

# Automated Candidate Screening Agent

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Revolutionizing recruitment with AI and human experience



AI-Powered



Human-Centered



Smart Matching



Data-Driven



Fair & Inclusive



Efficiency

## Project: Automated Candidate Screening Agent



Context

**Data Science Project**

**Intelligent**

**Recruitment**



Duration

**8 weeks**



Team

- **Rebhi Montaha**
- **Ncib Yasmine**
- **Ben Rejeb**  
**Sayma**
- **Bejaoui Ahmed**
- **Khemiri**  
**Youssef**
- **Bouzidi**  
**Mohamed**  
**Mouheb allah**

# The Current Recruitment Challenge

## Key Figures

200+

applications per position



5-7

hours per day screening



75%

resumes rejected without  
feedback



2-3

weeks average response time



## ⚠ The Dual Problem



### For Recruiters

*"I spend more time chasing feedback and formatting resumes than talking to promising candidates."*

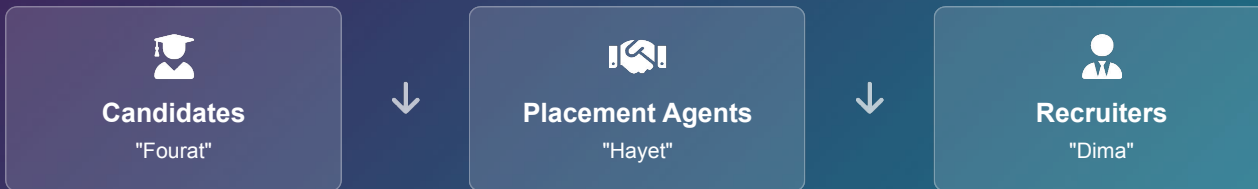


### For Candidates

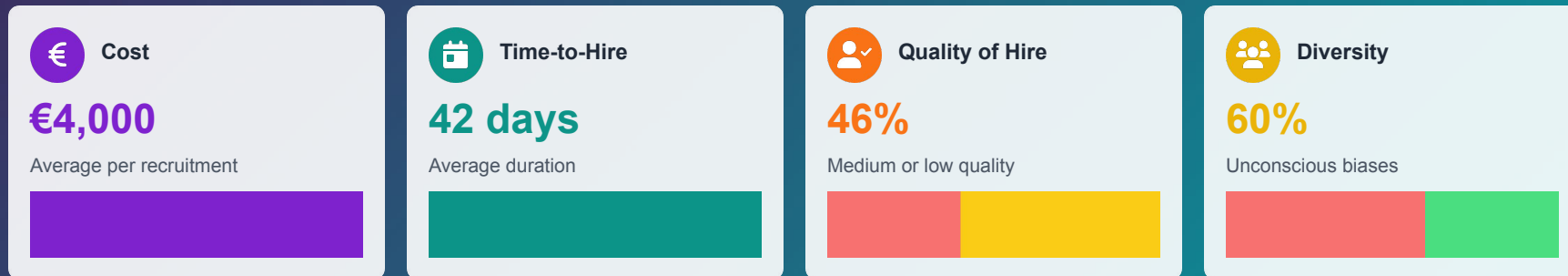
*"I'm sending my resume into a black hole without knowing if I've been seen, or why I'm rejected."*

# Project Context




## Complex Ecosystem




## Business Stakes





# Existing Solutions Analysis

Solution	Advantages	Limitations	Our Differentiation
 Traditional ATS Greenhouse, Lever	Workflow management, integrations	Basic screening, administrative	Integrated AI, explanations
 Pure AI Solutions HireVue, Pymetrics	Advanced algorithms	Black box, expensive, standalone	Transparency, candidate feedback
 Manual Processes	Human judgment, relational	Slow, subjective, biased	Augmentation not replacement

