



FACULTY OF COMPUTERS SCIENCE AND INFORMATION TECHNOLOGY DAMANHOUR UNIVERSITY

Career Insight 2023-2024

GRADUATION PROJECT DOCUMENTATION

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Abstract

This project, centered on "Labor Market Analysis," aims to guide individuals through the job market intricacies. Our primary aim is to empower users with comprehensive insights into labor market and industry standards, easing informed decisions about essential skills, experience, and prevailing market dynamics. Using an OpenAI model and frequent data gathered from approved online sources, the project looks to create an individualized career roadmap and forecast the evolving nature of the job market.

Embarking on the dynamic journey of job exploration, this project delves into the realm of "Labor Market Analysis" with a focus on guiding individuals through the intricacies of the job market. The goal is to empower users with insights into the labor market and industry benchmarks for informed decisions about essential skills, experiences, and market dynamics.

The Career Insight platform offers two primary services:

1. Analyzing the labor market in the IT field to give users a clear understanding of the market.
2. Generating personalized roadmaps based on this analysis.

This serves the dimensions as follows:

- **Health Dimensions:** By guiding individuals towards suitable IT careers, the platform can reduce job-related stress and improve mental well-being.
- **Social Dimensions:** Enhancing Employment Opportunities in the IT Sector, Community Development, and Social Stability.
- **Economic Dimensions:** Increasing employability and skill alignment in the IT market boosts economic growth and individual earnings potential.
- **Education Dimensions:** Providing insights and personalized roadmaps encourages continuous learning and skill development, leading to better educational outcomes and career advancement.



We would like to start by thanking Allah (SWT) for granting me the faith, strength, and knowledge to complete this thesis. I hope it is of benefit and relevance to many.

We would like to express our deepest gratitude to the following individuals who have contributed to the success of our capstone project:

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We would like to extend our appreciation to our families and friends who have supported us throughout this journey. Their encouragement and understanding have been crucial in helping us stay focused and motivated.

Finally, we would like to thank our university and the capstone project committee for providing us with the opportunity to work on this project. We are grateful for the resources and facilities that have been made available to us, and we hope that our project will contribute to the advancement of knowledge in our field.

We are forever grateful for Allah's blessings, for he is the Most Generous.



Design

Why Talent Bridge ?

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Dashboard

No. Of Scrapping Job: **391** (8.5% Up From Yesterday)

No. Of Cities: **10** (1.3% Up From Last Week)

No. Of Skills: **90** (4.3% Down From Yesterday)

Frequency Of Job Posting

Skills

Top front-end technologies

Popular Careers With Amazon Job Seekers

- 'Operations Manager Career'
- 'Program Manager Career'
- 'Executive Assistant Career'
- 'Customer Relations Career'

Interviews At Amazon

3.1 / 5 difficulty®

Interview Experience :

60% Positive	Neutral 23%	Negative 17%
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How Other Got An Interview At Amazon :

59% Applied Online	0% Campus Recruiting
13% Recruiter	11% Employee Referral
0% In Person	

Get In Touch With Career Insight

Enter your message or question here. We'll respond as quickly as possible.

Our Figma Design



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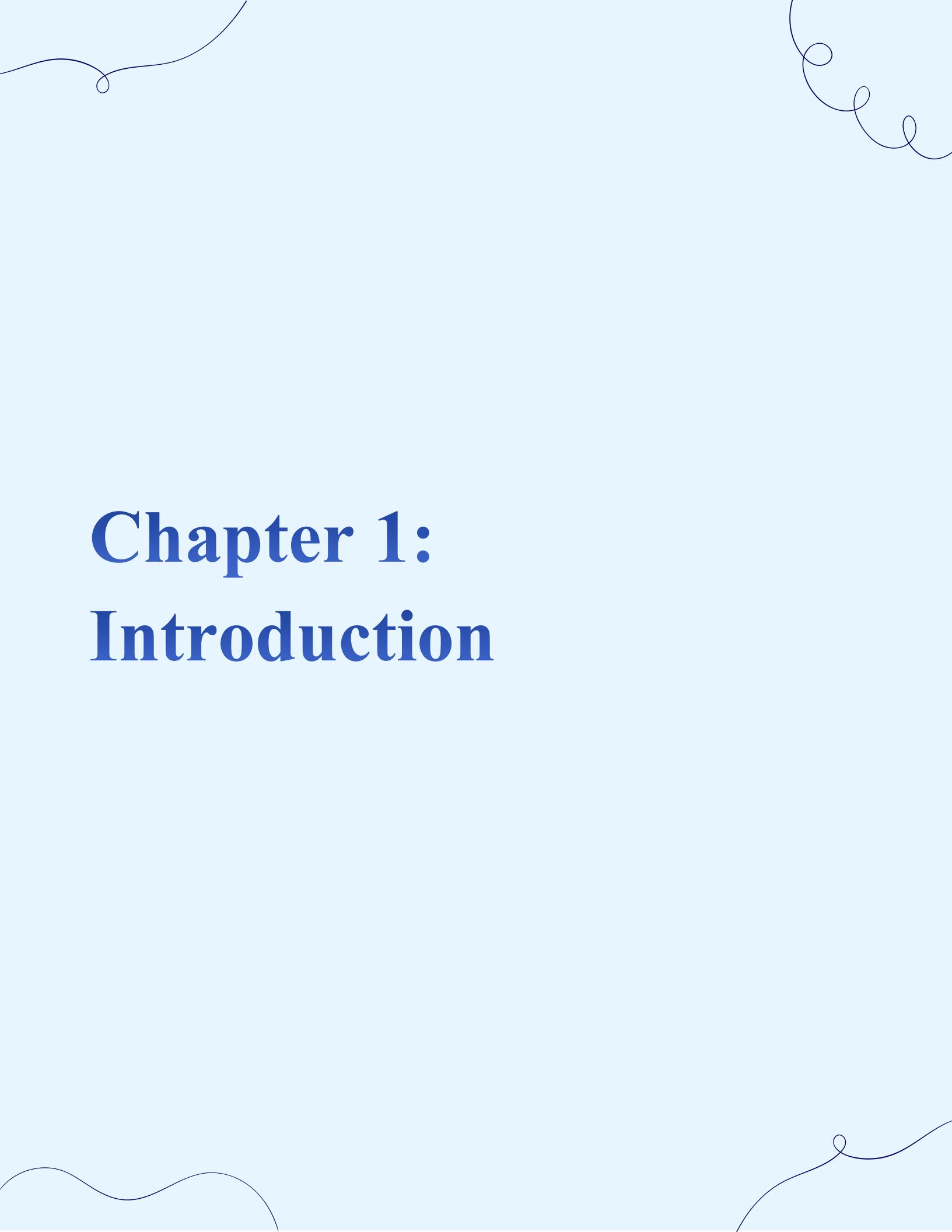
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List of Abbreviations

Abbreviation	Description
AI	Artificial Intelligence
OS	Operating System
ARM	Advanced RISC Machine
x86	Intel's 32-bit instruction set architecture
x64	Intel's 64-bit instruction set architecture
e.g.,	For example,
DB	Database
NoSQL	Not Only SQL (non-relational databases)
SQL	Structured Query Language
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
HTML	Hypertext Markup Language
JSON	JavaScript Object Notation
XML	Extensible Markup Language
APIs	Application Programming Interfaces
RESTful	Representative State Transfer
USP	Unique Selling Proposition





Chapter 1: Introduction

Career Insight - Your Career Companion

1.1 Background

In the dynamic landscape of today's job market, think about someone like Sarah—a tech lover fresh out of college, trying to find the right job. But it's not just her; many people struggle because they don't know what skills are popular. This makes getting a respectable job want to solve a tricky puzzle. The bigger problem? Talented people are having a tough time because they don't understand how the job market works.

Now, I'm meeting Career Insight, a superhero for job seekers or any learners. It's not just a solution. It's like a helpful friend. Career Insight isn't your usual job finder. It's more like a wise buddy that helps people like Sarah understand what companies really want. Imagine having a friend who not only shows you job listings but also guides you in making smart career choices and shares all the secrets about the job market, how it works, what it needs, and its requirements.

Career Insight acts as a helpful bridge between job seekers and the job market. But it's not just about basics; it goes deep into the job world. Using cool tech like web scraping, data analysis, machine learning, and algorithms, Career Insight gives clear and prompt info. Picture Sarah finding her way through the job maze with an always-up-to-updated map in hand.

In a world full of tech wonders, Career Insight stands out. It uses web scraping, data analysis, and machine learning not just as tools but as the magic ingredients that make it amazing. They're the secrets behind Career Insight greatness, helping Sarah and others get personalized and accurate insights into the job market.

1.2 Overview

Helping people find jobs can be tricky, but that's where the Career Insight project comes in. We don't directly provide job postings; instead, we make it easy for you to find them by offering valuable insights. Our primary objective is to provide you with useful information about various job opportunities.

We figure out what skills are important, look at what's happening in different job fields, and even try to predict what jobs will be popular in the future. Think of Career Insight as a friendly guide, helping you make smart choices about your career. We gather information from the internet, study it carefully, and use a clever computer system to create personalized career plans just for you.



CAREER INSIGHT

We follow strict rules to make sure everything works well and is safe for you to use. From keeping your information safe to making sure our system runs smoothly, we're committed to making it easy for you.

Our website is designed to be simple. Whether you're signing up, logging in, or managing your profile, we've made it easy for you to use. We want you to feel comfortable and confident using Career Insight to help you find the right job.

Here's how we do it:

1. Finding Essential Skills:

We figure out the skills that employers are looking for. This way, you'll know what skills to focus on to stand out in the job market.

2. Analyzing Industry Trends:

We keep an eye on what is happening in different job fields. Understanding industry trends helps us guide you towards sectors with promising opportunities.

3. Personalized Roadmap Using fine-tuning:

Think of us as your personal career advisors. We collect information from the internet, analyze it carefully, and use a clever computer system to create customized roadmaps just for you.

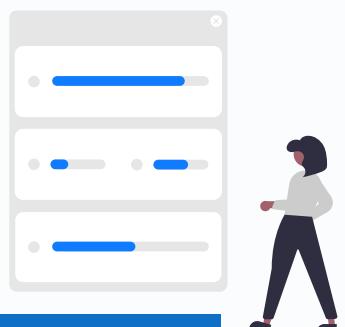
4. Ensuring Safety and Efficiency:

We take your safety seriously. From keeping your personal information secure to ensuring our system runs smoothly, we follow strict rules to provide you with reliable and safe experience.

5. User-Friendly Website:

Our website is designed to be user-friendly. Whether you're signing up, logging in, or managing your profile, we've made it easy for you to navigate. We want you to feel at ease while using Career Insight to find the right job for you.

In essence, Career Insight is more than just a tool, it's your companion in making informed and confident decisions about your career. Ready to embark on a smoother job-seeking journey? Sign up now and let Career Insight be your guide to a more tailored and successful career path.



1.3 Motivations

Succeed in your career with "Career Insight" your committed partner for negotiating a complex labor market. We want to be more than just a tool; we want to take the mystery out of job searching and give you the ability to make decisions that will affect your life now and down the road. Our goal is to make your job search a smooth, customized journey. That much is clear.

Imagine a more straightforward route to success as "Career Insight" develops into your dependable mentor, supplying specialized insights and tactics to further your professional development. Seize the chance to transform doubts into chances and set off on a career-enhancing trip.

Are you prepared to alter your professional path? Enroll now to take the first step. Allow "Career Insight" to be your dependable partner in turning your goals into reality. Start building your empowered career now.

1.4 Objectives

Our Career Insight project is all about making job hunting simpler and more effective.

1. Getting the Right Info (Data Collection):

We want to gather the right job market info from websites like WUZZUF and Indeed. We'll use smart methods to make sure the info is up to date.

2. Making Info Useful (Data Analysis):

We will look at the info we collect to find out what skills and experiences are in demand. Then, we'll share easy-to-understand insights about job trends.

3. Smart Career Help (Machine Learning Model):

We are creating a smart tool that gives you a personalized plan for your career. Plus, we will predict what the job market might look like. We'll keep improving it to make it even better.



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4. User-Friendly Website (Web Application):

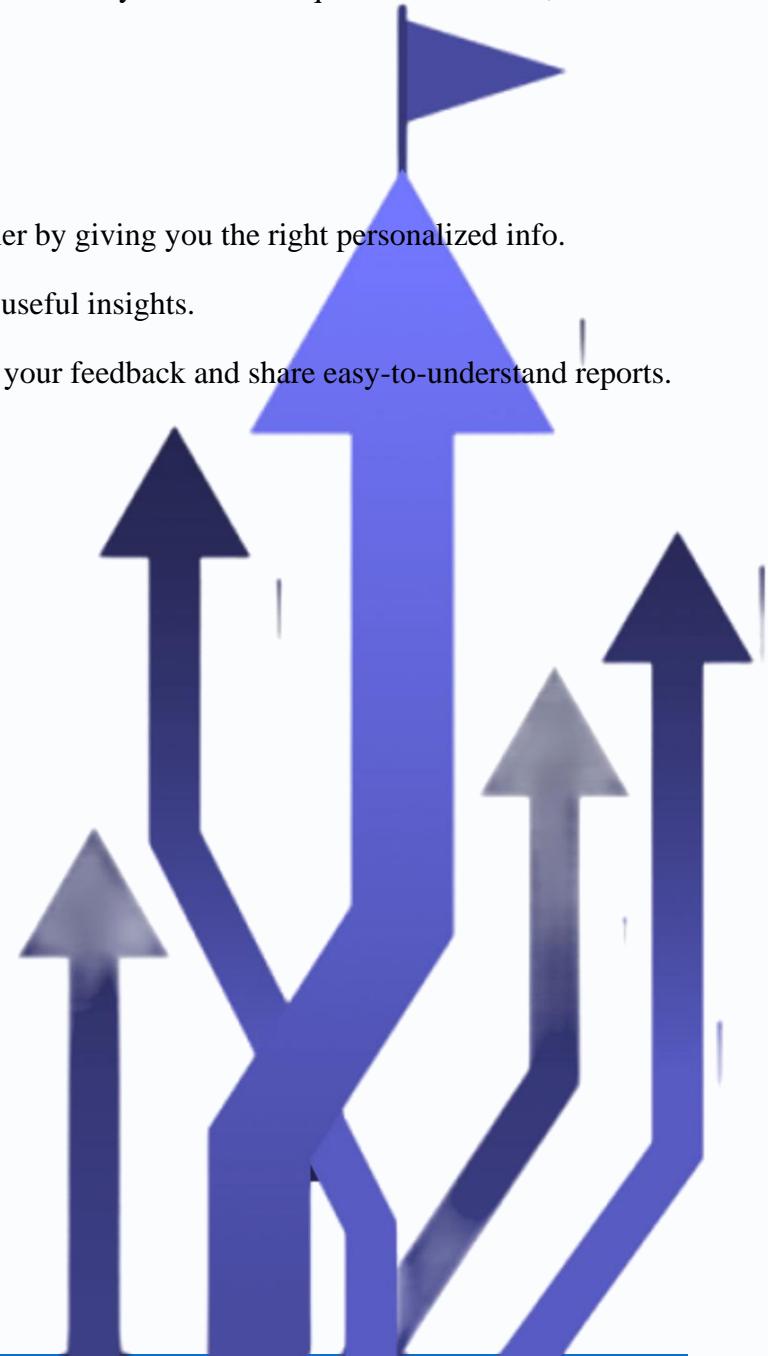
We are designing a website that's easy to use. It'll be like a helpful guide, giving you info and advice about jobs.

5. Safe and Helpful Support (Security and User Support):

We are making sure your info stays safe. If you ever have questions or issues, our support team is here to help you.

Main:

- Make job seekers and students easier by giving you the right personalized info.
- Analysis of the labor market gives useful insights.
- Improve your experience based on your feedback and share easy-to-understand reports.



Chapter 2:

System Analysis

2.1 Introduction to System Functionality

In the intricate landscape of software development, the cornerstone of any successful project lies in a comprehensive understanding of system functionality. The term encapsulates the core purpose and capabilities that a system is designed to deliver, forming the bedrock upon which the entire project thrives. As we embark on the analysis of our project's system functionality, we delve into the fundamental question: What should our system do?

In its essence, system functionality outlines the set of features, operations, and tasks that the software is expected to perform, catering to the unique needs and aims of the project. This chapter serves as a compass, guiding us through the intricacies of our chosen Analysis Model - Scrum, and elucidating the entities intricately woven into the fabric of our project.

