FAKULTI KECERDASAN BUATAN DAN KESELAMATAN SIBER

SESSION – 1 25/26

Bachelors Of Artificial Intelligence with Honor (BAXI)

Artificial Intelligence Project Manager

(BAXI 3533)

(S3G2)

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Introduction

The modern IT job market is characterized by a significant disconnect: skilled professionals struggle to find roles that match their expertise, while employers face challenges in identifying suitable candidates amidst overwhelming applications. Traditional recruitment methods, relying heavily on manual screening and keyword-based filters, prove inefficient, time-consuming, and prone to human bias. The Job MatchMaking System addresses these challenges by leveraging artificial intelligence to transform how job seekers and employers connect. This intelligent platform automates resume parsing, skill analysis, and compatibility assessment to provide accurate, data-driven matches. By serving as a smart intermediary, the system aims to streamline hiring, reduce bias, and create meaningful connections between talent and opportunity, benefiting both candidates and companies in the digital era.

Problem Statement

The IT job market suffers from significant inefficiencies in matching qualified candidates with suitable positions. Job seekers struggle to identify roles that align with their actual skills and experience, while employers waste substantial time and resources manually screening unsuitable applicants. Traditional recruitment processes are slow, prone to human bias, and lack intelligent matching capabilities, leading to prolonged hiring cycles and missed opportunities for both candidates and companies.

Objectives
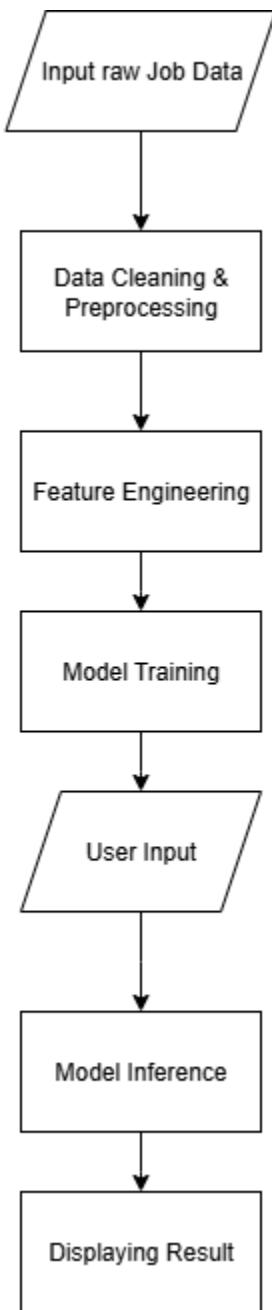
- To automate CV parsing and skill extraction with >90% accuracy using OCR and NLP technologies
- To develop an AI recommendation engine that predicts top 3 suitable job roles with >80% precision
- To reduce average hiring process time from 4 weeks to 1 week through intelligent automation
- To create a two-way matching system that benefits both job seekers and employers equally

Proposed Approach
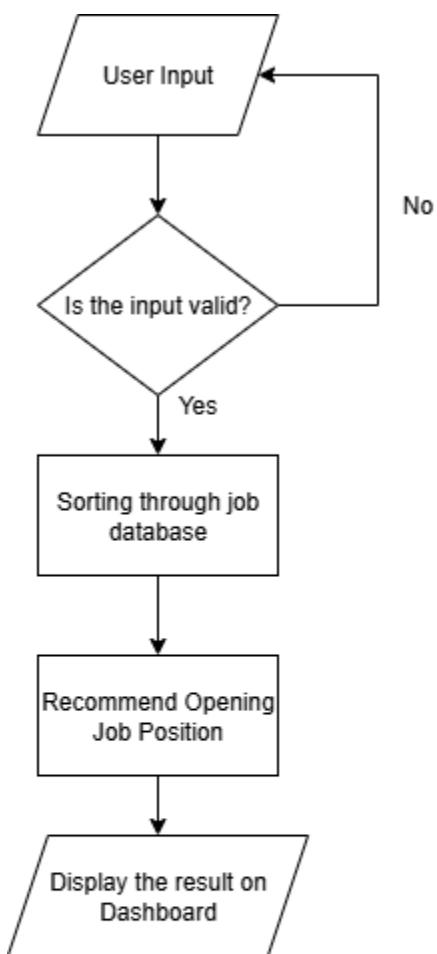
We will implement a multi-layered AI architecture combining:

- **Computer Vision & OCR:** PaddleOCR for text extraction from various CV formats (PDF, DOCX, images)
- **Natural Language Processing:** spaCy and NLTK for skill recognition, entity extraction, and semantic analysis
- **Machine Learning:** Scikit-learn classifiers (Random Forest, XGBoost) trained on IT job market data for role prediction and compatibility scoring
- **Matching Algorithm:** Hybrid recommendation system using content-based filtering and collaborative filtering techniques
- **Web Framework**: Flask backend with React frontend for an interactive user interface
- **Database:** Firebase for real-time data storage and retrieval
- **Interview Simulation:** Rule-based AI chatbot integrated with transformer models for candidate response evaluation

Project Workflow Diagram

```
        ┌─────────────────────┐
       /   Input raw Job Data /
      └─────────────────────┘
                 │
                 ▼
      ┌─────────────────────┐
      │  Data Cleaning &    │
      │   Preprocessing     │
      └─────────────────────┘
                 │
                 ▼
      ┌─────────────────────┐
      │ Feature Engineering │
      └─────────────────────┘
                 │
                 ▼
      ┌─────────────────────┐
      │   Model Training     │
      └─────────────────────┘
                 │
                 ▼
        ┌─────────────────────┐
       /     User Input       /
      └─────────────────────┘
                 │
                 ▼
      ┌─────────────────────┐
      │   Model Inference    │
      └─────────────────────┘
                 │
                 ▼
      ┌─────────────────────┐
      │  Displaying Result   │
      └─────────────────────┘
```

System Data Flow Diagram

```
        ┌─────────────────────┐
       /     User Input       / ◄────────┐
      └─────────────────────┘           │
                 │                        │ No
                 ▼                        │
            ◇ Is the input valid? ◇ ──────┘
                 │ Yes
                 ▼
      ┌─────────────────────┐
      │ Sorting through job  │
      │     database         │
      └─────────────────────┘
                 │
                 ▼
      ┌─────────────────────┐
      │ Recommend Opening    │
      │   Job Position       │
      └─────────────────────┘
                 │
                 ▼
        ┌─────────────────────┐
       / Display the result on/
      / Dashboard            /
      └─────────────────────┘
```