## ⚠ Identified Gaps in Current Solutions

 **Lack of Transparency**  
Candidates don't understand decisions

 **Technological Silos**  
Tools not integrated with existing systems

 **Absence of Feedback Loop**  
No continuous improvement

 **Uncontrolled Biases**  
Potentially discriminatory algorithms

# Persona: Coordinator Dima



**Age :** 27

**Profession :** HR Recruiter

Role



**Internal Recruiter**  
**Tech Startup**



Company  
**Tech Startup**



*"I need an intelligent layer that finds the hidden gems in the pile."*

- Dima

## ⚠ Frustrations



### Time Allocation

Spends 70% of her time on administrative tasks



### Feedback Chasing

Constantly chases feedback from managers



### ATS Limitations

Her current ATS is "dumb" - just a database



### FOMO

# Persona: Fourat



## Anxious Fourat

The Candidate



Role

Junior Data Scientist seeking  
employment

### “ Alex's Quote

*"Just tell me what's missing, I can't  
improve without knowing why."*

## ⚠ Key Frustrations



Resumes disappear into "black holes"



Generic rejections without explanation



Feels powerless in the process



Doesn't know which skills to develop

# Persona: Hayet



## "Strategic Hayet"

The Advisor



### Role

Employment Office Coordinator



### Frustrations

⌚ Manual matching too slow (Excel + human review)

📈 Career advice is not data-driven

Unable to demonstrate impact with metrics

📊 Can only effectively help 1% of his client base

### “ Quote

*"The faster I match, the more people I can help."*



Speed = Impact

### Key Needs






# Business & Data Science Objectives



## Business Objectives (BO)


### BO<sub>1</sub>: Reduce recruiter workload & hiring time

Current: 5h/day  Target: 1.5h/day

### BO<sub>2</sub>: Improve candidate experience

Target: 4.5/5 satisfaction score

### BO<sub>3</sub>: Reduce time-to-hire by 40%

Current: 42 days  Target: 25 days

### BO<sub>4</sub>: Increase diversity in shortlists

Target: +30% varied profiles

### BO<sub>5</sub>: Support fairness & diversity



## Data Science Objectives (DSO)

### DSO<sub>1</sub>: Develop a semantic matching model

For CV/job description analysis

### DSO<sub>2</sub>: Create a decision explanation system

Explainable AI for candidate matching

### DSO<sub>3</sub>: Implement algorithmic bias detection

Ensure fairness in hiring outcomes

### DSO<sub>4</sub>: Build a training recommendation engine





Recommender for skill development

### DSO<sub>5</sub>: Develop contextual embeddings

Specialized for HR domain

# Success Metrics

Key performance indicators to evaluate the success of the Automated Candidate Screening Agent project

Metric	Current	Progress	Measurement
 Screening time/day	5 hours	<div><div></div></div> <div>CurrentTarget</div>	Time tracking
 Candidate satisfaction	2.8/5	<div><div></div></div> <div>CurrentTarget</div>	Post-process survey
 Time-to-hire	42 days	<div><div></div></div> <div>CurrentTarget</div>	HR metrics
 Diversity in shortlists	Baseline	<div><div></div></div> <div>CurrentTarget</div>	Demographic analysis

# Technical Architecture - Hybrid Approach



**Input**  
CV + Job Description



## Preprocessing Pipeline

Text Cleaning  
Tokenization

Multiple Embeddings  
TF-IDF, Word2Vec, BERT

Feature Engineering



## Multi-Layer Matching Engine

Layer 1: TF-IDF Filtering  
Must-have skills

Layer 2: Word2Vec Ranking  
Semantic similarity

Layer 3: BERT Analysis  
Contextual understanding

Layer 4: Bias Detection  
Explainability





**Output**  
Matching Score +  
Explanations + Bias  
Alerts




# Key Features by Persona

## For Dima (Recruiter)

 **ATS Plugin with integrated AI scores**


 **Real-time bias dashboard**

 **Automated feedback chasing**

 **Explanations for "why this matching"**


*"I need an intelligent layer that finds the hidden gems in the pile."*

## For Fourat (Candidate)

 **Application status transparency portal**

 **Personalized feedback on rejections**

 **Skill gap analysis vs. job requirements**

 **Personalized training recommendations**


*"Just tell me what's missing, I can't improve without knowing why."*

## For Hayet (Advisor)

 **Mass matching of candidates/job offers**

 **Skills market analytics**

 **Automated impact reports**

 **Data-driven counseling tools**

*"The faster I match, the more people I can help."*

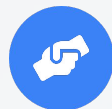
# Differentiating Innovations



## Radical Transparency

Candidates receive their matching score and detailed reasons behind the decisions, fostering trust and enabling self-improvement.