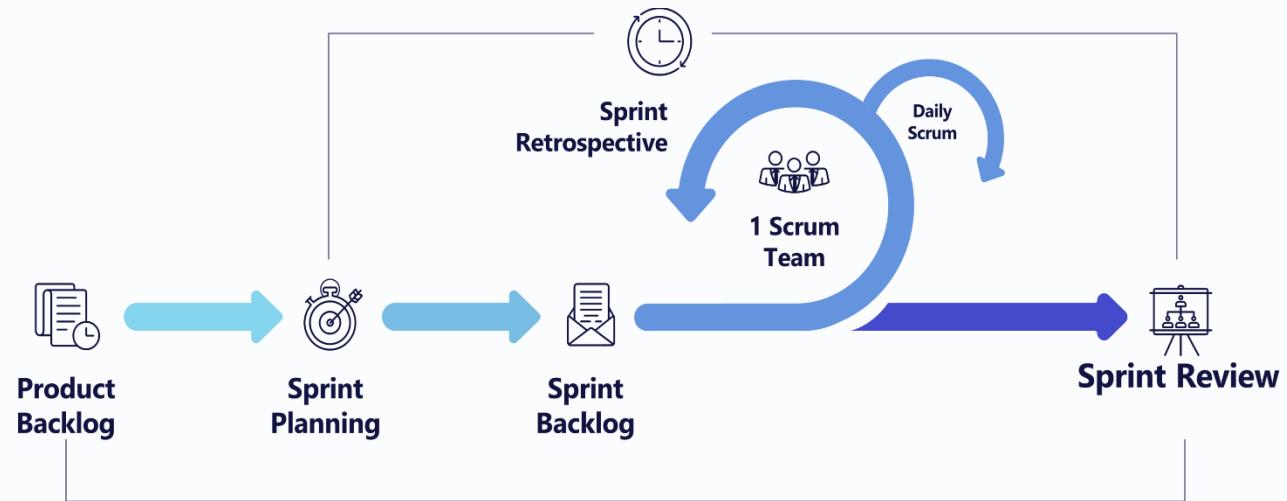


Figure 1

Scrum Methodology: Agile Foundations

At the heart of our analysis lies the adoption of the Scrum method – an agile framework celebrated for its adaptability in the dynamic landscape of software development. Through short, iterative sprints, Scrum propels our project forward with a focus on collaboration and responsiveness.

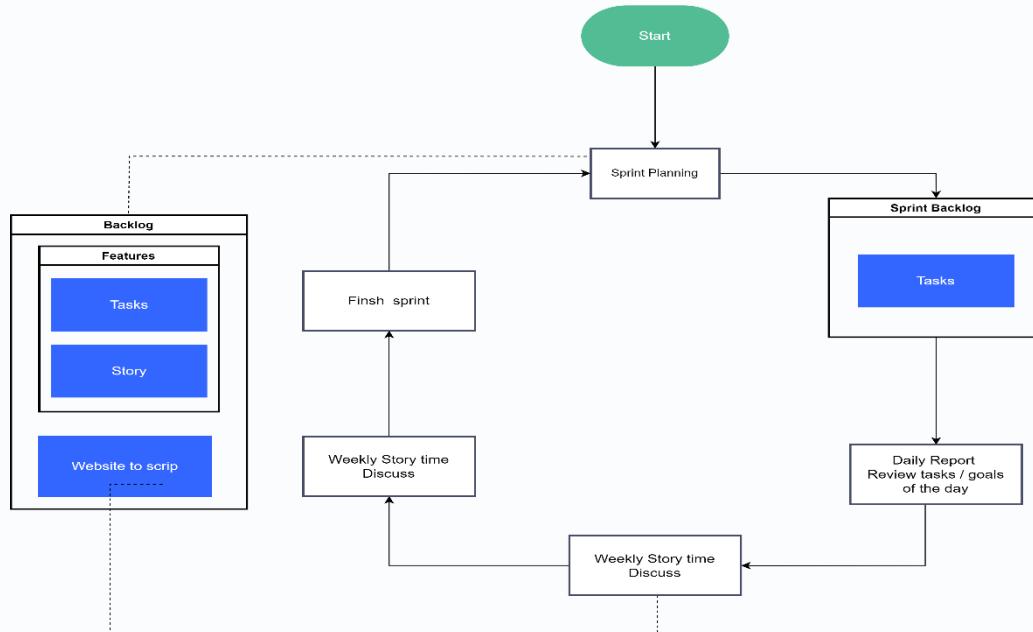


Figure 2

Entities in the Spotlight: A Collaborative Team

As we get to know the functionalities, it becomes imperative to find entities integral to the project's success. Stakeholders, developers, and end-users form an interdependent network, each playing a pivotal role in shaping the system's capabilities. Understanding these entities and their relationships is tantamount to crafting a robust system that aligns seamlessly with the project's vision.

Navigating the Methodological Landscape

The journey through system functionality is not just a catalog of features; it's a strategic exploration of how these features align with the overarching goals of the project. Our chosen method, Scrum, supplies the basics for this exploration, emphasizing continuous communication, adaptability, and a user-centric approach.

In the pages that follow, we dissect the functionalities envisioned for our system, unravel the intricacies of Scrum's impact on these functionalities, and paint a vivid picture of the collaborative entities that breathe life into our project.



2.2 Analysis Model:

Why We Chose Scrum (Boosting Project Power)?

Choosing Scrum for our project wasn't random; it was a smart move to match our project's dynamic goals. Scrum is all about being efficient and flexible, making it a perfect fit.

2.2.1 Scrum's Useful Tools:

We picked Scrum because it comes with great tools for teamwork. From the 'Product Backlog,' where we keep track of what needs to be done, to 'Sprint Review and Retrospective' to get better over time, Scrum gives us what we need to manage the details of software development.

Sprint meter:

- **Simplicity:** Known for simplicity and a focus on sprint planning.
- **Customization:** Allows customization of columns and fields.
- **Offline Mode:** Supports offline mode for work in environments with limited internet access.
- **Free Version:** Offers a free version, making it cost-effective for smaller teams.

GoodDay:

- **Versatility:** Comprehensive tool beyond Agile, suitable for various project management aspects.
- **Integration:** Integrates with third-party tools for flexibility.
- **Customizable Workflows:** Supports customizable workflows for unique team processes.
- **Collaboration Features:** Emphasizes collaboration with shared calendars, task discussions, and document sharing.

2.2.2 Following Agile Principles:

Scrum follows Agile principles, which means it adapts well to change. Our project can evolve continuously, making sure our system always meets the project's needs.

1. Shorter Sprints:

Scrum works in short cycles called sprints. Choosing shorter sprints keeps our project quick and responsive. At the end of each sprint, we achieve something, keeping everyone excited and involved, Maximizing the number of features to be worked on to two in each sprint.

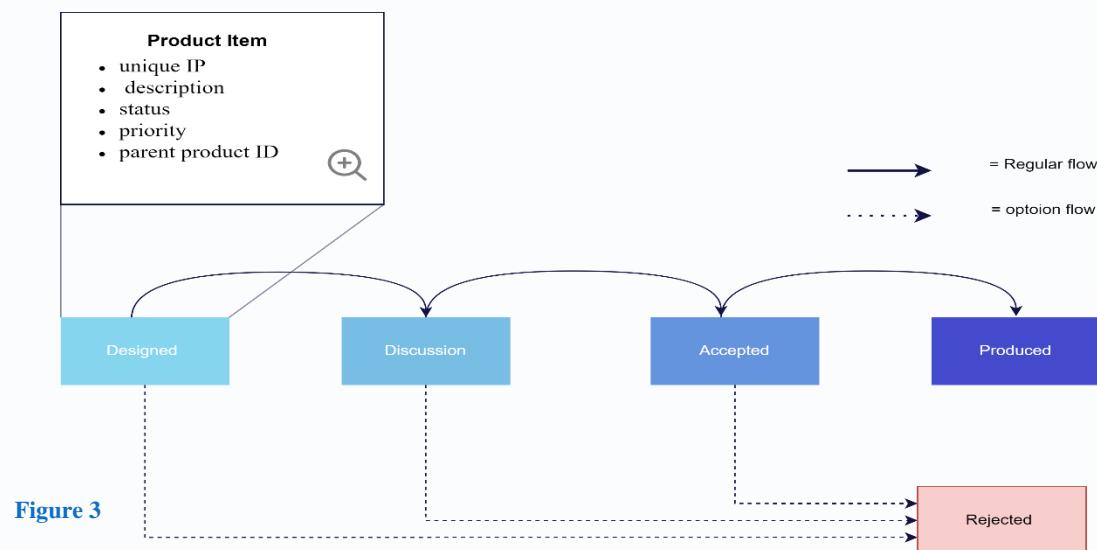
2. Connecting with Project Goals:

Our decision to go with Scrum is all about aligning with our project's unique goals. Whether it's working better together, adapting to changing needs, or keeping things clear and open, Scrum is the key to making it all work smoothly.

3. Managing Tasks with Backlogs:

The 'Product Backlog' is like our project's to-do list. It's a living document that holds all the things we want to do. We can change it as the project goes on, always making sure we're working on the most important stuff.

How it operates: Each product is identified by a unique IP, description, status, priority, and parent product ID. For a product to progress, it must go through four stages: Design, Team Discussion, Acceptance, and Production.



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The following table serves as a sample representation of our backlog:

	Product Name	Priority	Status	Description
High priority	Analysis Labor Market	1	Started	Comprehensive study of the labor market
	Roadmap Maker	2	Started	Create personalized career roadmaps
	Choose Your Career Based on Interest	3	Not Started	Tool to help users select a career path
	CV Builder	4	Not Started	Platform for creating professional CVs
	Feedback on Roadmap	5	Not Started	Feedback tool for roadmap effectiveness
	Company Analysis	6	Not Started	In-depth analysis of companies and industries
	Career Suggestions	7	Not Started	Integration for personalized career advice
	Alter to Follow Your Track	8	Not Started	Comprehensive study of the labor market
	Intermeshed and Job Opportunities	9	Not Started	Integration of career opportunities

Figure 4

2.3 Entities Involved in the Project:

1. Stakeholders:

Stakeholders, with their personal stake, contribute valuable insights and expectations to guide the project. Their feedback is instrumental in ensuring the product aligns with real-world needs.

2. End Users:

End users are the individuals who will ultimately use the software we're creating. Understanding their needs and preferences is vital to ensure that our product is user-friendly and meets real-world requirements.

3. Scrum Master:

The Scrum Master acts as a guide, ensuring adherence to Scrum principles, fostering teamwork, and swiftly addressing any impediments.

4. Designers:

Designers bring creative and user-centric design principles to the forefront. Their role is to create visually appealing and intuitive interfaces, enhancing the overall user experience.

5. Development Team:

The development team is the group of people responsible for turning ideas into reality. These individuals, with their diverse skills, collaborate to design, code, and assess the software. Their ability and creativity drive the project forward.

6. Testers:

Testers play a vital role in ensuring the quality of our software. Their meticulous testing procedures help find and address any issues, ensuring a robust and reliable product.

7. Statistics + Analytics:

Our Statistics + Analytics experts are the data wizards of our project. They dig into the numbers to guide our decisions, spot trends, and fine-tune the project using solid evidence. Their work is like having a compass, keeping us on the right path by letting the data tell its story.



8. Career/Market Experts:

Career/Market Experts provide industry-specific knowledge, aligning the project with market trends and ensuring that the product is positioned strategically within the professional landscape.

9. Project Burn:

The primary purpose of the Burn Down forecast is tracking and forecasting project progress are crucial components for ensuring successful delivery.

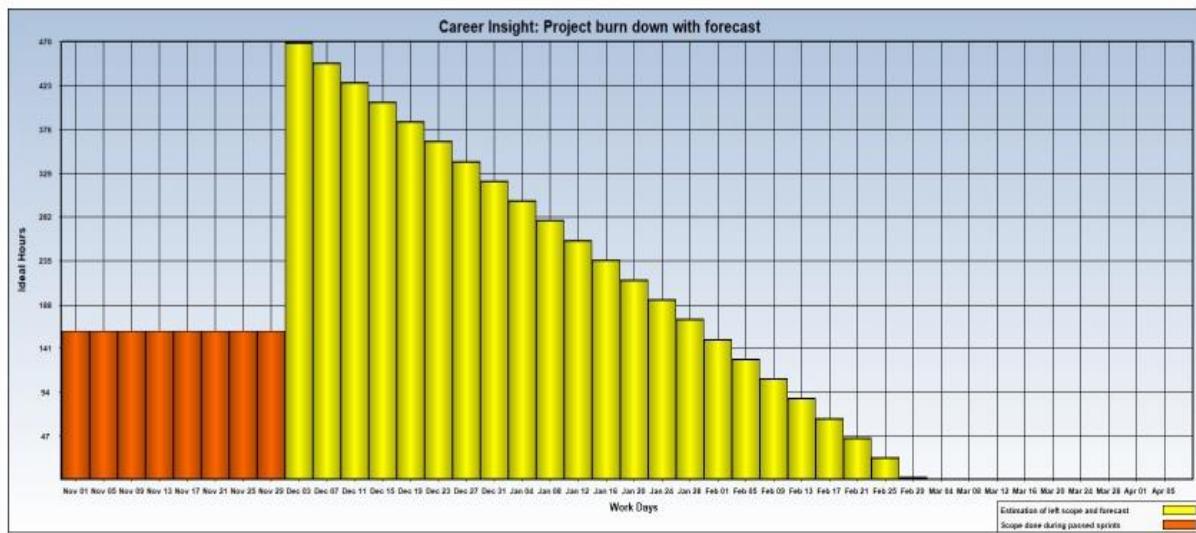


Figure 5

2.4 Methodology for Career Insight

2.4.1 Problem Identification:

- Thoroughly study the problem at hand, exploring potential solutions.
- Engage in discussions with domain experts to gain comprehensive insights into practical solutions.

2.4.2 Setting the Objectives:

Career Insight is designed to address a significant challenge faced by job seekers—lack of a comprehensive understanding of the job market. This challenge can lead to various issues, including not being aware of the skills and experience in demand.

Career Insight aims to achieve the following goals:

1. Find In-Demand Skills and Experience:

Provide users with insights into the specific skills and experience that are currently in high demand within the labor market.

2. Analyze Trends Across Industries:

Conduct a thorough analysis of trends in various industries to offer users a comprehensive view of the evolving job landscape.

3. Understand the Job Market Dynamics:

Equip users with a profound understanding of how the job market functions, including its intricacies and factors influencing employment.

4. Create Customized Roadmaps:

Develop personalized roadmaps for users, aligning their skills, aspirations, and career goals with the current and future realities of the job market.



Chapter 3:

Tools and environment



3.1 Tools

In this section, I will describe the tools used for my project. These include various software applications, libraries, and frameworks essential for development and analysis.

1. Software

- **Visual Studio Code:** A versatile code editor with support for debugging, syntax highlighting, etc.
- **Jupyter Notebook:** An interactive computing environment for creating and sharing live code, equations, visualizations, and narrative text.
- **Nmap:** Network scanning tool used for discovering hosts and services on a computer network by sending packets and analyzing the responses.
- **Burp Suite:** Integrated platform for performing security testing of web applications.
- **miro.com:** used for wireframe and user flow chart diagrams
- **Figma:** UI/UX

2. Frameworks

- **Metasploit:** Framework for developing, testing, and executing exploits against target systems.
- **React:** A JavaScript library for building user interfaces.
- **Node.js:** A JavaScript runtime built on Chrome's V8 JavaScript engine.

3. Utilities

- Docker: A tool designed to make it easier to create, deploy, and run applications by using containers.
- Kubernetes: An open-source system for automating deployment, scaling, and management of containerized applications.
- Jenkins: An open-source automation server used to automate parts of the software development process.
- Redis: An in-memory data structure store, used as a database, cache, and message broker.
- MongoDB: A NoSQL database program.



- Winston: A logger for Node.js applications.

3.2 Environment and Programming Language

In this section, I provide details about the development of the environment and the programming languages used in the project.

- **Development Environment:** Windows 10, Ubuntu 20.04
- **Production Environment:** Ubuntu 20.04

Development Environment:

- **Virtual Environments:** Python virtual environments were used to manage dependencies.
- **Containerization:** Docker was employed to create consistent development and production environments. Kubernetes was used for orchestration.
- **Continuous Integration/Continuous Deployment (CI/CD):** Jenkins was used to automate the build and deployment process

Programming Languages:

- **Python:** Used for data processing as scripting language.
- **JavaScript (Node.js):** Used for backend services with Express.js.
- **JavaScript (React):** Used for frontend development to build dynamic user interfaces.