Expected Outcome

A fully functional web platform that serves as a comprehensive matchmaking ecosystem where:
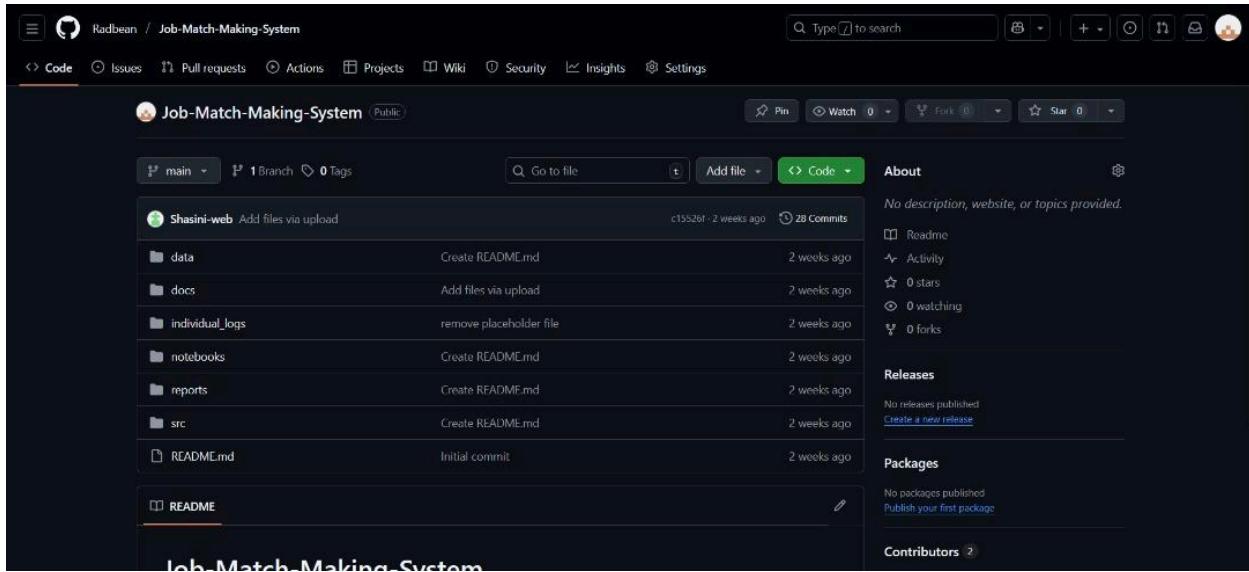
- IT professionals receive personalized job recommendations with compatibility scores
- Employers get AI-curated candidate shortlists ranked by fit and potential
- Both parties receive mutual match notifications when compatibility exceeds 80%
- Users access detailed analytics including skill gap analysis, market salary insights, and career development pathways
- The system facilitates seamless communication through integrated messaging and AI-powered interview scheduling

The platform will achieve >80% accuracy in job-candidate matching and reduce manual screening time by 70% for recruiters while increasing qualified application rates for job seekers.

Evaluation Metrics
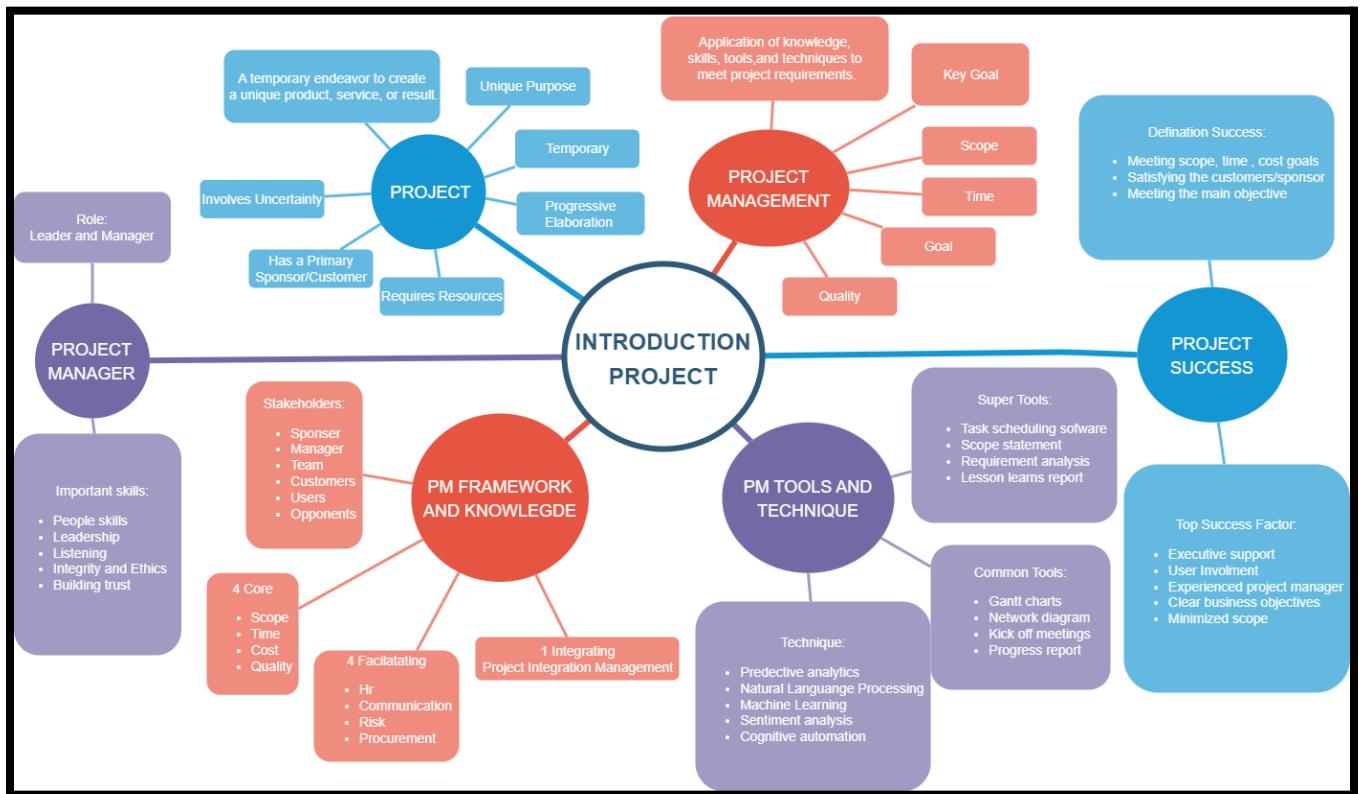
- Matching Accuracy: Precision, Recall, F1-score for successful job-candidate matches
- Compatibility Scoring: RMSE for predicted vs actual job suitability ratings
- System Performance: CV parsing accuracy rate, skill extraction completeness
- User Satisfaction: System Usability Scale (SUS) score, Net Promoter Score (NPS)
- Business Impact: Reduction in time-to-hire, improvement in employee retention rates
- Platform Engagement: User retention rate, match acceptance rate, feature utilization statistics
- Technical Performance: API response time (<2 seconds), system uptime (99% availability)

