



ARIES

# INNOV8 2.0

FINALS SOLUTION

 eightfold.ai

TEAM MODULENOTFOUND

IIT KHARAGPUR



# DEMO



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## Application Preview

# AI Hiring Automation

## TIMELINE

1

### Early Adoption

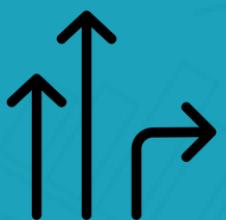


- Initial exploration of AI in recruitment
- Primarily focused on parsing resumes

2010-2014

2

### Mainstream Growth



- Widespread use of AI for candidate screening
- Emergence of AI-powered chatbots and video interviews

2015-2019

3



### Advanced Integration

- AI tools for skill matching and bias reduction
- Increased adoption of AI in end-to-end hiring processes

2020-present

AI resume screening automates resume filtering using **keywords** and **criteria**, helping recruiters quickly identify top candidates while saving **time** and **reducing bias**.

Accuracy

AI Screening Drivers

Cost Savings

Bias Reduction

Efficiency

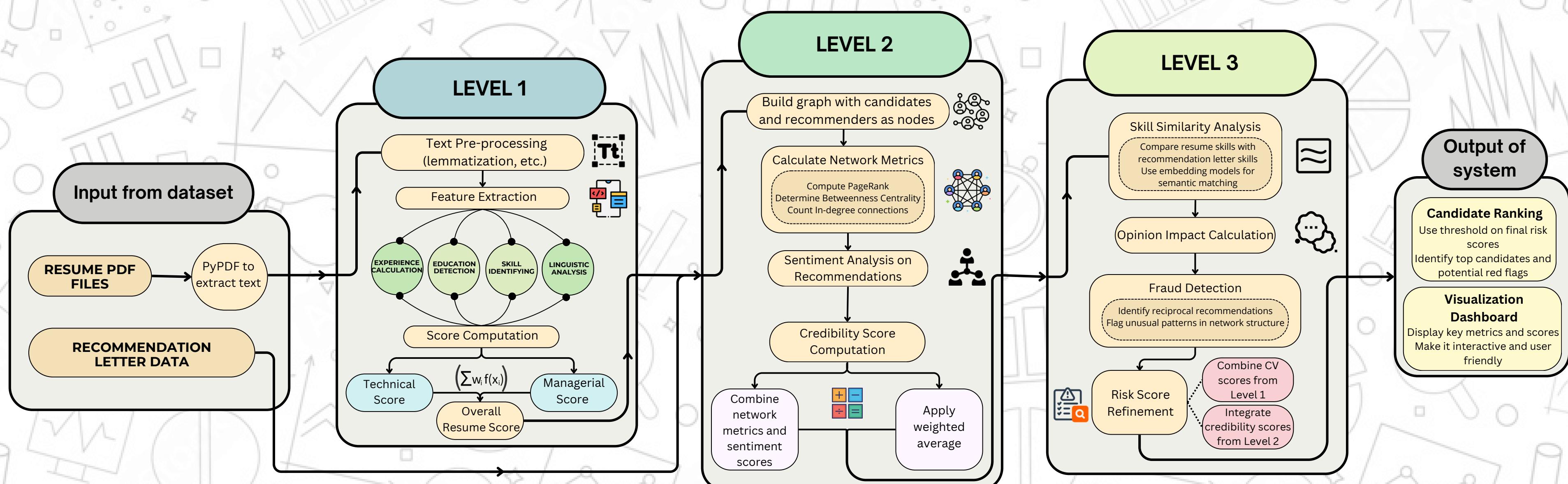
Introduction

Level 1

Level 2

Level 3

# Pipeline



Flowchart for the Workflow

Introduction

Level 1

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Level 3



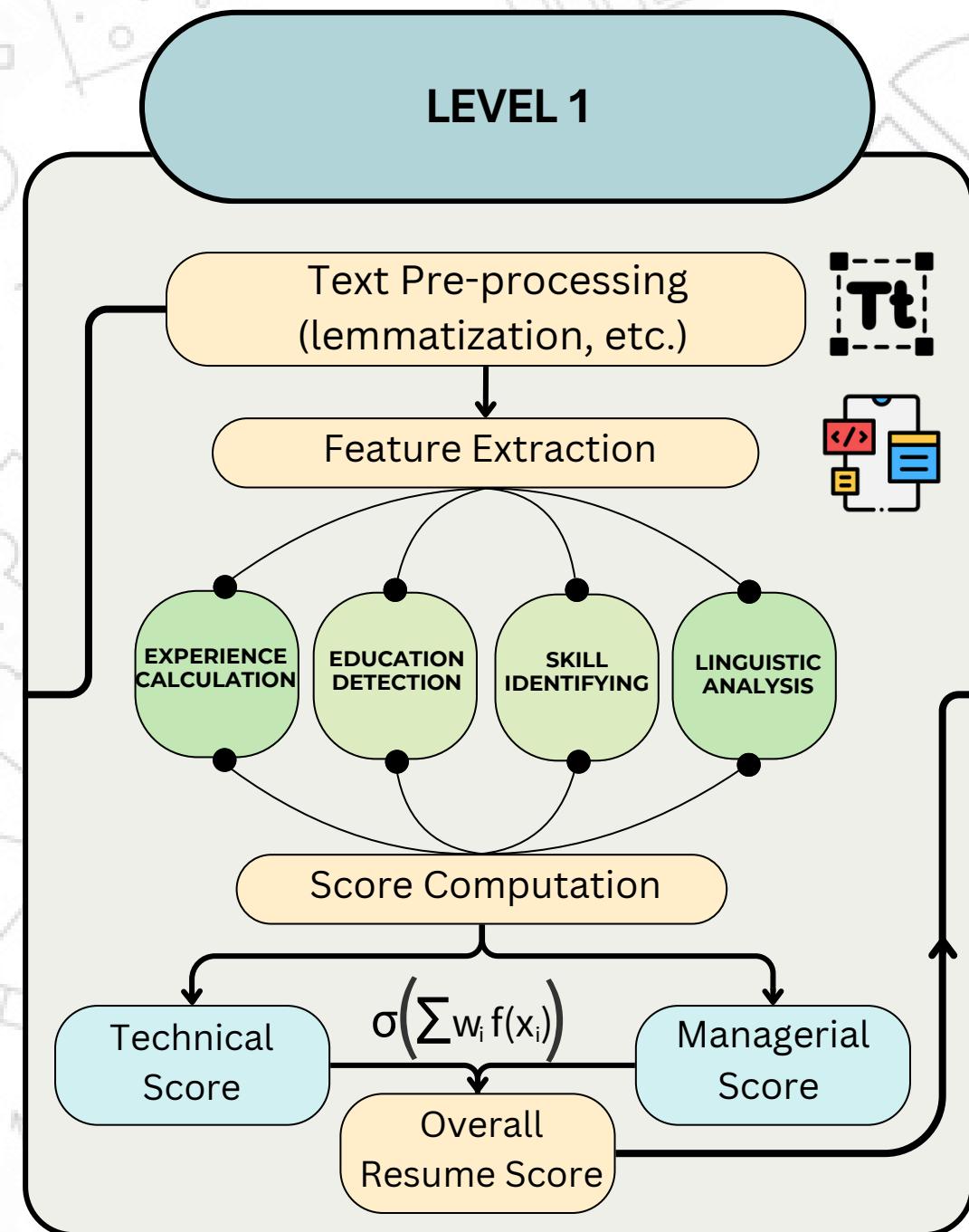
# LEVEL 1

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## Resume Scoring

# Data Preprocessing



This stage of the recruitment pipeline employs **advanced natural language processing (NLP)** techniques to extract and analyze various measures from resumes, providing objective metrics for candidate comparison. These metrics offer deep insights into candidates' **qualifications, skills, and overall suitability** for the role, significantly enhancing the effectiveness and efficiency of the recruitment process.