React library:

- **Bootstrap:** A front-end framework for developing responsive and mobile-first websites.
- **Tailwind CSS:** A utility-first CSS framework for creating custom designs directly in your markup.
- **React Router DOM:** A library for routing in React applications.
- **React Query:** A library for fetching, caching, and updating data in React applications.
- **Axios:** A promise-based HTTP client for making HTTP requests from node.js or XMLHttpRequests from the browser.

Node.js library:

- **Express.js:** A web application framework for Node.js.
- **Mongoose:** An Object Data Modeling (ODM) library for MongoDB and Node.js.
- **Jsonwebtoken (JWT):** A library for working with JSON Web Tokens.
- **Passport.js:** Authentication middleware for Node.js.
- **OpenAI API:** Used for integrating AI capabilities into applications.

Chapter 4:

Software Requirements

Specifications

4.1 Introduction

4.1.1 Purpose

Career Insight exists to help job seekers and young students who are interested in computer science overcome challenges in understanding the job market. By finding in-demand skills, analyzing industry trends, and providing insights into the job market's workings, Career Insight aims to empower users with a clear roadmap, ensuring informed decisions that align with the dynamic demands of the job market.

4.1.2 Intended Audience

The target audience is Simply anyone want to come into or involved in computer science and looking for learn and know about this career.

4.1.3 Scope

1. Software Products:

- Career insight web Application *Functionality*
 - Find in-demand skills.
 - Analyze industry trends.
 - Offer personalized career guidance.
 - Predict future job market trends.
 - Create customized road maps for users.
- AI-powered Community Application Functionality
 - Gather data from various sources for a holistic view of the job market.
 - Analyze job postings to find the required skills.
 - Supply personalized learning paths based on found skills.
 - Offer career guidance through data analysis.
 - Help students make informed decisions about their career pathways.

2. Application of Software:

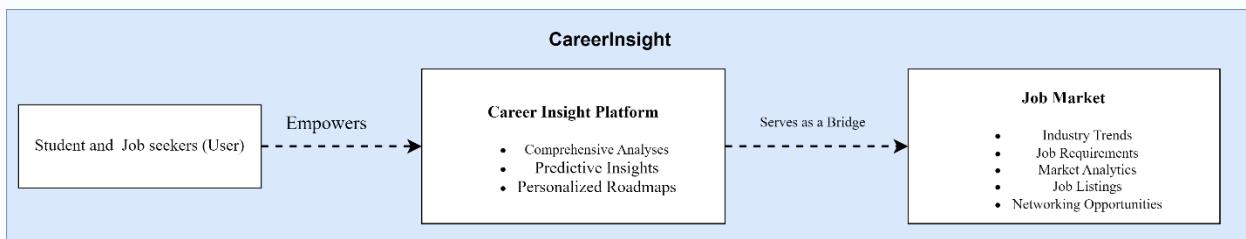
- Benefits:
 - Empower users with insights into in-demand skills.
 - Analyze industry trends to guide career choices.
 - Enhance understanding of job market dynamics.
 - Predict future market trends for initiative-taking career planning.
 - Provide personalized roadmaps aligning with individual skills and aspirations.

- Objectives:
 - Address the lack of awareness about job market demands.
 - Facilitate the identification of suitable learning paths.
 - Centralize information sources for informed decision-making.
 - Bridge the gap between university education and the job market.
 - Contribute to the enhancement of the Egyptian workforce.
- Goals:
 - Revolutionize the employment landscape through correct labor market analysis.
 - Deliver personalized career roadmaps to empower individuals.
 - Leverage data and machine learning for tailored guidance.
 - Enhance the transition from education to the job market for students in Egypt.
 - Contribute to the overall improvement of the Egyptian job market.

4.2 Overall description

4.2.1 Product perspective

Career Insight: A Job Market Insight Platform is used as a standalone



system, serving as a vital bridge between job seekers and the job market. It supplies comprehensive analyses, predictive insights, and personalized roadmaps, empowering users to navigate the dynamic job landscape effectively.

Figure 6



4.2.2 User characteristics

End-users of the Career Insight Platform are limited to interacting solely through the displayed interface. This streamlined approach ensures simplicity and accessibility, with all essential system functions readily available as key features.

4.2.3 Constraints

Career Insight uses Software as a Service (SaaS) model, ensuring accessibility for all users through web access. However, to unlock the full suite of system features, users must complete a signup process, setting up a personalized account. This ensures a secure and tailored experience for everyone within the system.

4.2.4 Assumptions and Dependencies

- Each user must have a valid account and password.
- Server must be running for the system to function.
- Users must log in to the system to access any feature.
- Website can run on most browsers effectively.

4.3 System features

4.3.1 Specific Requirements

The following outlines the detailed specifications for the functional requirement of User Authentication in the context of the Career Insight platform.

User Authentication:

- The system is needed to implement a secure user authentication mechanism to verify user identities during the signup process.
- Users must supply a valid email address and create a password during signup.
- The system must confirm the email address format and ensure its uniqueness in the database.
- Passwords must adhere to a defined complexity policy, including a minimum length and a mix of uppercase, lowercase, numeric, and special characters.
- Passwords must be securely stored using industry-standard encryption algorithms.

Design Implications:

- The design should include a user interface for the signup process, guiding users through the necessary steps.

- Backend systems must incorporate components for email validation and secure password storage.
- Consideration may be given to integrating with third-party authentication services for enhanced security.

Testing Criteria:

- Test cases should be developed to verify that the signup process accurately captures and confirms user information.
- The system must undergo testing scenarios to ensure secure storage and retrieval of user credentials.
- Rigorous testing of user authentication under various conditions should be conducted to guarantee reliability.

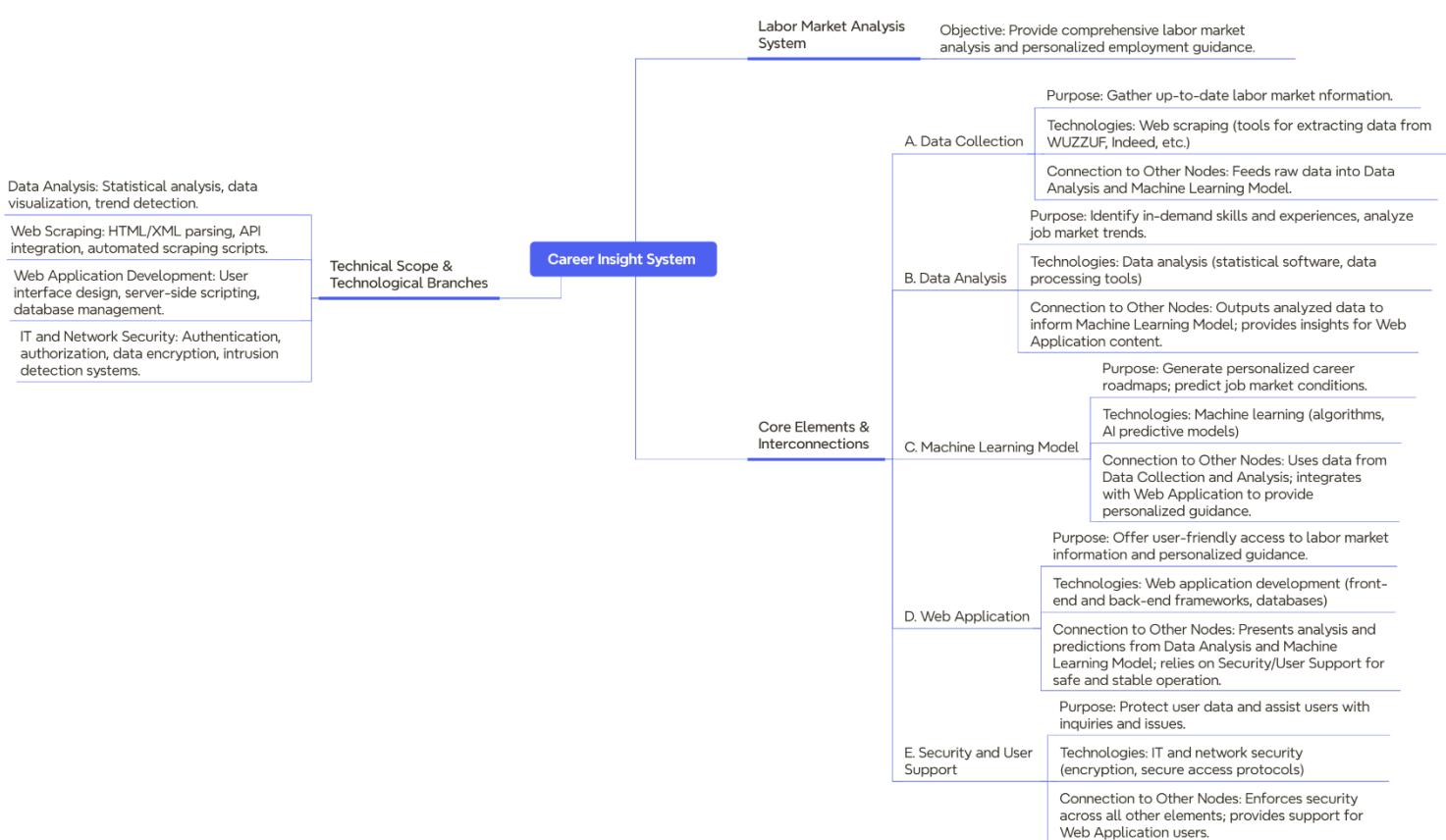


Figure 7



4.4 External Interface Requirements

4.4.1 User Interfaces

Screen formats, page or window layouts, error messages, etc. Some sample screen dumps can be used here to explain the interface.

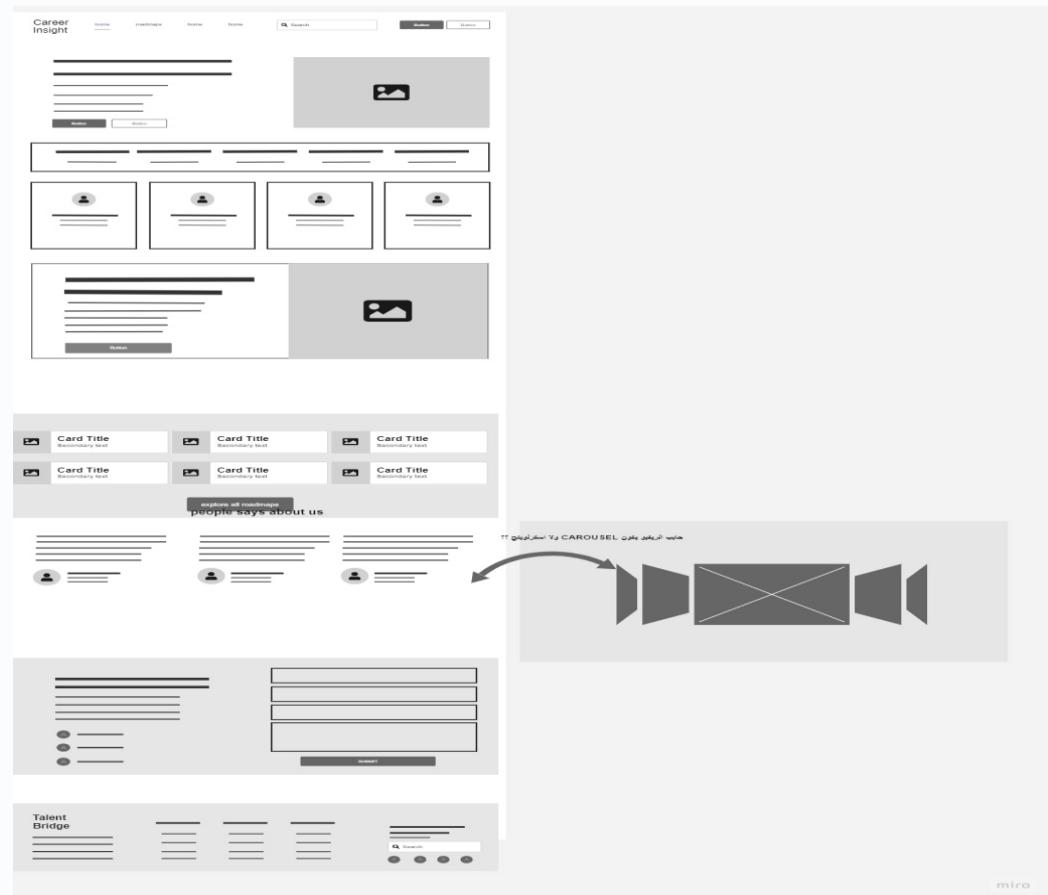


Figure 8

4.4.2 Communication Interfaces

1. Data Collection Communication Interface:

- Protocol: HTTP/HTTPS
- Data Format: HTML, XML, or JSON
- Description: The web scraping module communicates with specified websites (e.g., WUZZUF, Indeed) using standard HTTP/HTTPS protocols. It retrieves data from web pages in formats like HTML, XML, or JSON for further processing.

2. Data Analysis Communication Interface:

- Protocol: Internal APIs (RESTful)

- Data Format: JSON
- Description: The data analysis module communicates with the web scraping module via internal APIs using RESTful protocols. It receives structured data (e.g., job market information) in JSON format for analysis.

3. Machine Learning Model Communication Interface OpenAI

- Protocol: Internal APIs (RESTful)
- Data Format: JSON
- Description: The machine learning model communicates with the data analysis module through internal APIs using RESTful protocols. It receives input data (e.g., user profiles, job market trends) in JSON format and supplies personalized career roadmaps and job market predictions.

4. Web Application Communication Interface:

- Protocol: HTTP/HTTPS
- Data Format: JSON
- Description: The web application communicates with the machine learning model and other backend modules using standard HTTP/HTTPS protocols. It sends user requests and receives responses, typically in JSON format, to display personalized career roadmaps and labor market information.

5. Security and User Support Interface:

- Protocol: HTTPS
- Data Format: Encrypted
- Description: To ensure secure communication between the web application and the server, user authentication and security interfaces use HTTPS. Data exchanged, especially during user login and profile management, is encrypted to protect sensitive information.



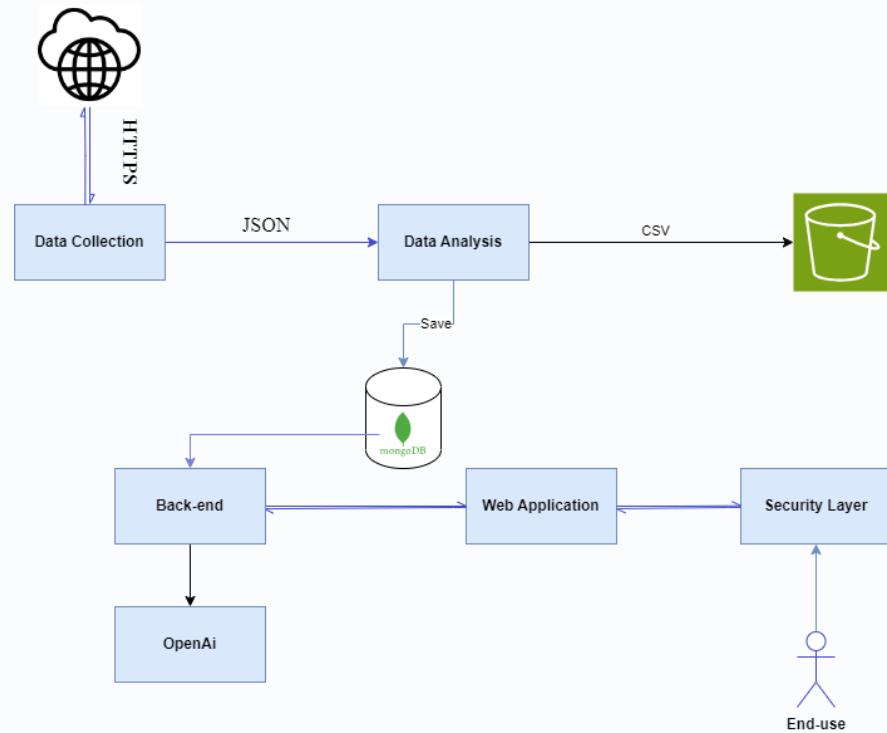


Figure 9

4.5 Functional requirements:

- User registration and profile creation.
- User authentication for access to personalized features.
- User preferences and settings management.
- Web scraping from specified websites.
- Real-time data updates.
- Data quality validation.
- Skill and experience identification from collected data.
- Trend analysis and reporting.
- Insights generation for job market trends.
- Personalized career roadmap generation.
- Intuitive user interface for labor market information access.
- Integration with data analysis and machine learning components.
- User feedback and interaction features.
- Encryption of sensitive user data.
- Access control mechanisms.
- Incident response and logging.