GitHub LInk :

https://github.com/Radbean/Job-Match-Making-System

Mindmap

PROJECT
- A temporary endeavor to create a unique product, service, or result.
- Unique Purpose
- Temporary
- Progressive Elaboration
- Has a Primary Sponsor/Customer
- Requires Resources
- Involves Uncertainty

PROJECT MANAGEMENT
- Application of knowledge, skills, tools,and techniques to meet project requirements.
- Key Goal
- Scope
- Time
- Goal
- Quality

PROJECT SUCCESS
- Defination Success:
  - Meeting scope, time , cost goals
  - Satisfying the customers/sponsor
  - Meeting the main objective
- Top Success Factor:
  - Executive support
  - User Involment
  - Experienced project manager
  - Clear business objectives
  - Minimized scope

INTRODUCTION PROJECT

PROJECT MANAGER
- Role: Leader and Manager
- Important skills:
  - People skills
  - Leadership
  - Listening
  - Integrity and Ethics
  - Building trust

PM FRAMEWORK AND KNOWLEGDE
- Stakeholders:
  - Sponser
  - Manager
  - Team
  - Customers
  - Users
  - Opponents
- 4 Core
  - Scope
  - Time
  - Cost
  - Quality
- 4 Facilatating
  - Hr
  - Communication
  - Risk
  - Procurement
- 1 Integrating Project Integration Management

PM TOOLS AND TECHNIQUE
- Super Tools:
  - Task scheduling sofware
  - Scope statement
  - Requirement analysis
  - Lesson learns report
- Common Tools:
  - Gantt charts
  - Network diagram
  - Kick off meetings
  - Progress report
- Technique:
  - Predective analytics
  - Natural Languange Processing
  - Machine Learning
  - Sentiment analysis
  - Cognitive automation

REFLECTION :

1. What did I contribute this week?
- I helped create the project concept statement such as problem statement and project objectives; contributed ideas for the workflow diagram.

2. What did I learn about collaboration or planning?
- I learned how to organize tasks using GitHub and how clear documentation supports teamwork.

3. What challenges did I face?
- Understanding how to visualize the AI workflow was challenging at first.

4. What will I focus on next week?
- Next week, I will focus on dataset collection and resume parsing implementation.