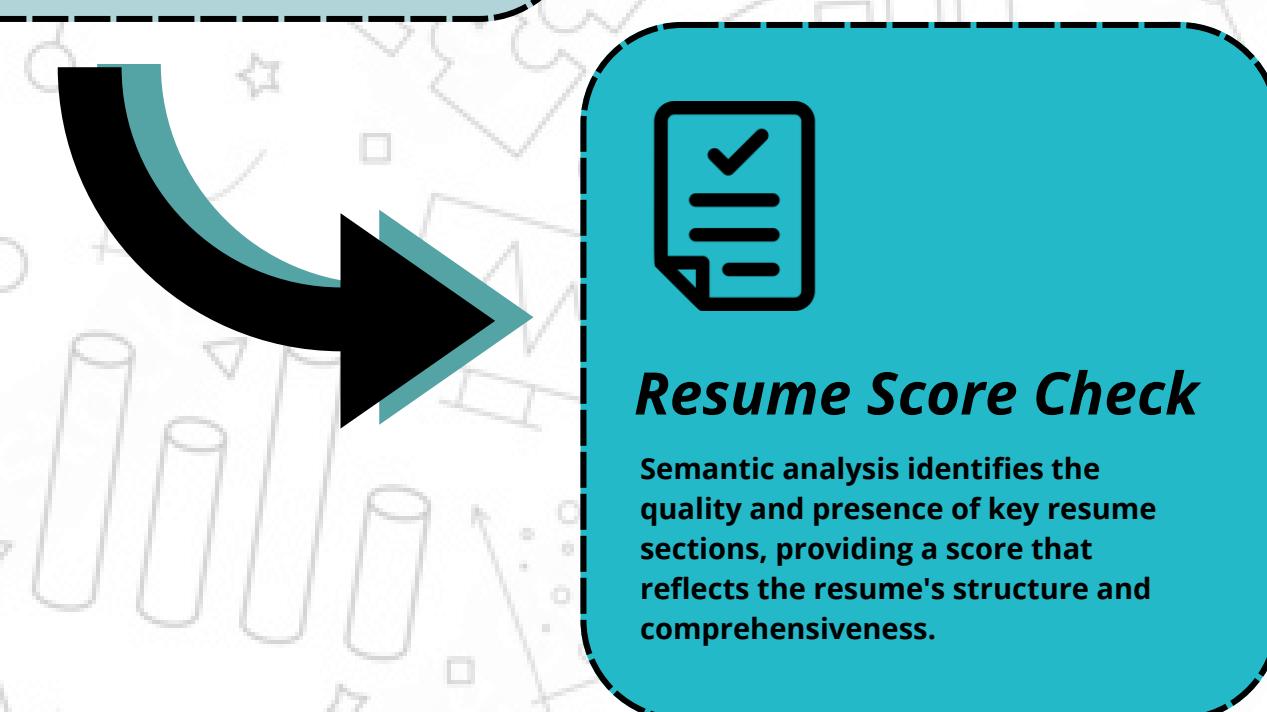
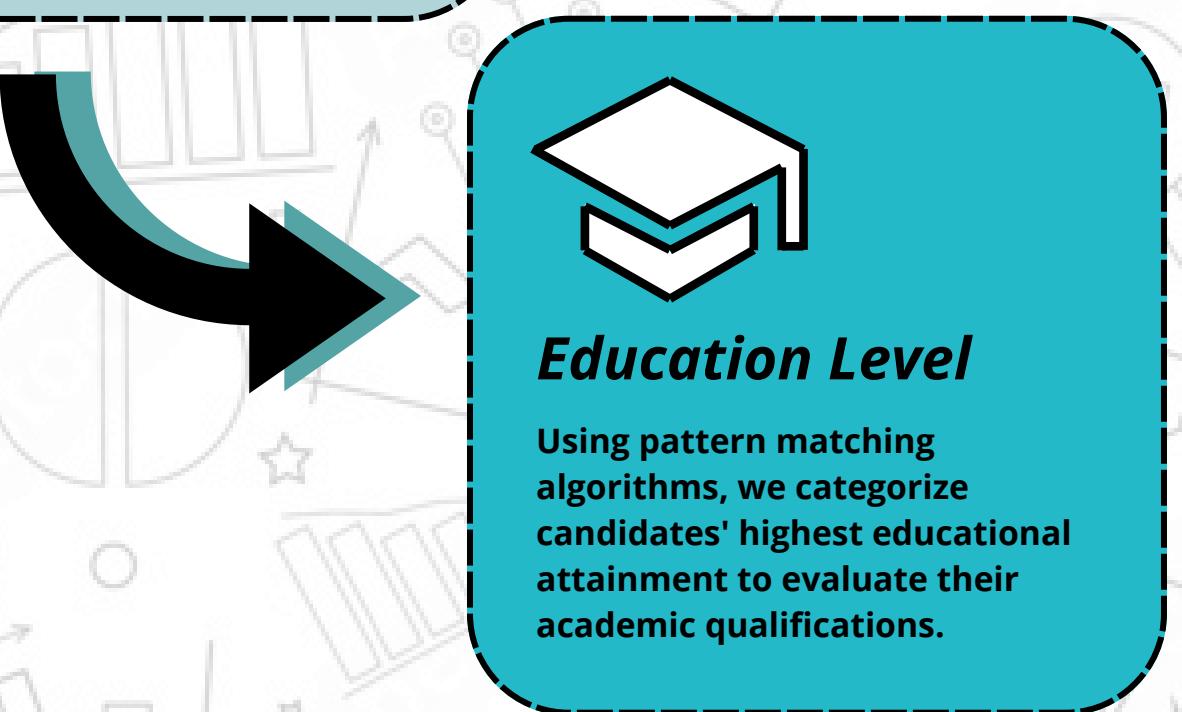
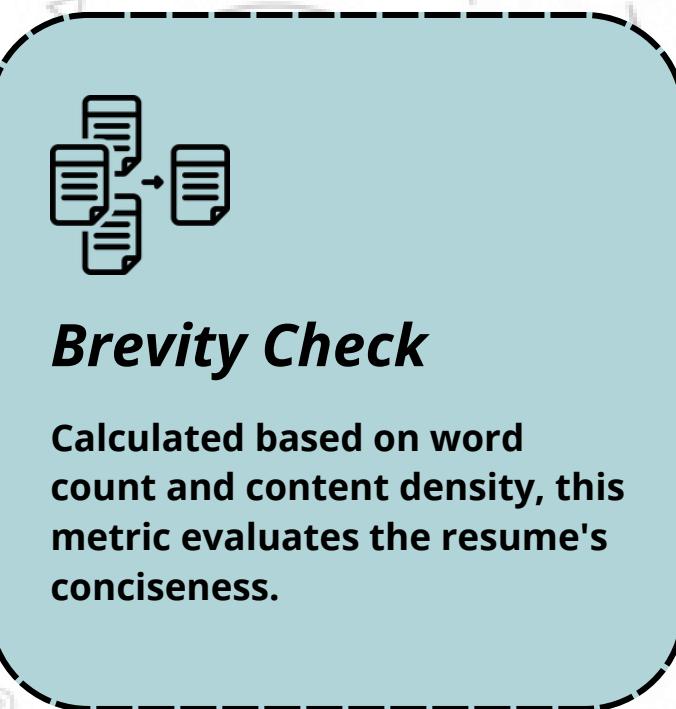