4.6 Non-Functional requirements

- Secure storage of user data.
- Quick and seamless user authentication.
- GDPR-compliant data handling.
- Timely and accurate data collection.
- Error handling and reporting for failed data collection.
- Scalability for future data source integrations.
- Robust algorithms for accurate data analysis.
- Performance optimization for handling large datasets.
- Visualization of analysis results.
- Model training with diverse datasets.
- Regular model updates based on changing job market conditions.
- Explain ability of model predictions.
- Cross-browser compatibility.
- Responsiveness for various devices.
- Regular updates for feature enhancements.
- Compliance with industry security standards.
- Regular security audits.
- User education on security best practices.
- Quick response time for user support.
- Continuous improvement based on user feedback.
- Training to support staff on project features.
- Consistent with data formats and protocols.
- Documentation for external developers.
- Scalability to accommodate future integrations.



4.7 Use case diagram

The purpose of this diagram is to demonstrate how objects will interact with BECS and map out the basic functionality of the system. Below is a list of the elements that you will see in the diagram on the next page as well as what is included in the use case templates that follow:

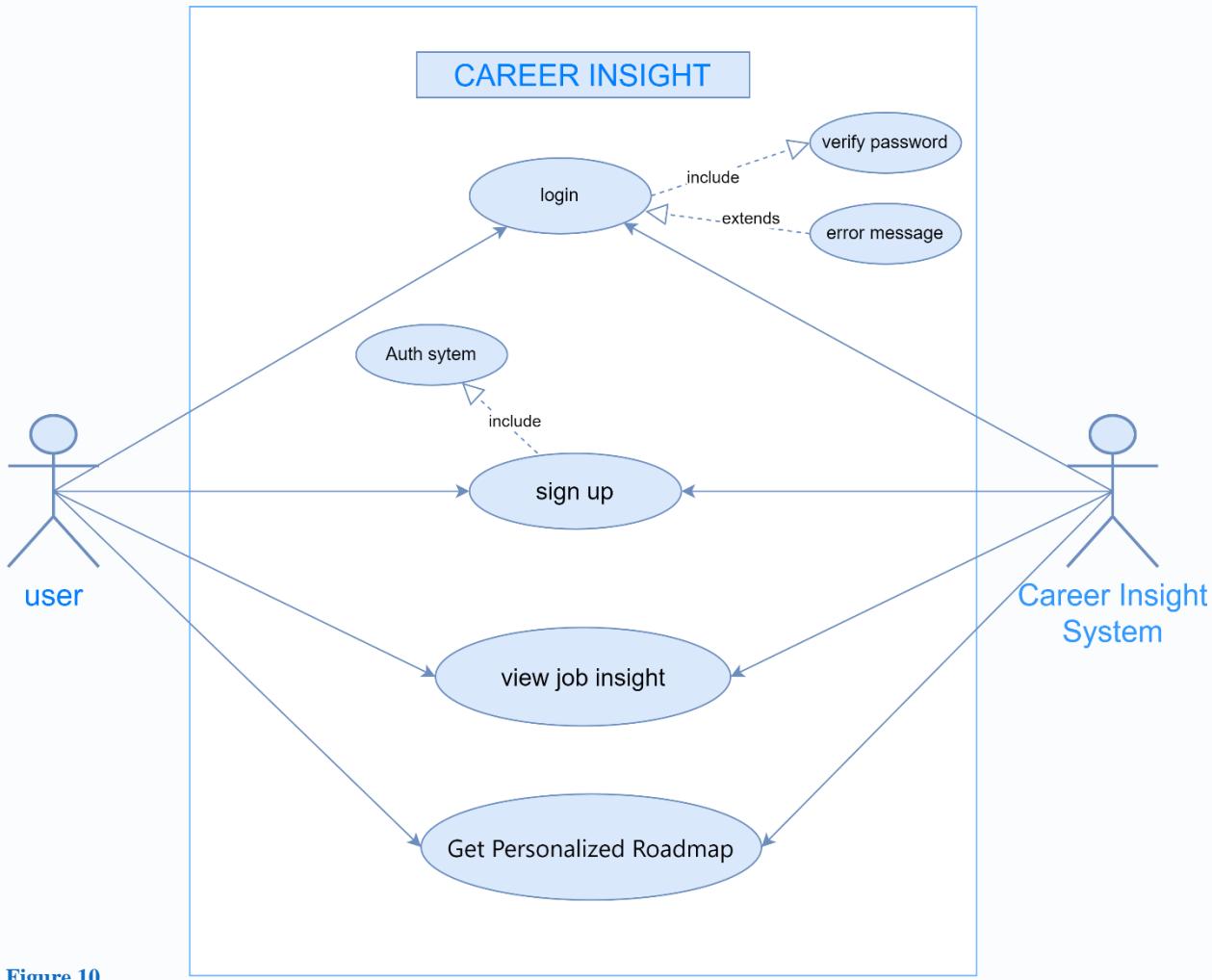


Figure 10

Use Case: User Login	
Actors	User, Career Insight System
Type	Primary and essential
Description	Represents the user logging into the system, initiated when a user attempts an action that is restricted. The user is then prompted to enter their username and password to proceed.
Includes	Verify password
Extends	Error message
Cross Ref	Satisfies the requirements for user authentication.

Use Case: User Sign up	
Actors	User, Career Insight System
Type	Primary and essential
Description	Represents the user registering a new account.
Includes	Auth system
Extends	None
Cross Ref	Satisfies the requirements for user registration.

Use Case: View Job Insight	
Actors	User, Career Insight System
Type	Primary and essential
Description	Represents the user viewing personalized job insights.
Includes	None
Extends	None
Cross Ref	Satisfies the requirements for personalized job insights.

Use Case: Get Personalized Roadmap	
Actors	User, Career Insight System
Type	Primary and essential
Description	Represents the user receiving a personalized career roadmap.
Includes	None
Extends	None
Cross Ref	Satisfies the requirements for personalized career guidance

3.8 Sequence Diagrams:

The sequence diagrams use the class diagram and demonstrate specific sequences of actions in the system. The purpose is to ensure that the BECS system runs in an expected way and that the class structure is sufficient to accomplish the tasks needed. Below is a list of the items that you will see in the diagram and their definitions.

3.8.1 User Authentication and Registration Sequence Diagram

1. Landing Page:

- The diagram starts with a lifeline representing the landing page.
- An actor labeled "User" interacts with the landing page.

2. Authentication:



- A lifeline labeled "Authentication" is depicted, indicating the authentication process.
- The user triggers an action, "Enter Sign up button," initiating the registration process.

3. Registration Flow:

- When user information is entered, the process involves checking if the email already exists.
- If the email exists, an edge labeled "Email is already Existing" provides feedback to the user.
- Otherwise, the process continues with an edge labeled "Open Registration."

4. Open Registration:

- Another lifeline labeled "Open Registration" signifies the registration form being opened.
- The user enters information, and an edge labeled "Enter information" leads to the next step.

5. Verification Code:

- The registration process includes the generation and verification of the code.
- When a verification code is sent, an edge labeled "verification code sent" indicates the process.

6. Database Interaction:

- Lifelines representing "Email Server" and "Database" are involved in storing user data.
- Edges like "Store User data" and "Active User Data" represent the interaction with the database.

7. Final Output:

- The diagram concludes with feedback elements like "Warning" and "Valid User," highlighting the status of the user interaction.

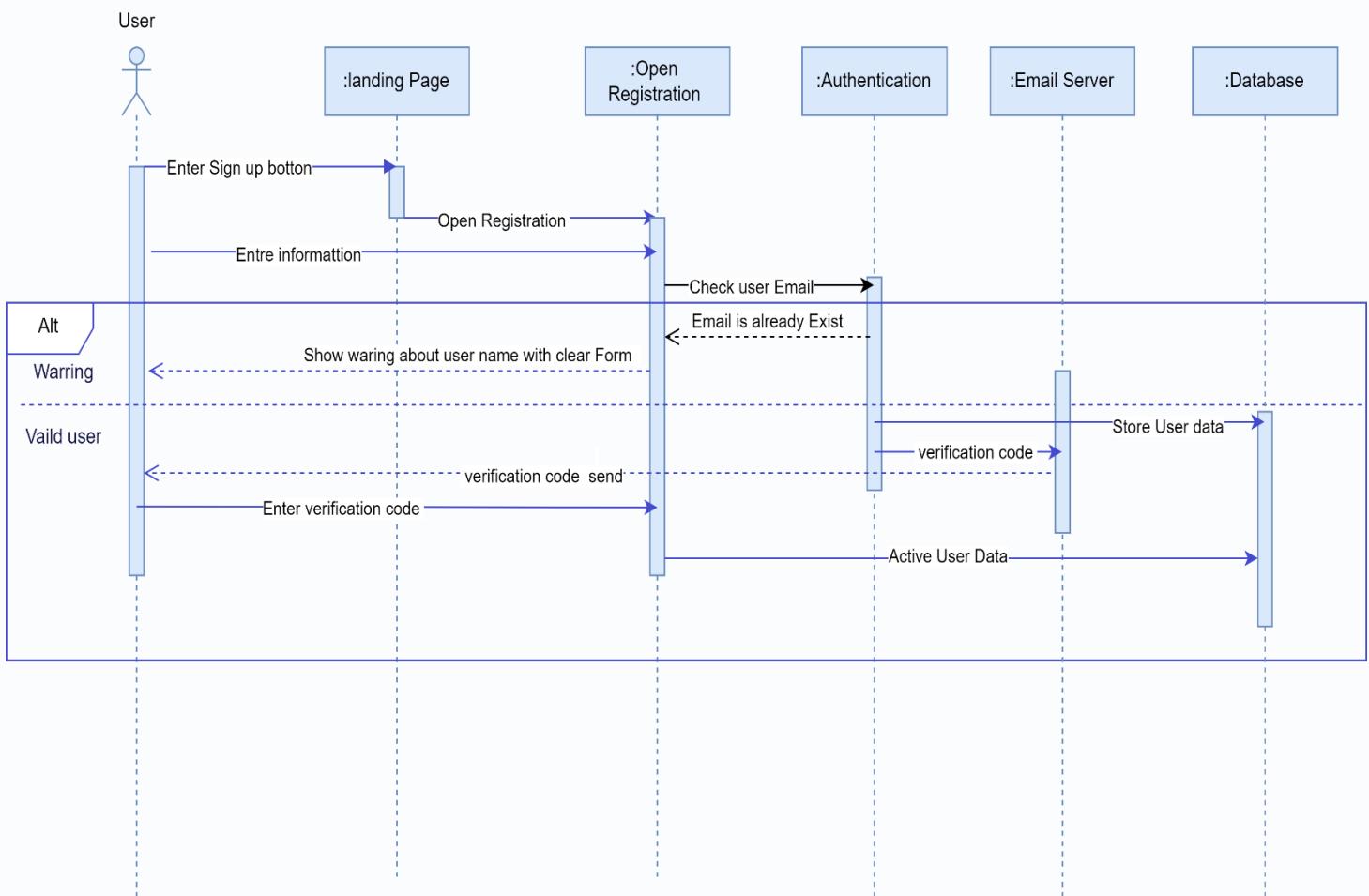


Figure 11

4.8.2 Register use Sequence Diagram

1- Dashboard (: view insights)

- It is positioned on the right side of the diagram and has interactions related to data visualization.

2- Model (: create Roadmap)

- representing a component responsible for creating roadmaps. Positioned in the middle, it has interactions for creating and sending roadmap data.

3- Roadmap Form (: RoadMap Form)

- represent a form or module for creating roadmaps. It is connected to the Model lifeline.



- Choose Level: An interaction from the Landing Page to the Model, indicating a user action to choose a level.
- Return some Related Questions: Interaction from the Model back to the Landing Page, possibly indicating a response or feedback related to the chosen level.
- Choose Track: Interaction from the Roadmap Form to the Model, indicating a user action to choose a track for the roadmap.

4- DB Roadmap (:DB Roadmap):

- represent a database or storage for roadmaps. Positioned on the right, it has interactions to save roadmaps to history.

5- DB Jobs (:DB Jobs)

- Another database entity, positioned on the far right, represents storage of job-related data.

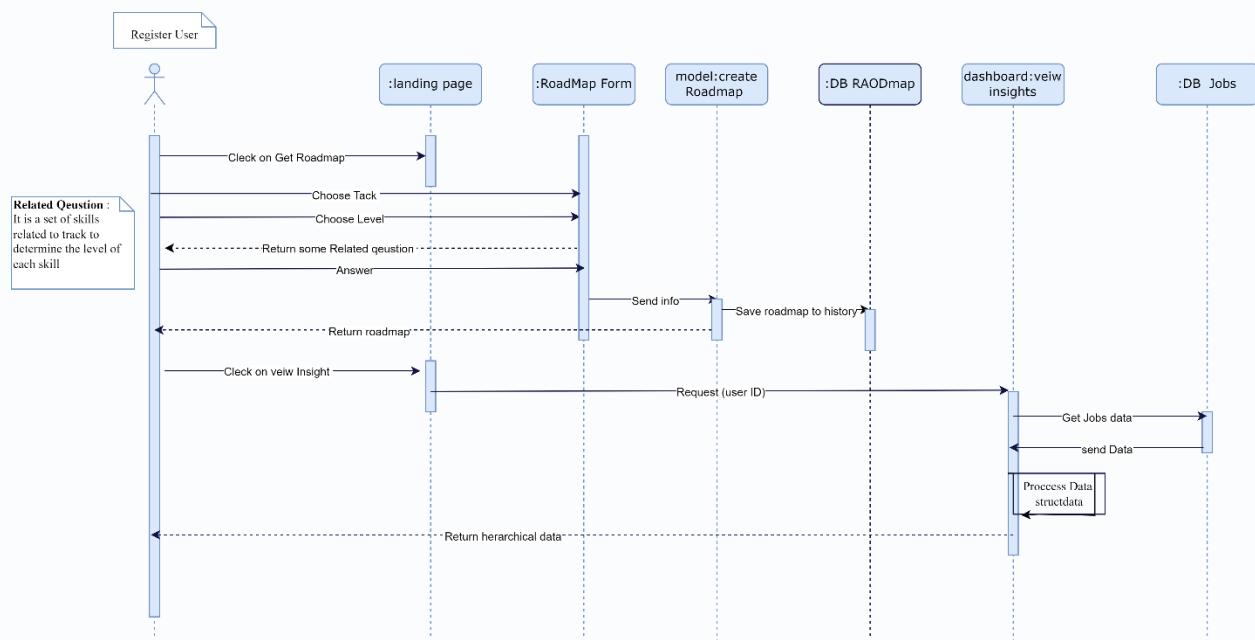


Figure 12

4.9 Class Diagram

The purpose of this diagram is to show how objects within the BECS system will interact with each other to achieve the functionality required by the Use Case diagram. Below is a list of what you will see in the diagram itself as well as the class descriptions that follow:

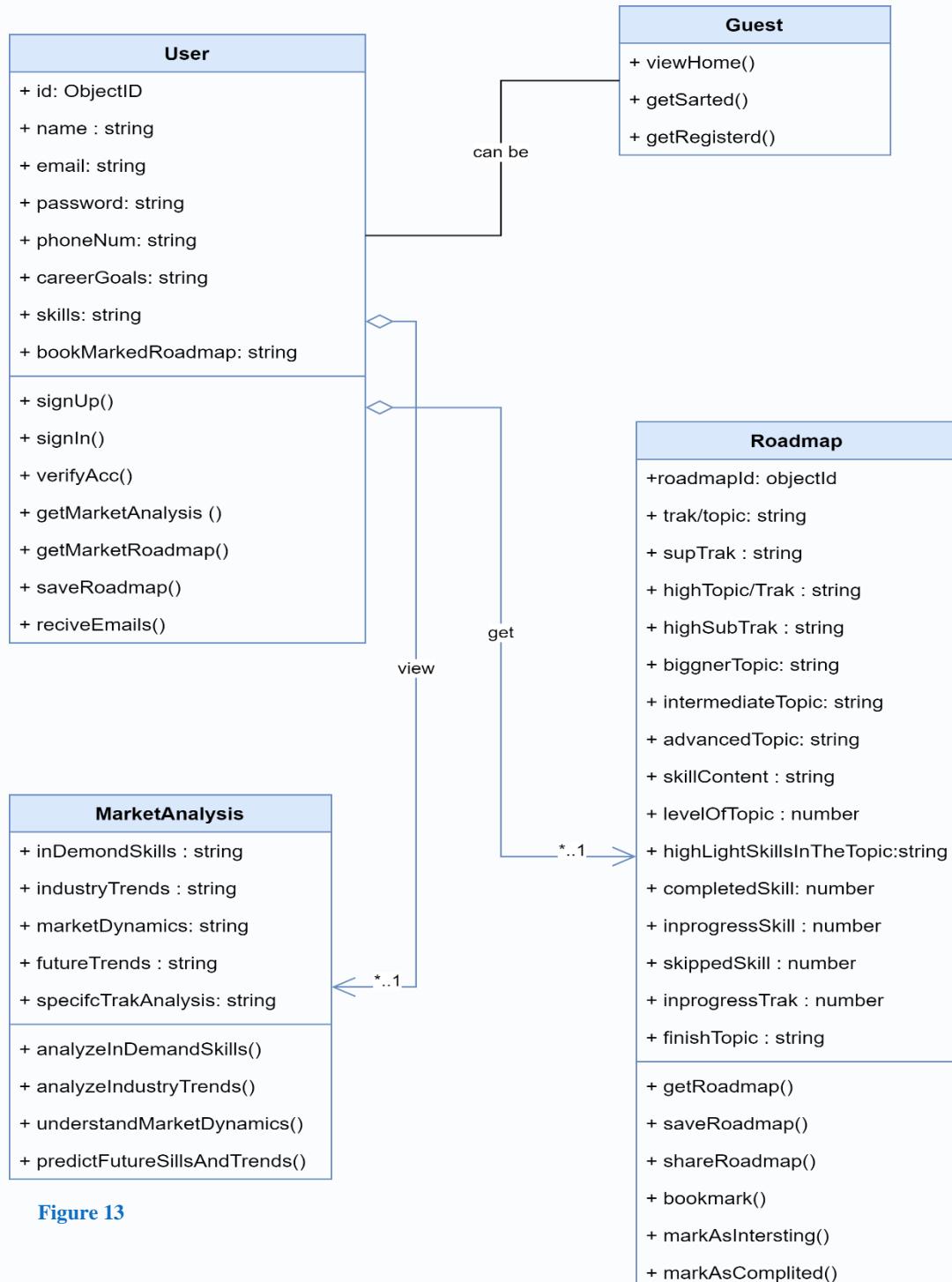


Figure 13



Class			
User	Brief: Represents a user in the system Public: Yes		
	Relationships <table border="1"> <tr> <td>Associations: Roadmap</td> </tr> <tr> <td>Aggregations: None</td> </tr> <tr> <td>Generalization: None</td> </tr> </table>	Associations: Roadmap	Aggregations: None
Associations: Roadmap			
Aggregations: None			
Generalization: None			
Variables: id: Object, name: string, email: string, password: string, phoneNum: string careerGoals: string, skill: string, bookMarkRoadmap: string			
Functions: signUp() ,signIn(),verifyAcc(),getMarketAnalysis (), ,getMarketRoadmap(),saveRoadmap(),receiveEmails()			

Class			
MarketAnalysis	Brief: Represents analysis entity in the system Public: No		
	Relationships <table border="1"> <tr> <td>Associations: None</td> </tr> <tr> <td>Aggregations: None</td> </tr> <tr> <td>Generalization: None</td> </tr> </table>	Associations: None	Aggregations: None
Associations: None			
Aggregations: None			
Generalization: None			
Variables: inDemandSkills : string industryTrends : string marketDynamics: string futureTrends : string specificTrakAnalysis: string			
Functions: analyzeInDemandSkills(), analyzeIndustryTrends(), understandMarketDynamics(), predictFutureSkillsAndTrends()			

Class			
Guest	Brief: Represents a guest user in the system Public: yes		
	Relationships <table border="1"> <tr> <td>Associations: None</td> </tr> <tr> <td>Aggregations: None</td> </tr> <tr> <td>Generalization: None</td> </tr> </table>	Associations: None	Aggregations: None
Associations: None			
Aggregations: None			
Generalization: None			
Variables: None			
Functions: viewHome(), getStarted(), getRegistered()			

Class							
Roadmap	<p>Brief: Represents a roadmap entity</p> <p>Public: No</p>						
	<table border="1"> <tr> <td>Relationships</td><td>Associations: User</td></tr> <tr> <td></td><td>Aggregations: None</td></tr> <tr> <td></td><td>Generalization: None</td></tr> </table>	Relationships	Associations: User		Aggregations: None		Generalization: None
Relationships	Associations: User						
	Aggregations: None						
	Generalization: None						
	<p>Variables: roadmapId (ObjectID), trak/topic, supTrak, highTopic/Trak, highSubTrak, beginnerTopic, intermediateTopic, advancedTopic, skillContent, levelOfTopic, highLightSkillsInTheTopic, completedSkill, inprogressSkill, skippedSkill, inprogressTrak, finishTopic.</p>						
	<p>Functions: getRoadmap(), saveRoadmap(), shareRoadmap(), bookmark()</p>						

4.10 system flow:

3.10.1 workflow:

The objective of the system, as depicted in the workflow diagram, appears to be related to user interaction with a web application or platform.

Why Workflow is Needed: The workflow depicted in the diagram is essential for several reasons:

1. User Guidance:

- A well-defined workflow guides users through the process of interacting with the system. This helps users understand the steps they need to take, reducing confusion and enhancing the user experience.

2. Error Handling:

- The workflow includes branches for handling different scenarios, such as successful and unsuccessful logins. This allows the system to manage errors effectively and provide appropriate feedback to users.



CAREER INSIGHT

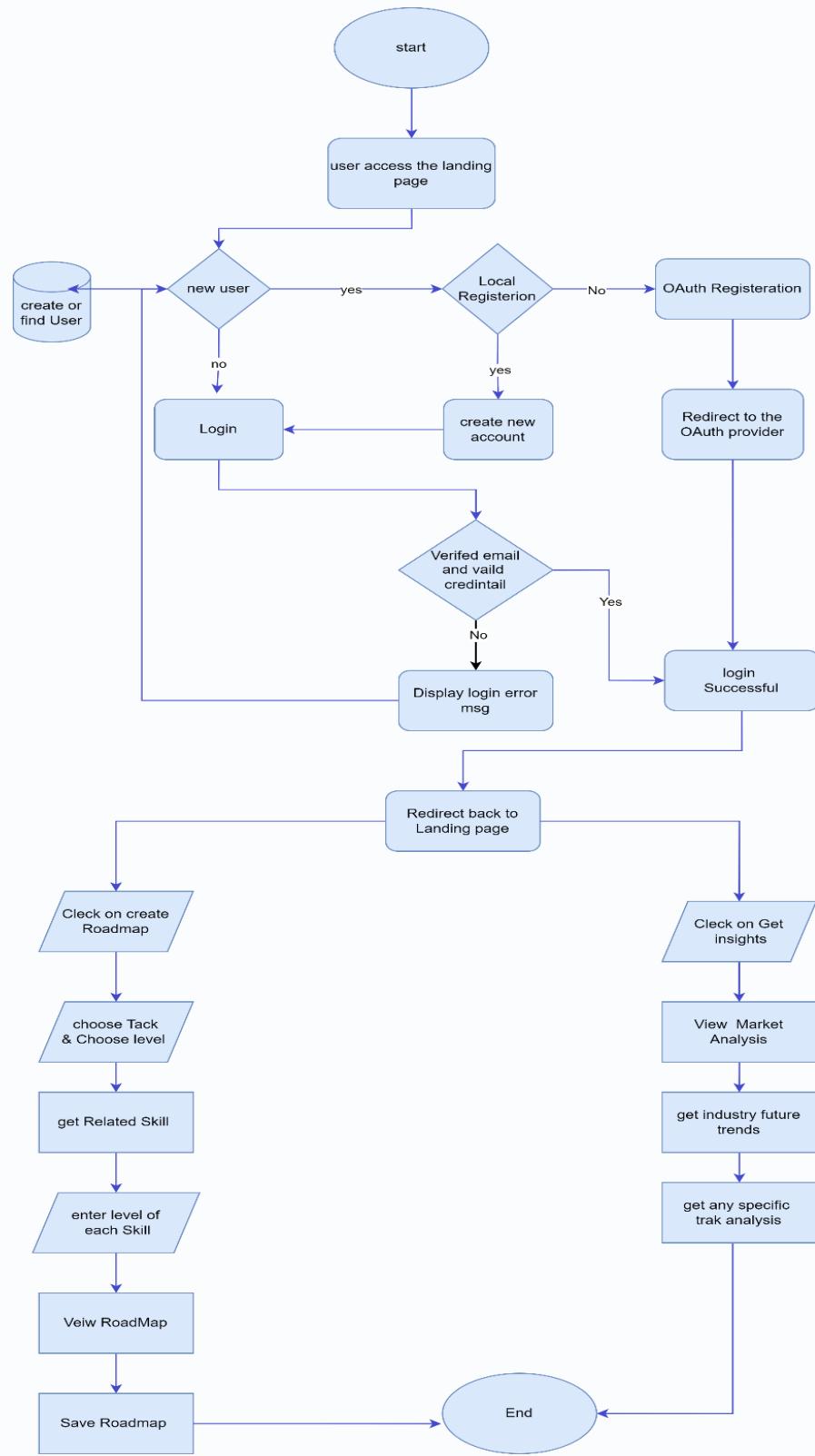


Figure 14

4.10.1 context diagram

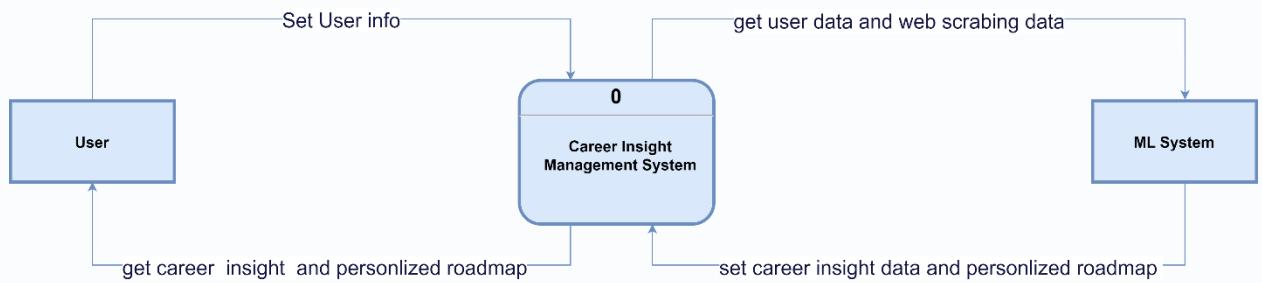


Figure 15

4.10.2 DFD diagram

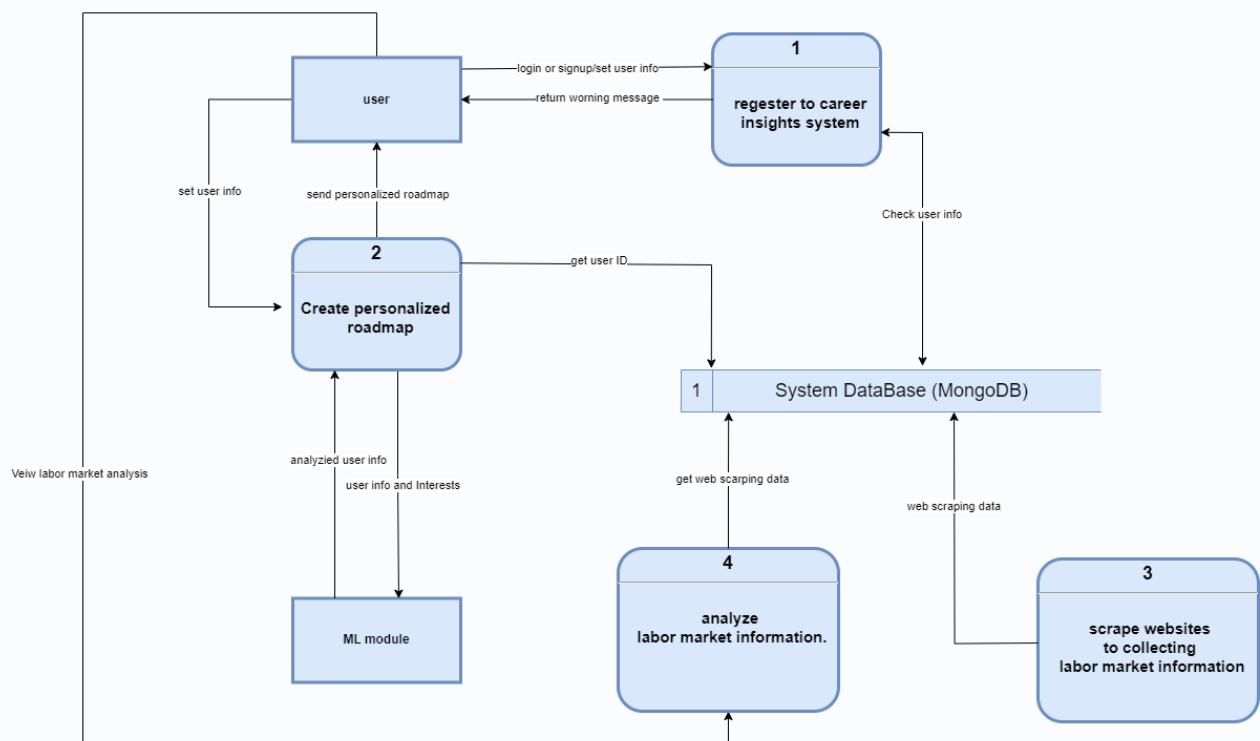
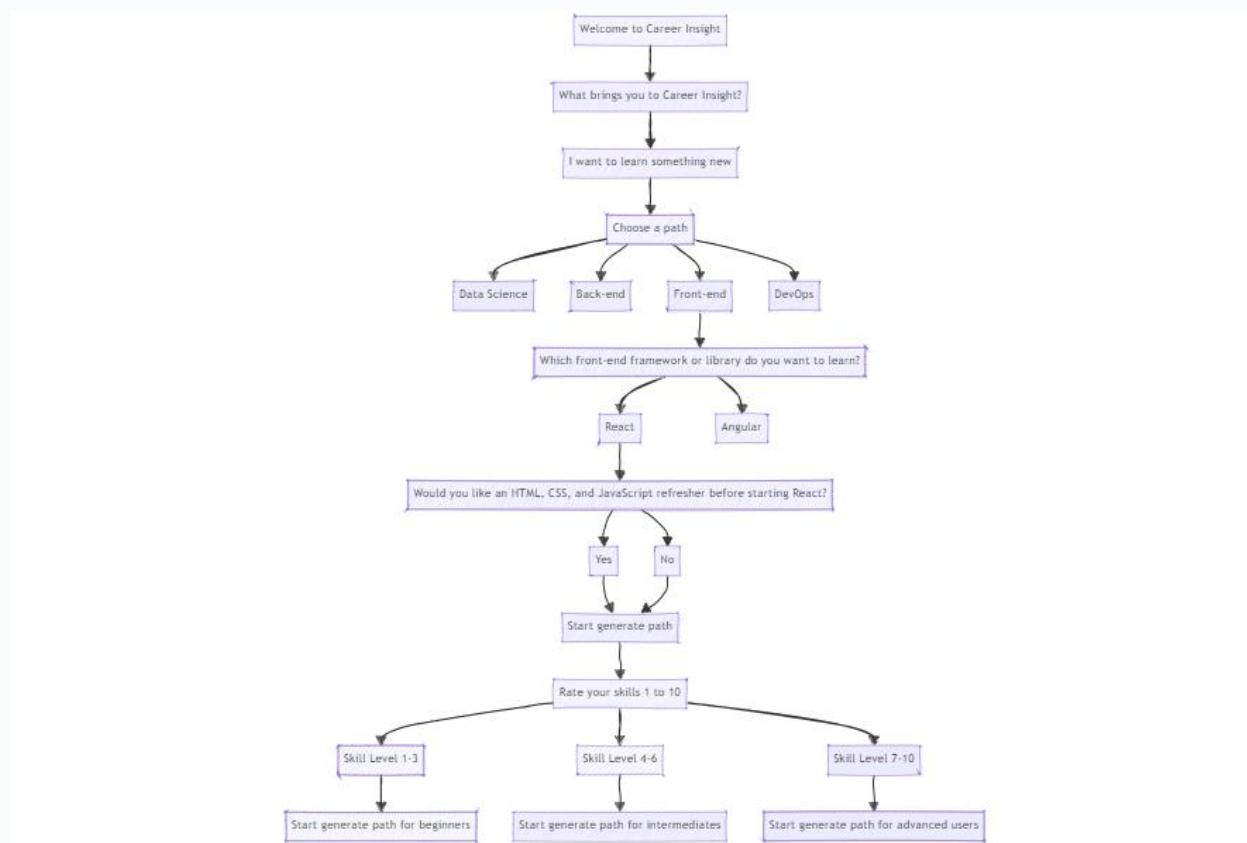


