualize how skills and career paths evolve over time.

Using her insights, HR teams can better understand the social dynamics within the candidate pool, allowing for smarter hiring decisions.

3.3 HR Decision Support Dashboard

Satya believes that even the most complex analysis should be easy to interpret. That's why she presents her findings in a user-friendly HR dashboard. In this dashboard, HR teams can interact with

Satya's analysis, comparing candidates side-by-side in a clean, intuitive interface.

Satya's dashboard doesn't just display data — it acts as an early warning system. Fraud alerts are integrated directly into the interface, allowing HR to spot red flags immediately. The dashboard also includes a candidate ranking system, where HR teams can see which candidates Satya considers the strongest, based on a comprehensive evaluation of their skills, experience, and network connections.

With Satya's help, HR teams no longer need to worry about missing the subtle signs of fraud or failing to recognize the most connected and influential candidates. She ensures that only the best, most deserving candidates make it through to the next stage of the hiring process.

4 What Satya Needs to Learn

Satya won't just look at data, she needs to learn how to think about it. She'll use AI models to make sense of the Résumés and recommendations. Your task is to teach her how to spot inconsistencies, learn who the key players are, and make informed recommendations for HR.

5 How You Will Be Judged

Satya's performance depends on the tools you build. You'll be evaluated on:

- How accurately your system detects fraud and explains its findings.
- The depth and clarity of the insights your data analysis provides.
- The usability and functionality of the dashboard—can HR easily navigate it?
- The creativity and innovation in your approach to solving these challenges.
- The scalability of your solution—can Satya handle datasets beyond 1000 candidates?
- Code quality, thorough documentation, and clear visualizations.

6 Submit Your Work

Your submission will include:

1. The source code that powers Satya.
2. A report (max 10 pages) explaining:
    - Your methodology and models
    - The key findings and performance metrics
    - Discussions of bias, fairness, and how they were addressed
    - How scalable your approach is, and what optimizations you applied

Remember, you're shaping the future of HR with AI. We can't wait to see what Satya learns from your contributions!

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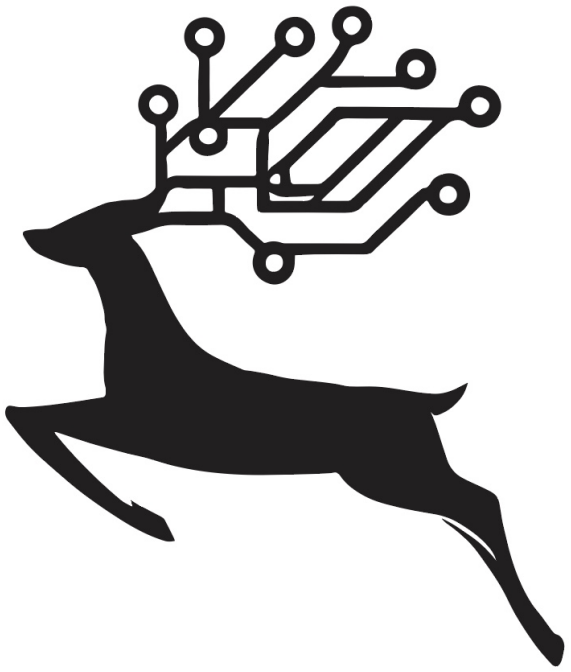

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