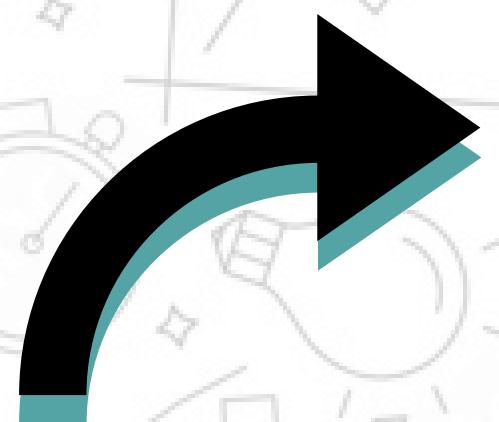
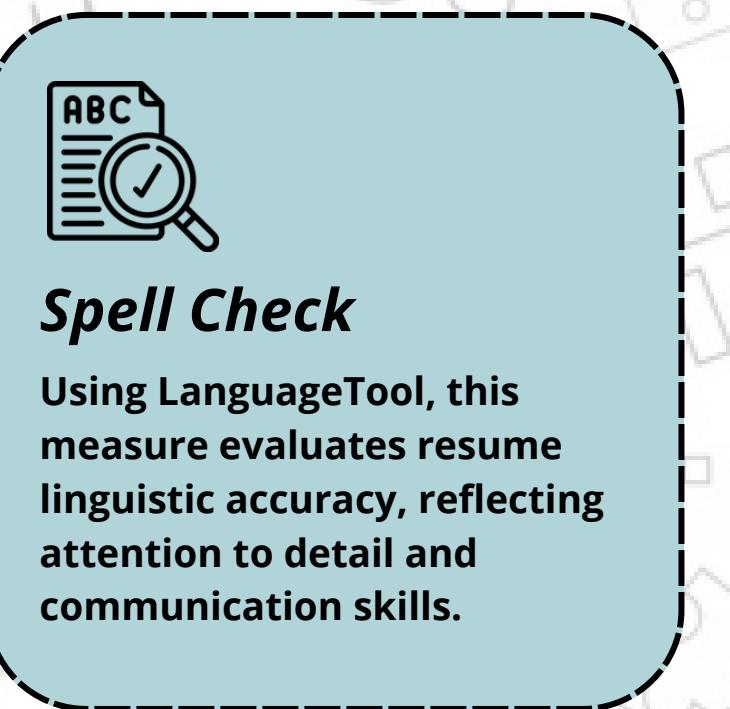
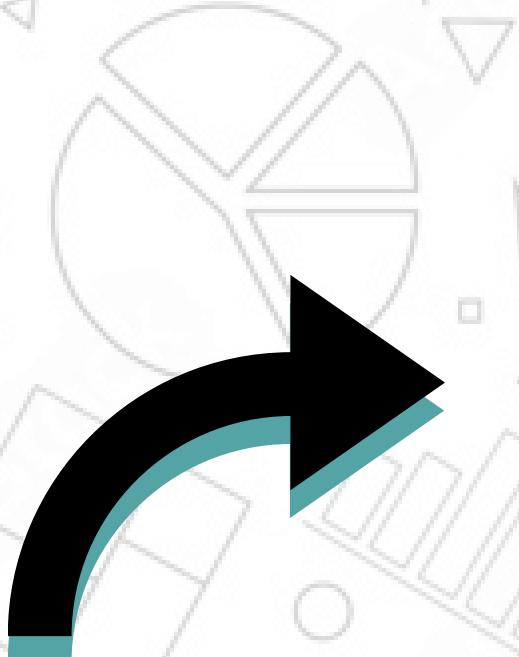
Level 1