Figure 16



4.11 Roadmap flow chart:

If user select front-end

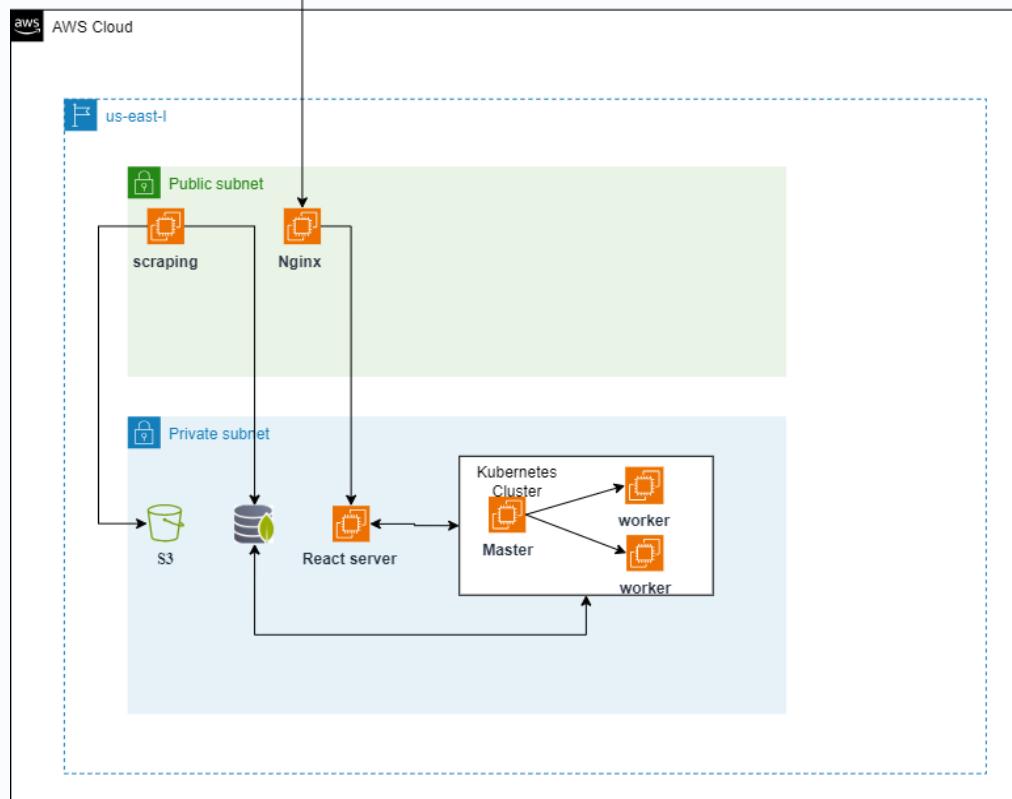


Here is the link for the full flowchart:

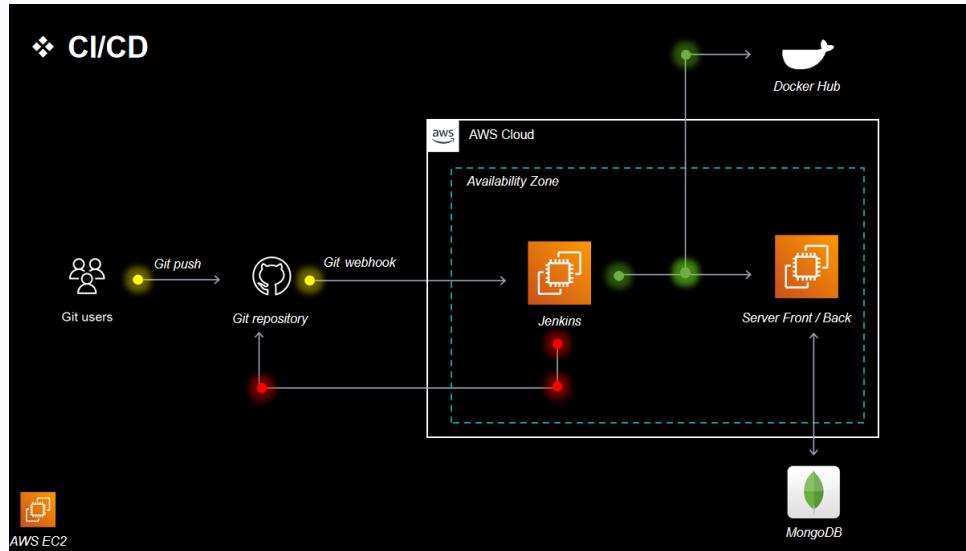


4.12 System Architecture

4.12.1 Aws:



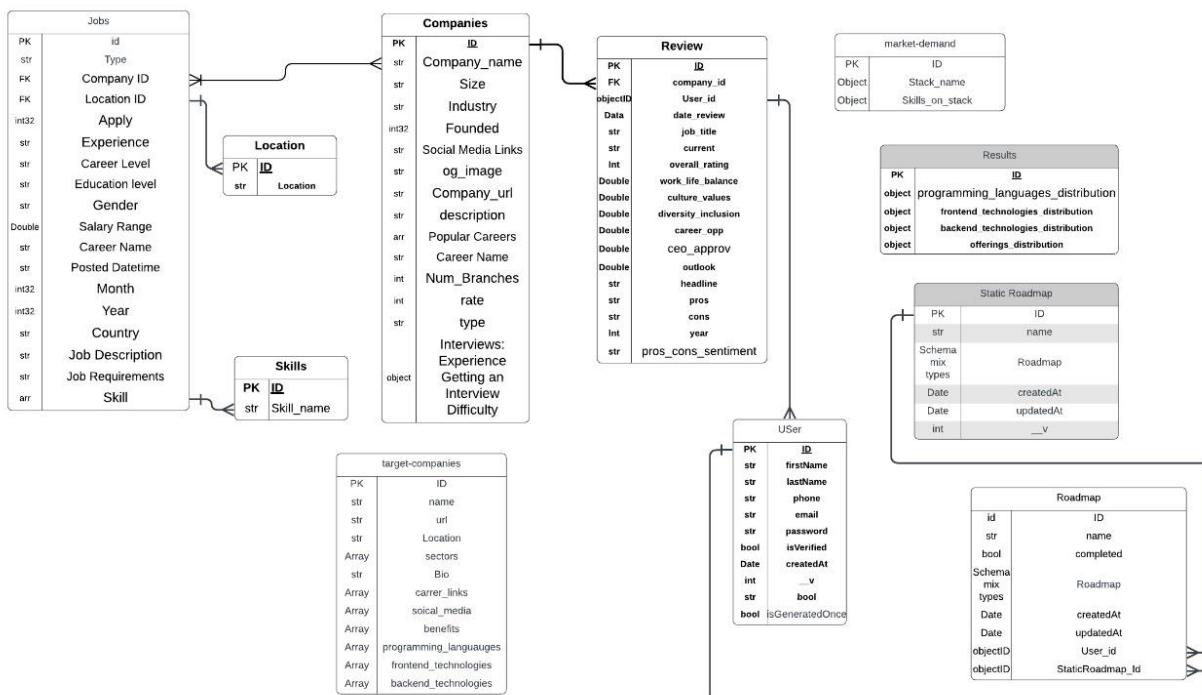
4.12.2 CI/CD:

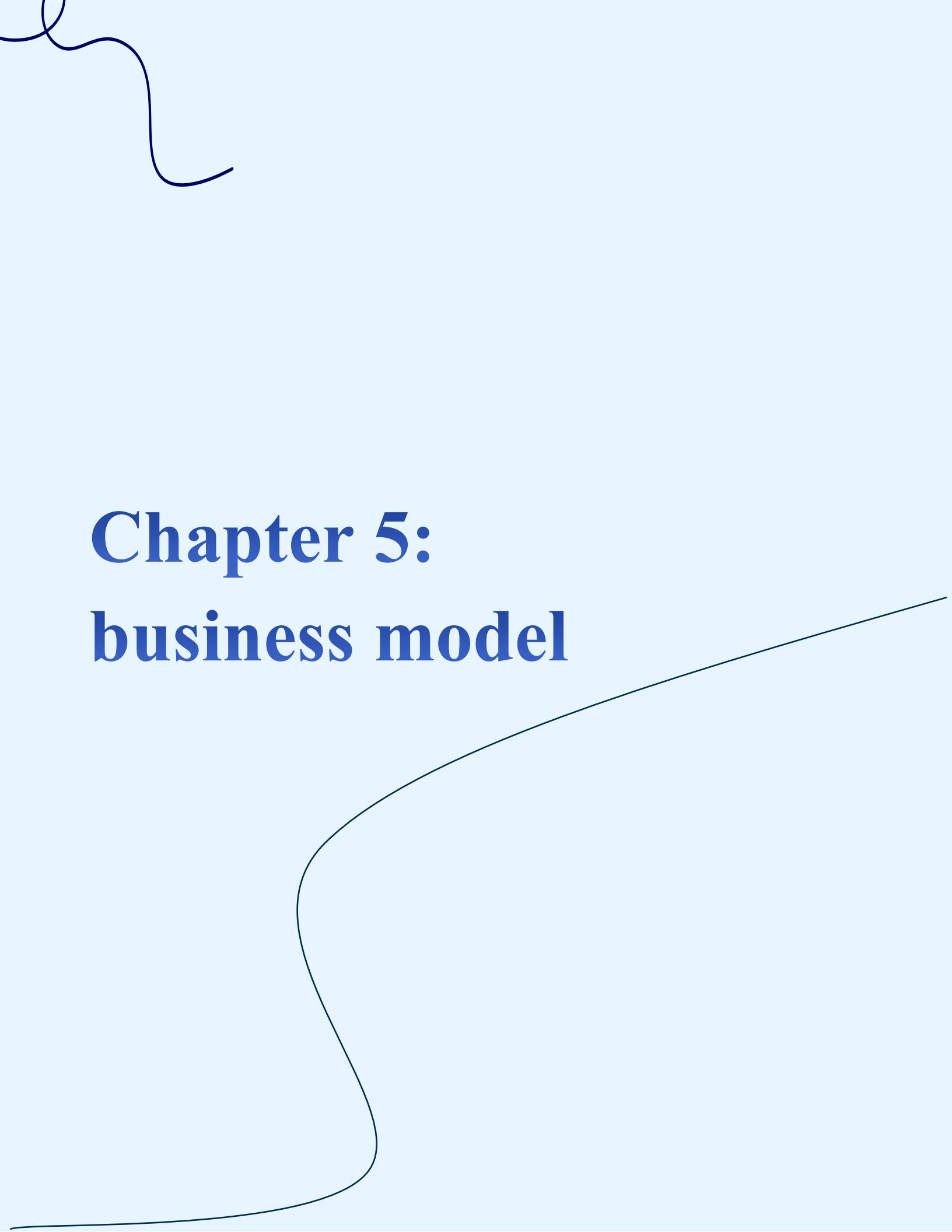


4.12.3 Pipeline overview



4.13 Data scheme



The background features abstract blue line art. In the top left corner, there is a wavy line that curves down and to the right. In the bottom right corner, there is a large, smooth, curved line that starts low and slopes upwards towards the top right.

Chapter 5: business model

5.1 Executive Summary

5.1.1 Objective:

The primary aim of this project is to revolutionize the employment landscape through a comprehensive "Labor Market Analysis" platform. By accurately assessing the needs of the job market and industry trends, our project is dedicated to empowering individuals with tailored guidance. Leveraging data from specific web sources and using a machine learning model, we aim to deliver personalized career roadmaps, equipping users with the essential skills and insights needed for success in the dynamic job market.

5.1.2 Products and Services:

Problem

Recent university graduates in Egypt face challenges in transitioning from education to the job market due to the following reasons:

1. Lack of awareness about the skills demanded by the labor market.
2. Difficulty in finding suitable learning paths for desired careers.
3. Scattered information sources, making it challenging for students to make informed decisions.

Solution

The AI-powered community application is a comprehensive solution to bridge the gap between university education and the job market. Key features include:

1. Data integration
 - Gathers data from various sources to create holistic view of the job market and industry needs.
2. Personalized Learning Paths
 - Analyzes job postings to find the skills and knowledge needed for specific positions.
 - Matches these requirements with the courses and programs offered by Collage.
3. Career Guidance
 - Offers career guidance by assessing individual strengths, interests, and market trends using data analysis.
 - Assists students in making informed decisions about their career pathways.

5.2 Market Research

5.2.1 Target Market:

Our primary target market for the Community Application encompasses students in Egypt who are navigating the transition from university education to the job market.

Figure (4): Unemployment rates by field of study (standard definition)

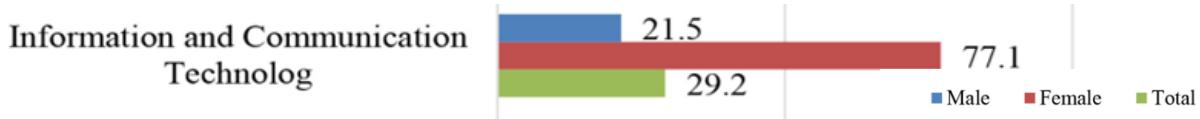


Figure 17

5.2.2 Unique Selling Proposition (USP):

Comprehensive analysis of the job market and industry needs.

Personalized learning paths and career guidance based on individual aspirations.

5.2.3 Geographic Focus:

Initial focus is on students in Egypt with potential expansion to other regions.

By targeting this demographic and addressing their specific challenges, our Community Application strives to empower and guide students through their academic and professional journeys, ultimately contributing to the enhancement of the Egyptian workforce.

5.3 Survey Analysis:

In our quest to fine-tune and optimize the user experience, we've meticulously designed a comprehensive survey aimed at gaining valuable insights from potential users. This survey delves into crucial aspects, seeking user preferences on the platform's accessibility – whether it should be in the form of a website or a mobile application. Beyond platform preferences, we're eager to understand the features users prioritize, ensuring our development aligns seamlessly with their expectations. This survey acts as a conduit for direct communication with our prospective user base, allowing us to tailor our platform to their needs, preferences, and desires. Through this iterative feedback loop, we aspire to craft a market labor analysis platform that not only meets but exceeds user expectations.



CAREER INSIGHT

Here are the questions we constructed in the survey:

Link : [Career Insight](#)



Career Insight: Your friendly guide to find the right career for you."