- ✓ Builds candidate trust



## Human Augmentation

The system assists recruiters, enhancing their capabilities rather than replacing human judgment, allowing them to focus on high-value interactions.

- ✓ Preserves human expertise



## Bias by Design

Algorithmic bias detection is integrated from the ground up, ensuring fairness and promoting diversity in hiring outcomes.

- ✓ Promotes diverse shortlists



## Open Ecosystem

The solution is built for seamless integration with existing recruitment tools and platforms, ensuring compatibility and ease of adoption.

- ✓ Future-proof integration

# Value Proposition

The Automated Candidate Screening Agent delivers measurable value across the recruitment ecosystem:



## For Recruiters

**Time savings** and **better decisions**



## For Candidates

**Transparency** and **improvement opportunities**



## For Placement Agents

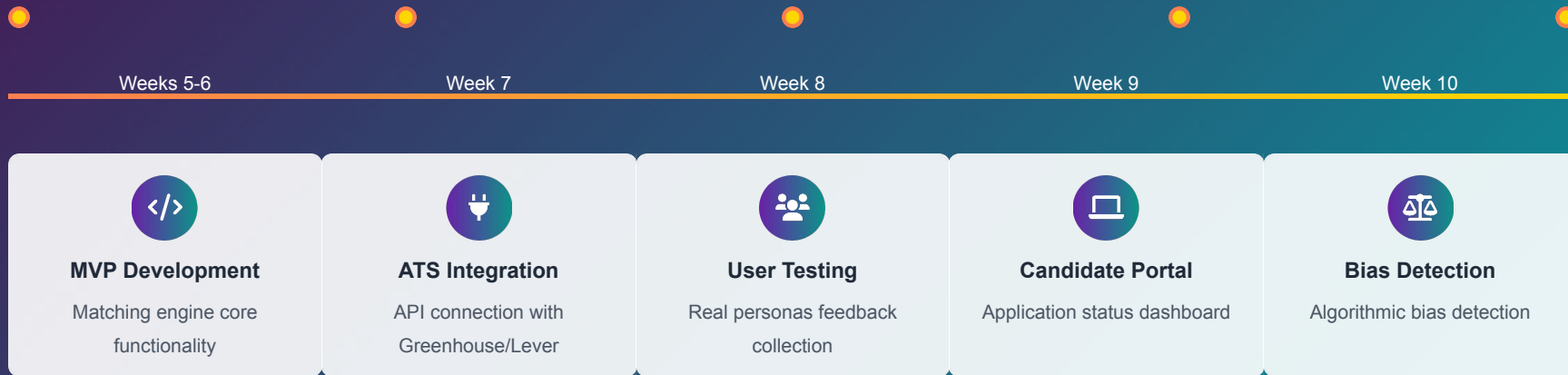
**Efficiency** and **demonstrable impact**



## For Companies

**Better hires** and **employer brand**

# Phase 2 Roadmap




 **Key Focus: Hybrid AI solution with human-centered design**

# Risk Assessment & Mitigation

High Impact   Medium Impact   Low Impact

 Risk	Impact	📉 Probability	 Mitigation Strategy
 Algorithmic bias	High 	Medium 	Continuous auditing + diverse data sets
 User rejection	High 	Medium 	Co-design with HR from the outset
 Technical performance	Medium 	Low 	Scalable cloud architecture
 GDPR compliance	High 	High 	Early legal consultation


 Risk management will be continuously reviewed and updated throughout the development process, with a focus on transparent communication and proactive mitigation strategies.



# Platform Mockups: Recruiter Dashboard



## Job Overview: Data Scientist

 Coordinator Dima

245

Applications

15

Shortlisted

3

Top Matches

### Top 3 Candidates:

**Marie D.**

92%

Skills:

Python

ML

SQL

Applied: 2 days ago

**Ahmed K.**

87%

Skills:

Python

Deep Learning

NLP

Applied: 3 days ago

**Sophie L.**

85%

Skills:

Python

Data Analysis

Stats

Applied: 5 days ago



#### Bias Alert

Shortlist 67% male → check criteria



View all candidates



Export shortlist



Analyze bias

# Platform Mockups: Candidate Portal

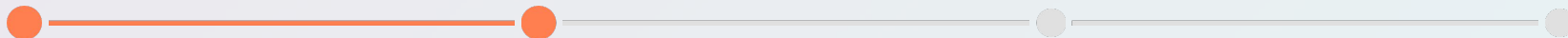


Hello Fourat

Position: Junior Data Scientist



## Your application status



✓ **CV received and analyzed**

11/24/2025

↻ **Under review by recruiter**

In progress

📅 **Interview scheduled**

Not yet planned

**78%**

Your matching score

## To improve your score

### Strengths

- ✓ Python
- ✓ SQL
- ✓ Data Analysis

### Skills to develop

- ↑ Machine Learning
- ↑ NLP

### Recommended training

- 🎓 Coursera ML
- 🎓 Udemy NLP



View similar jobs



Prepare for interview



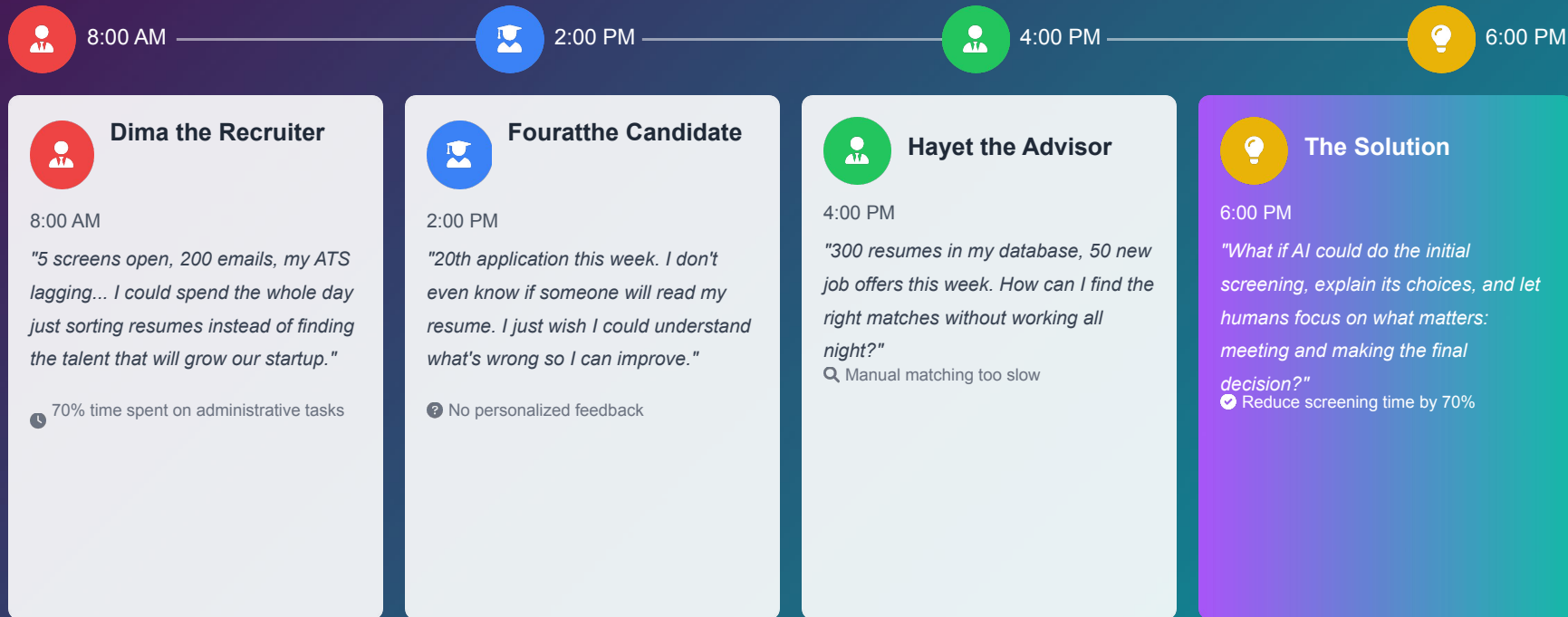
Improve CV



# Thank You!

Your feedback will help shape the future of  
recruitment

# Storytelling: A Day in the Life



Our solution transforms the recruitment journey from administrative burden to focused talent discovery.