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Level 3

Conclusion

# Resume Scoring



**Level 1**

**Level 2**

**Level 3**

**Conclusion**

# Resume Scoring

## Managerial Score

A composite score derived from education level, years of experience, and identified technical skills. It quantifies the candidate's technical proficiency relative to the job requirements.

## Technical Score

Leveraging sentiment analysis and achievement quantification algorithms, this score assesses leadership potential and impact in previous roles.

## Overall Score

A weighted combination of all previous scores, providing a holistic evaluation of the candidate. The weights are adjustable based on specific job requirements

Level 1

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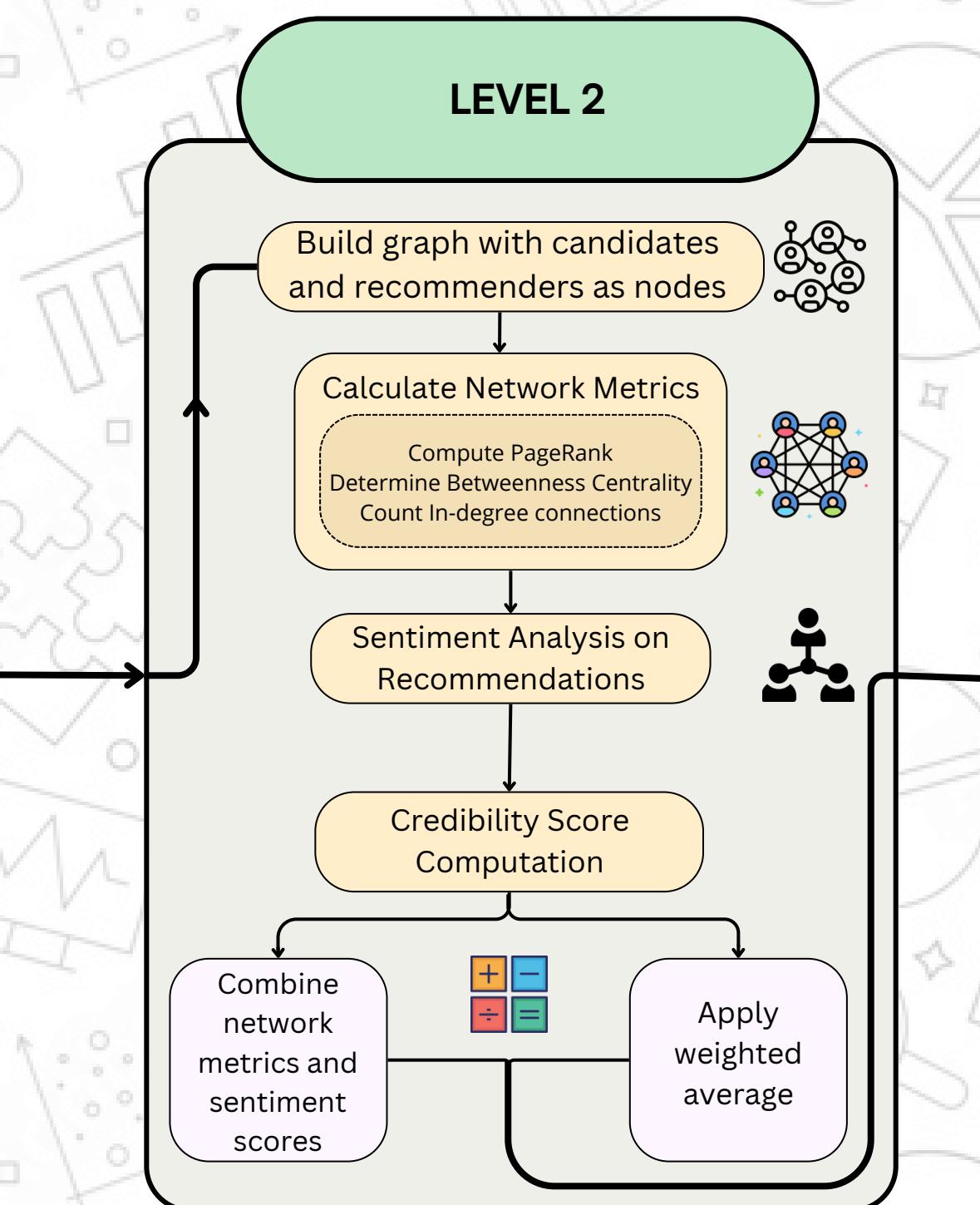
# LEVEL 2