مرحبا بك في استطلاع آراء المستخدمين حول! Career Insight مهمه ونحن نسعى جاهدين لتعزيز مصداقتك! شارك تجربتك وتحدياتك وتعلمك! نمساعدنا بشكل أفضل في رحلتك المهنية. إن محدثك القسمة تشكّل مستقبل عملك، ساً ما يضمن أنها تظل رفيقك الموقوف به في التنقل في سوق العمل. دعونا نبني مساراً وظيفياً مخصصتنا ونأخذها معنا! لذلك الشخص للتعلق في سوق العمل وتشكيل مسار وظيفي ناجح! شكرنا على مشاركتك في استطلاع الآراء الخاص بـ!

bodyarafa640@gmail.com Switch account
Not shared

* Indicates required question

* الاسم رباعي

Your answer

* النوع - Gender

- ذكر
 أنثى

* العمر - Age

- تحت 18 سنة
 18 - 24 سنة
 24 - 34 سنة
 34 - 35 سنة و اكبر

* المحافظة - Governorate

Choose

* هل أنت طالب أم ذريج؟

- طالب
 ذريج

* جامعة - University

Choose

* الكلية - College

Choose

تتميزي أن تجيء على حل المسؤليات

ما مدى اهتمامك بممواكبة اتجاهات العمل المستقبليه وكيف يمكن أن تؤثر على اختيارك المهنيه؟

4+
 غير مهم
 هادئ

هل أنت على دراية بأحدث اتجاهات الصناعة وكيف يمكن أن تؤثر على اختيارك المهنيه؟

مدرك جداً
 واعي إلى حد ما
 هادئ
 ليس واعياً جداً
 لا علم على الإطلاق

هل تجد أنه من المفيد الحصول على نظرة ثاقبة للطبيعة المتغيرة لسوق العمل لتخاذل قرارات مستقبليه؟

ملحة للغاية
 مفيدة جداً
 مفيدة إلى حد ما
 مفيدة قليلاً
 غير مفيدة على الإطلاق

هل أنت نفس المعلومات حول سوق العمل على قراراتك المهنية في الصالحي؟

تحدى قراراته بسلاسة
 تتأثر إلى حد ما
 هادئ
 تحدى الأسلوب من النادر
 لا تتأثر على الإطلاق

هل أنت مهتم بفرض الإرشاد لريشادتك في تطوير حياتك المهنية؟

بمهده
 بمهده
 هادئ
 ليس مهمها جداً
 غير مهمها على الإطلاق

كيف تصف التحديات الحالية التي تواجهها في اتخاذك عن عمل؟

عدم اقتنان بذات اتجاهات الصناعة
 صغرورة يهدى فرض حيل متساوية
 قلة توفرها بالمهارات المطلوبة

في رأيك، ما هي المعلومات أو الأفكار المحددة التي قد تكون أكثر فائدة للبلدان عن عمل في التعامل مع تحديات سوق العمل؟

Your answer

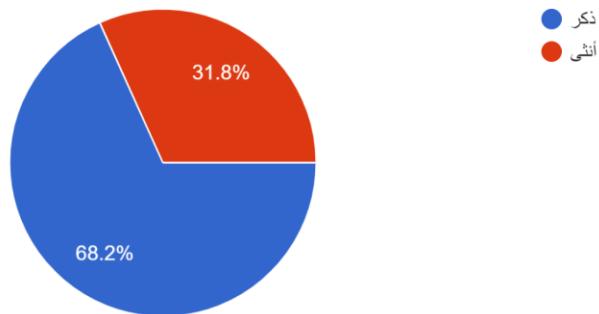
رأيك، ما هو العائق الأدبي الذي يواجه الباحثين عن عمل في سوق العمل الحالي؟

تحديد فرض العمل ذات الصفة
 الافتراضات المطلوبة
 قلة اتجاهات الصناعة

We have gathered insights from around 85 responses regarding the visuals created by the primary dataset.

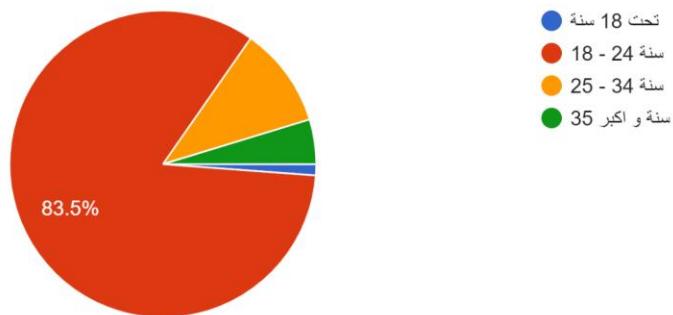
نوع - Gender

85 responses



العمر - Age

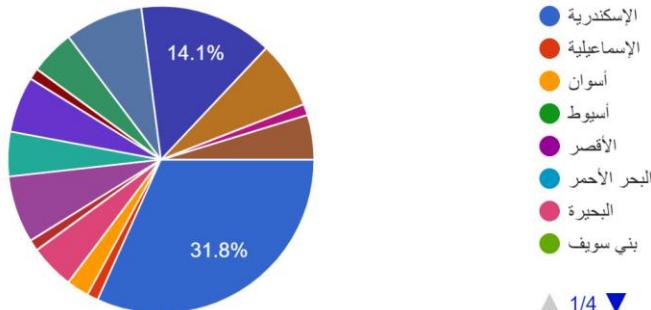
85 responses



CAREER INSIGHT

المحافظة - Governorate

85 responses

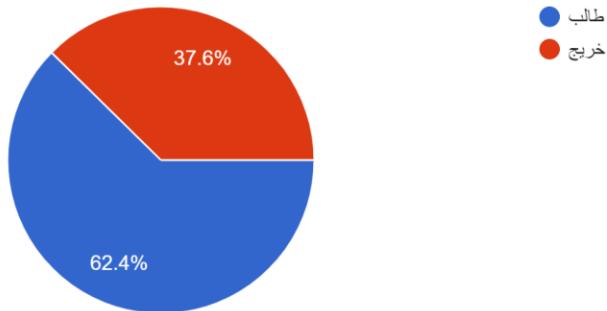


- الإسكندرية
- الإسماعيلية
- أسوان
- أسيوط
- الأقصر
- البحر الأحمر
- البحرية
- بني سويف

▲ 1/4 ▼

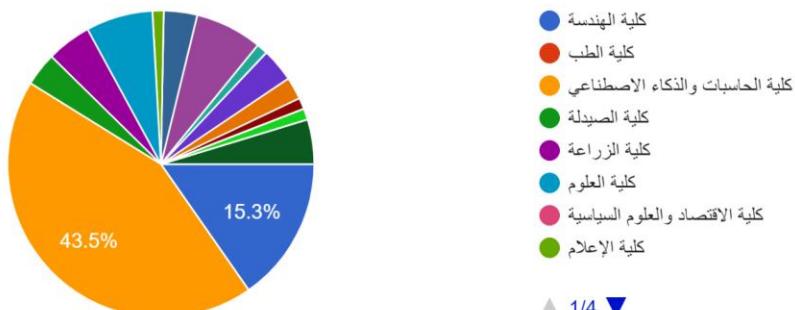
هل انت طالب أم خريج ؟

85 responses



الكلية - College

85 responses

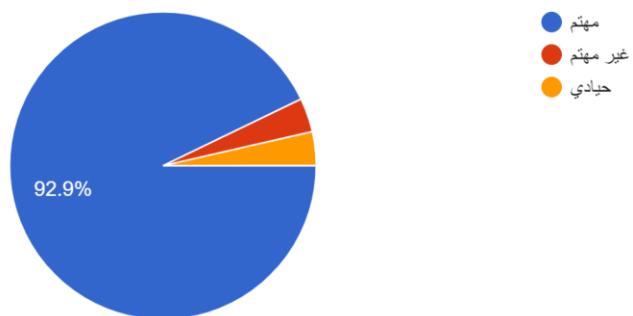


- كلية الهندسة
- كلية الطب
- كلية الحاسوب والذكاء الاصطناعي
- كلية الصيدلة
- كلية الزراعة
- كلية العلوم
- كلية الاقتصاد والعلوم السياسية
- كلية الإعلام

▲ 1/4 ▼

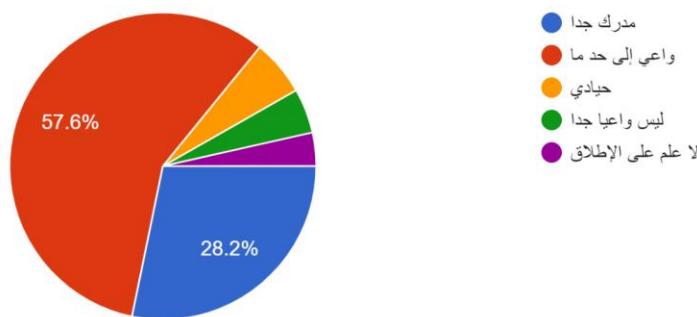
ما مدى اهتمامك بمواكبة اتجاهات العمل المستقبلية وتكييف مهاراتك وفقاً لذلك؟

84 responses



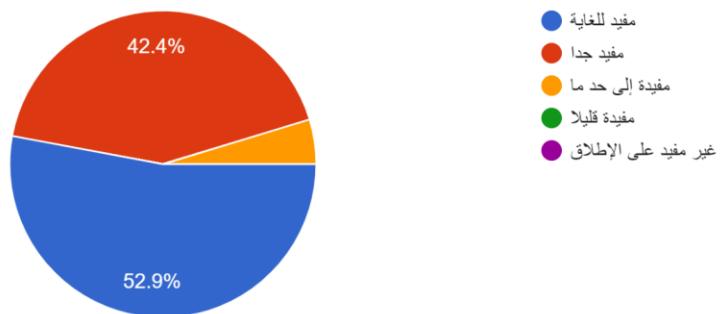
هل أنت على دراية بأحدث اتجاهات الصناعة وكيف يمكن أن تؤثر على اختياراتك المهنية؟

85 responses



هل تجد أنه من المفيد الحصول على نظرة ثاقبة للطبيعة المتغيرة لسوق العمل لاتخاذ قرارات مستنيرة؟

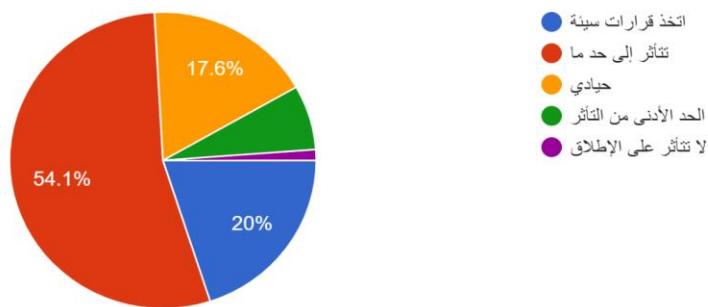
85 responses



CAREER INSIGHT

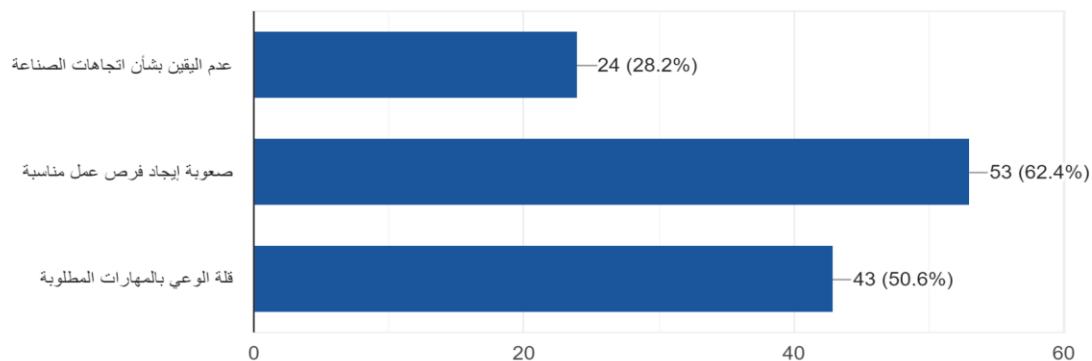
هل أثر نقص المعلومات حول سوق العمل على قراراتك المهنية في الماضي؟

85 responses



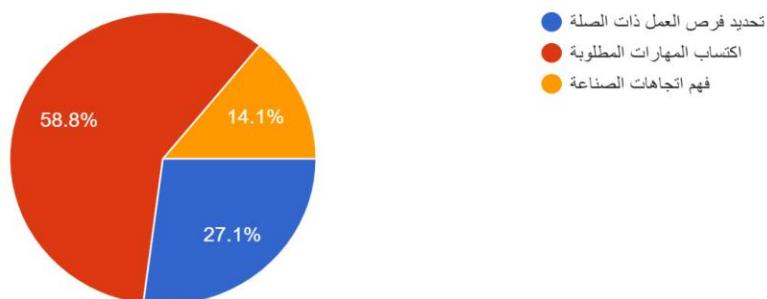
كيف تصف التحديات الحالية التي تواجهها كباحث عن عمل؟

85 responses



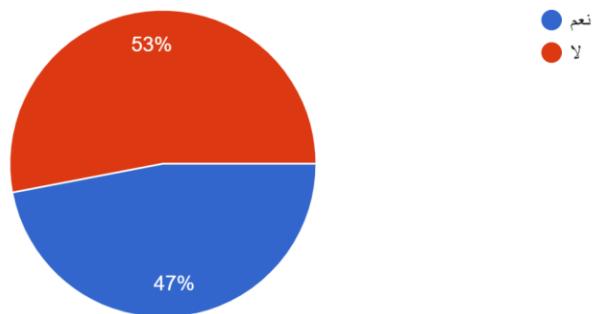
برأيك، ما هو العائق الأكبر الذي يواجه الباحثين عن عمل في سوق العمل الحالي؟

85 responses



هل استخدمت أي أدوات أو منصات تساعدك على فهم سوق العمل؟ إذا كانت الإجابة بنعم، يرجى مشاركة تجربتك.

83 responses



The most important opinions

- **LinkedIn:** Used to build a professional network and follow developments in the industry and available jobs.
- **Glassdoor:** Provides company reviews, salary reports, and interviews.
- **Indeed or Wuzzaf:** a job search platform.
- **Udemy and Coursera:** online learning platforms.
- **Stack Overflow, Geeks for Geeks, and Medium:** Resources for articles on labor market developments and in-demand skills.
- **YouTube:** To search for educational videos and skills development resources.
- **Facebook and Upwork:** Other places to look for job opportunities.

ما هي الطرق التي تعتقد أن التكنولوجيا يمكن أن تحسن تجربة البحث عن عمل؟

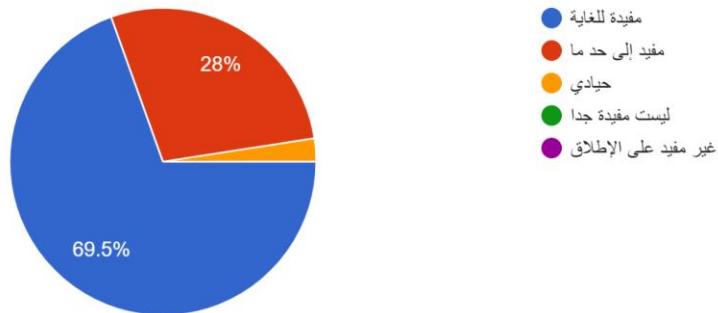
1. Use Chatbots to help write your CV.
2. Provide assessments of required and excellent skills.
3. Identify companies that are interested in your profile and provide notifications of job vacancies in them.
4. Provide data analytics to help job seekers understand labor market trends and future demands for skills.



5. Using e-learning platforms to develop the skills needed for required jobs.

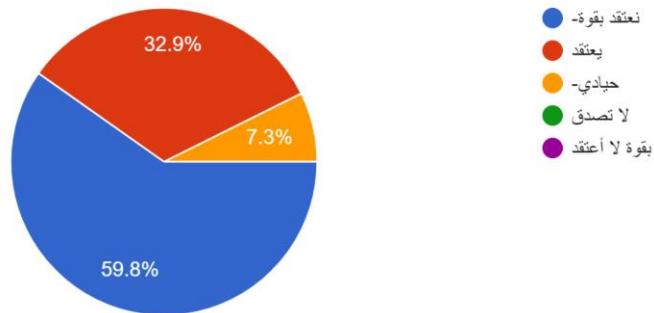
هل سيكون وجود منصة توفر رؤى شخصية حول تحديات سوق العمل التي تواجهها مفيّدة لحياتك المهنية؟

82 responses



هل تعتقد أن وجود خريطة طريق وظيفية مخصصة سيؤثر بشكل إيجابي على بحثك عن وظيفة وقرار انتك المهني؟

82 responses



5.3 Competitive Analysis:

5.3.1 Introduction

Competitive analysis is a process of examining and understanding the competition that a business faces. Its purpose is to gain insights into competitors' strengths and weaknesses, find market opportunities and threats, and guide strategic decision-making. By evaluating competitors' products, strategies, and market position, a competitive analysis helps a business develop a unique value proposition, differentiate itself, and position itself favorably in the market.