## Recommendation Networks



# Recommendation Networks



**Network analysis** is crucial for understanding the structure and relationships between different entities within a system. This section outlines the process for generating and analyzing a network, specifically focusing on extracting various network properties such as **node connections, centrality, clustering, and communities**. We also address the issue of circular endorsements and identifying influential actors, providing a deeper insight into the **social dynamics** within the candidate pool.

Level 1

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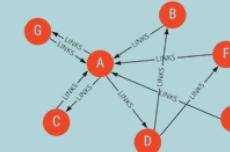
# Recommendation Networks

## Flagging Reciprocal Connections



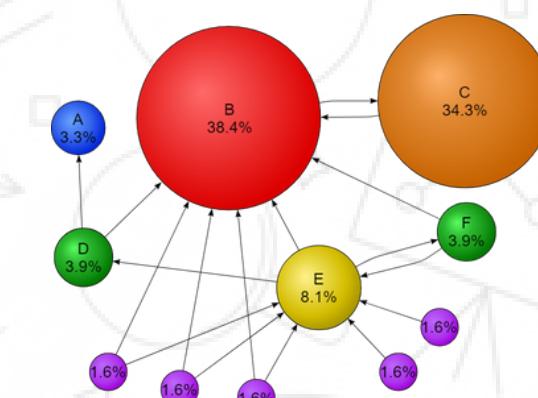
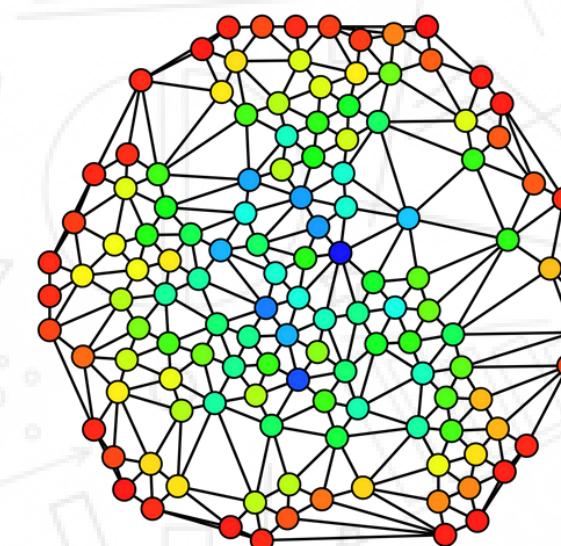
We check for reciprocal relationships, i.e., instances where a candidate has recommended their recommender in return. Such reciprocal connections can be a red flag, indicating mutual favour exchanges, which could undermine the integrity of the recommendations.

## Page Rank Algorithm



PageRank helps identify candidates and recommenders who are influential within the network, allowing for a more informed assessment of their credibility. A higher PageRank indicates a candidate or recommender with more significant connections, suggesting that they are likely more credible or trusted within the network.

- **Inverse Betweenness:** This measure is particularly useful for flagging candidates who may possess genuine potential and credibility but are not heavily entrenched in the network. By including inverse betweenness in the final composite score, we promote a more balanced evaluation of candidates.
- **In-Degree:** The number of incoming edges (recommendations).
- **Reciprocity:** Candidates involved in reciprocal relationships are penalized.



Level 1

Level 2

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Conclusion

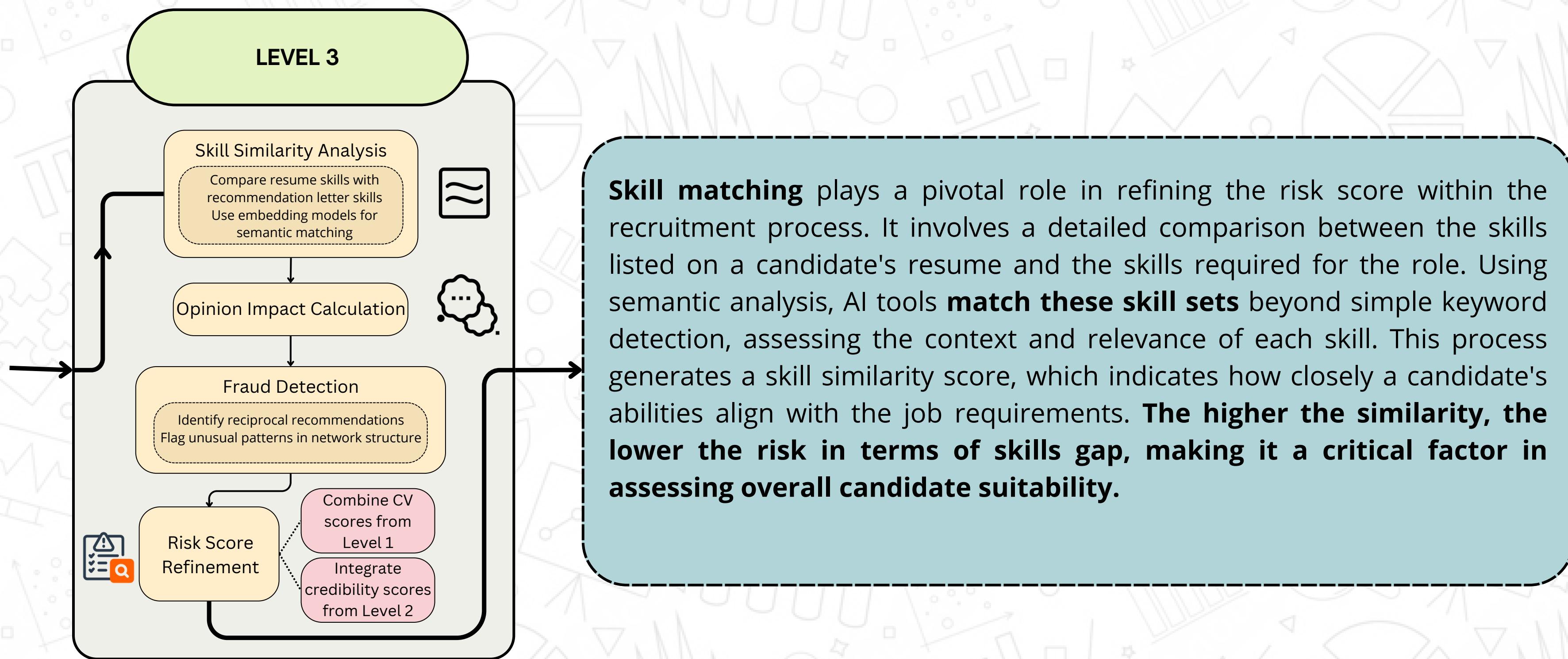


# LEVEL 3



Recommendation  
Validation

# Skill Matching



Level 1

Level 2

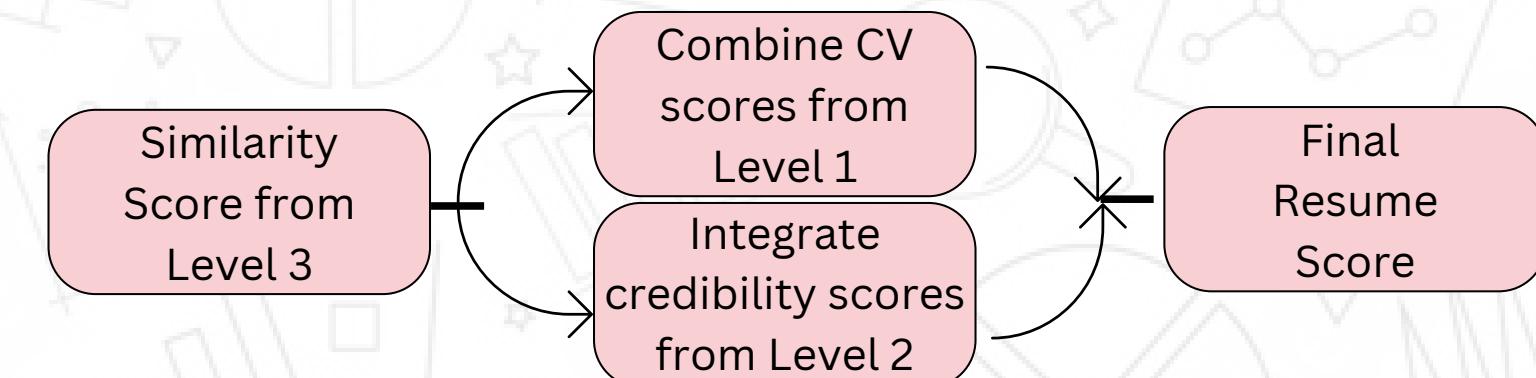
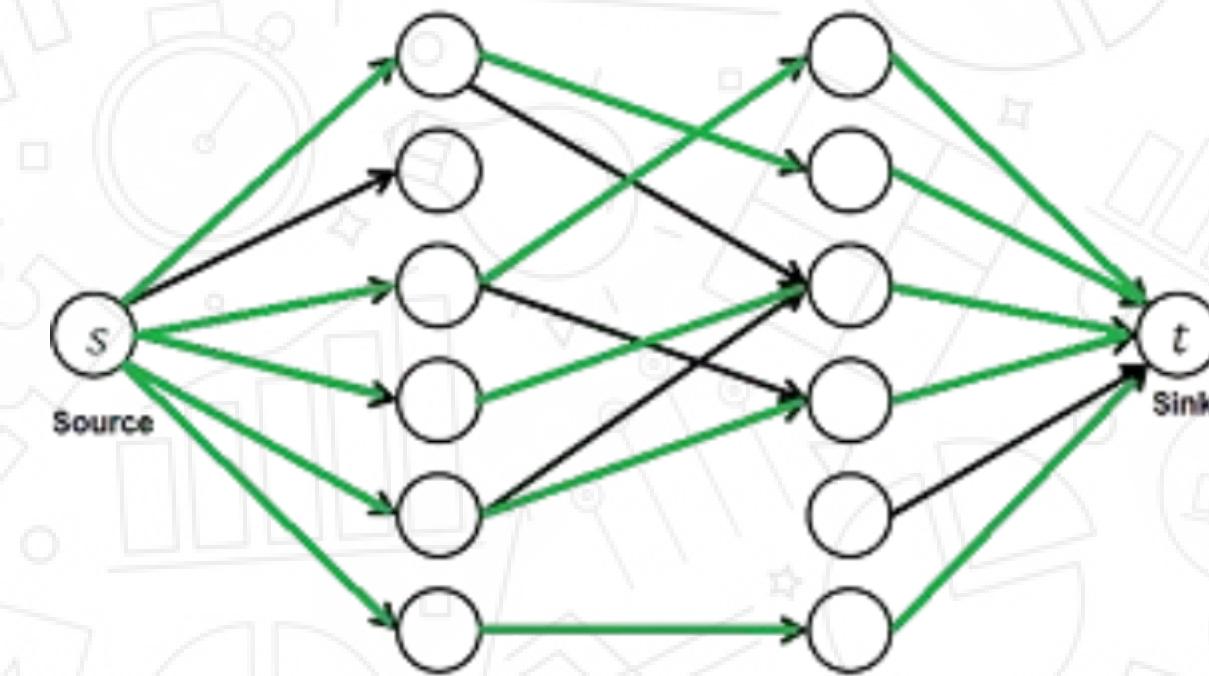
Level 3

Conclusion

# Skill Matching

- We utilized the Skillner Library to extract skills from the recommendation given to an employee and applied regex to extract skills from the employee's resume.
- Once we had two arrays of skills, we employed RoBERTa to generate embeddings for each skill and calculate similarity scores between every skill pair.
- Using a pair-matching algorithm, we computed the skill similarity score between the recommendee and recommender, ultimately averaging these scores to obtain a final skill match score.
- The final resume score is a weighted average of the CV score from Level 1 and credibility scores from Level 2, along with the Skill Similarity Score from Level 3.

# Skill NER



Level 1

Level 2

Level 3

Conclusion

# CONCLUSION



# Conclusion

- The presented pipeline, **Satya**, offers an innovative approach to resume screening and recommendation analysis, addressing key challenges in modern recruitment. By integrating advanced NLP techniques for resume screening with graph-based analysis of recommendation credibility, we provide a comprehensive evaluation of candidates. The system not only automates and refines the screening process but also adds layers of credibility assessment through network analysis, flagging potential biases like reciprocal endorsements and circular recommendations.
- The combination of a holistic resume scoring mechanism with network-based recommendation evaluation ensures a multifaceted approach, promoting more objective and data-driven hiring decisions. By leveraging techniques like semantic analysis, skill matching, and graph metrics such as PageRank and inverse betweenness, **Satya** delivers an in-depth, reliable candidate evaluation.
- Moving forward, additional refinements such as matching recommendation dates with company tenure can further enhance the system's capability to detect fraudulent claims, pushing the boundaries of automated hiring towards even greater accuracy and reliability.

Level 1

Level 2

Level 3

Conclusion