5.3.2 Competitor Identification

Competitive Analysis							
	Type	Key feature	User Interface	Pricing	Free Plan	Support	Global Reach
Career Insight		<ul style="list-style-type: none"> Job Market Analysis Skill Requirement Job growth personalized roadmap using (AI) 	Simple and easy-to-use	Fully Free, get revenue from commission	✓	Standard customer support ,response time varies	Focus in Egypt
Mentoria	Direct	<ul style="list-style-type: none"> Personalized career coaching resume review interview preparation job search assistance 	Modern and user-friendly, personalized focus.	Free trial, starts at \$99/month	✗	24/7 personalized support through various channels	Expanding globally, primarily English-speaking markets
Glassdoor	Direct	<ul style="list-style-type: none"> Company reviews salary information job listings Interview questions 	Simple and easy-to-use, company reviews focus.	Free, premium features for employers	✓	Standard customer support channels, response time varies.	Global presence, with a strong focus on the U.S. job market
LinkedIn	Indirect	<ul style="list-style-type: none"> Professional networking job searching company pages Professional development courses. 	Professional and sleek, networking focus.	Free version, premium from \$29.99/month	✓	Standard customer support channels, premium users may have priority.	Worldwide reach, particularly strong in professional sectors
Indeed	Indirect	<ul style="list-style-type: none"> company reviews Job searching salary information resume posting. 	Clean and straightforward, job search focus.	Free, sponsored job postings for employers	✓	Standard customer support channels, response time varies	Global job search platform, widely used internationally
Career vault	Indirect	<ul style="list-style-type: none"> company reviews Job searching Career advice interview preparation resume building. 	Simple and easy-to-use, job search focus.	Free trial, starts at \$29/month	✗	24/7 customer support, with priority for premium users	Expanding globally, with a focus on diverse markets
ZipRecruite	Indirect	<ul style="list-style-type: none"> company reviews Job searching employer reviews resume posting. 	User-friendly, job search and employer focus.	Free trial, starts at \$249/month	✗	Standard customer support channels, response time varies	U.S.-centric focus, expanding reach internationally

Figure 18



5.4 Risks and Mitigation Strategies

1- Data Quality and Availability

- **Risk:** Incorrect data could lead to poor analysis and unreliable job market predictions. (Data Scraping)
- **Mitigation:** Establish partnerships with reliable data providers to continuously validate and update data scraping mechanisms to ensure high-quality data. Like Data365 or LinkedIn API
 - This solution increases Cost
- **Mitigation:** update Scraping code continuously

2- Technical Challenges

- **Risk:** Complexities in integrating various technologies for web scraping, data analysis, could delay project milestones.
- **Mitigation:** Ensure team Data analysis team can do it. 🤔
- **Risk:** Dig data query led to delay in website.
- **Mitigation:** Need larger server

3- Security Vulnerabilities

- **Risk:** Potential data breaches could compromise user data and diminish trust in the application.
- **Mitigation:** Implement state-of-the-art security protocols, conduct regular security audits, and ensure compliance with global data protection standards.

4- User Adoption and Engagement:

- **Risk:** The application may not reach its intended audience or fail to engage users effectively.
- **Mitigation:** Develop a comprehensive marketing strategy to promote the application. Gather user feedback regularly to enhance the application based on user preferences and needs. (demo)

5- Technology Integration Risks

- **Risk:** Integrating various technologies (web scraping, data analysis, machine learning, and web development) may lead to compatibility issues or failures in achieving the desired operational efficiency.
- **Mitigation:** Utilize middleware and APIs that ensure compatibility across different platforms. Conduct integration testing phases to detect and resolve integration issues early in the development cycle.

6- Dependence on External Data Sources

- **Risk:** The project's reliance on external job portals for data could pose a risk if these sources change their layout, restrict access, or close down
- **Mitigation:** Develop agreements with multiple data providers to ensure a steady supply of data. Multiple source

7- Competitive Risks

- **Risk:** competitors might launch similar tools, reducing the project's market share.
 - Like: LinkedIn, Glassdoor
 - Educative: use ai to generate roadmap depend on user profile
- **Mitigation:** market research to understand user needs and preferences. Develop a unique value proposition and continually innovate to stay ahead of competitors.

8- Budget Overruns and Financial Risks

- **Risk:** The project may exceed its allocated budget due to unforeseen expenses in development, compliance, or marketing.

9- Technical Debt Risks



- **Risk:** Rapid development cycles may lead to compromises in code quality, resulting in technical debt that can hinder future enhancements or maintenance.
- **Mitigation:** Adhere to coding standards and conduct regular code reviews. Allocate time for refactoring and addressing technical debt in project schedules.

5.5 Cost Analysis

Cost Item	cost
Domain name registration and hosting space	\$15/year
secure Sockets Layer (SSL) certificate	\$30/year
AWS EC2 - t3.medium (General Purpose) 24 hours x 30 days	\$30
EBS Storage (100 GB) General Purpose SSD (gp2)	\$10/month
Data Transfer \$0.09 per GB Average 10	\$1/month

Total EC2 Costs (Monthly): \$56-\$60.

Domain Name Costs (Annually): \$19-\$35

Without calculating Market Cost Analysis

- Digital Marketing
- Content Creation
- Search Engine Optimization (SEO)
- Social Media Marketing
- Discounts and Coupons

5.6 Business Model Canvas

1- Customer Segments:

- **Primary Segment:** University students and recent graduates in Egypt, especially those pursuing careers in IT.
- **Secondary Segment:** Educational institutions and career counseling services looking to provide students with market insights.
- **Tertiary Segment:** Employers seeking skilled candidates.

2- Value Propositions:

- **For Students:** Personalized career paths, insights into in-demand skills, industry trends analysis, and job market dynamics.
- **Educational Institutions:** Data-driven insights to tailor curriculum development and align with market needs.
- **For Employers:** Access to a pool of candidates with skills aligned to industry demands.

3- Channels:

- **Online:** Website and mobile application for direct interaction.
- **Partnerships:** Collaborations with universities, career services, and job portals like WUZZUF and Indeed.
- **Marketing:** Digital marketing, social media, and educational webinars.

4- Customer Relationships:

- **Self-Service:** User-friendly interface for accessing personalized career information.
- **Automated Services:** Use of AI to generate insights and career roadmaps.
- **Community Engagement:** Forums, webinars, and interactive Q&A sessions.

5- Revenue Streams:

- **Subscription Fees:** Premium features for students and institutions.
- **Advertisements:** Targeted ads based on user activity and preferences.
- **Partnership Programs:** Collaborations with educational and career service providers.

6- Key Resources:

- **Technological Infrastructure:** Servers, databases, and AI models.
- **Human Resources:** Development team, data scientists, career experts, and customer support.
- **Data Sources:** Job portals, educational content providers, and market analysis tools.



7- Key Activities:

- **Data Collection and Analysis:** Web scraping, data mining, and continuous update of job market data.
- **Development:** Enhancing the platform with new features and maintaining existing ones.
- **Customer Support:** Assisting users with queries and troubleshooting issues.
- **Marketing and Outreach:** Engaging potential users through various marketing strategies.

8- Key Partnerships:

- **Educational Institutions:** Universities and colleges for integrating career insights into their systems.
- **Job Portals:** Websites like WUZUF and Indeed for real-time job market data.
- **Tech Companies:** For technological support and data integration (e.g., LinkedIn API).

9- Cost Structure:

- **Development Costs:** Salaries for developers, data scientists, and other technical staff.
- **Operational Costs:** Server maintenance, data storage, and bandwidth.
- **Marketing Expenses:** Digital marketing, SEO, content creation, and social media campaigns.
- **Compliance and Security:** Ensuring GDPR compliance and maintaining robust security measures.
- **Administrative Costs:** Office expenses, legal fees, and other administrative overheads.

The Business Model Canvas

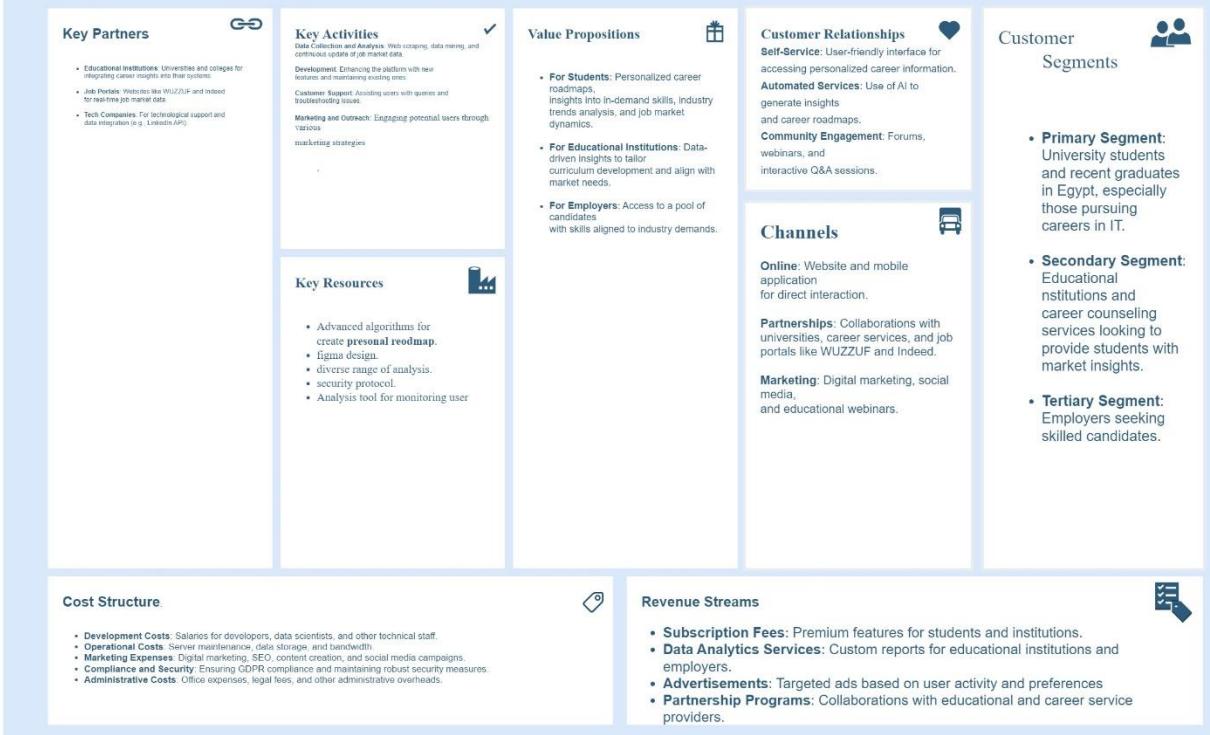
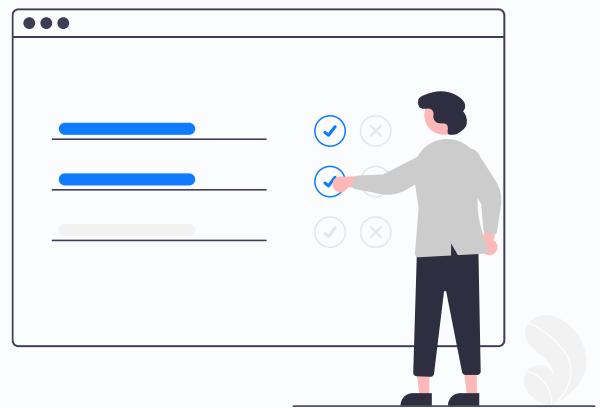


Figure 19



Chapter 6: Conclusion and future work

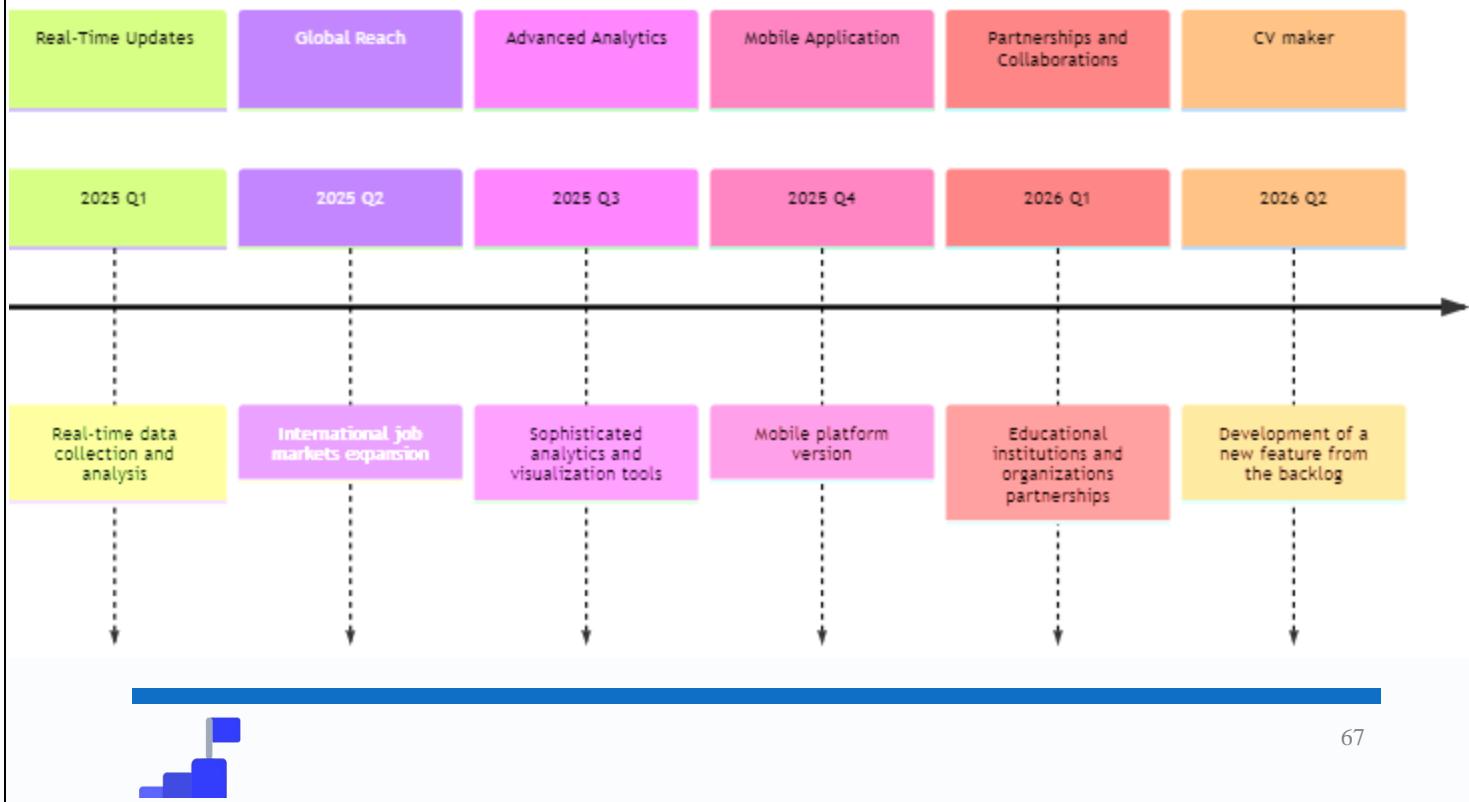


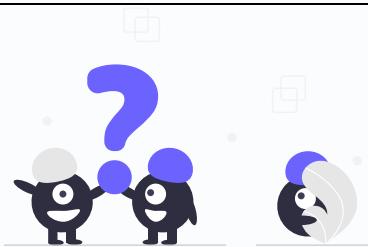
6.1 future work

While the Career Insight project has laid a solid foundation, there are several areas for future enhancement and expansion:

1. **Enhanced Personalization:** Further refinement of machine learning models to improve the accuracy and relevance of personalized career roadmaps. Incorporating user feedback to continuously adapt and improve the recommendations.
2. **Expanded Data Sources:** Integration of additional data sources, including more job boards, company websites, and industry reports, to provide a more comprehensive view of the job market.
3. **Real-Time Updates:** Implementing real-time data collection and analysis to ensure that insights and recommendations are always current and reflective of the latest market trends.
4. **Global Reach:** Expanding the platform to cover a wider geographic area, including international job markets, to assist users globally in finding suitable job opportunities and career paths.
5. **Advanced Analytics:** Develop more sophisticated analytics and visualization tools to help users understand market trends and their implications more deeply.
6. **Mobile Application:** Create a mobile version of the platform to provide users with access to carrier insights and guidance on-the-go.
7. **Partnerships and Collaborations:** Establishing partnerships with educational institutions, professional organizations, and companies to enhance the resources and support available to users.
8. **Working on a new feature:** from Backlog

Future Development Roadmap





6.2 Career Insight Platform FAQ

6.2.1 General Questions

Q1: What is Career Insight? Career Insight is a platform designed to help job seekers and students navigate the job market. It provides comprehensive analyses, predictive insights, and personalized career roadmaps to guide users in making informed career decisions.

Q2: How does Career Insight work? Career Insight uses advanced technologies like web scraping, data analysis, and machine learning to gather and analyze job market data. This data is then used to generate personalized career advice and roadmaps for users.

Q3: Who can benefit from Career Insight? The platform is beneficial for university students, recent graduates, and anyone looking to enter or advance in the field of computer science. It also helps educational institutions and career counseling services.

6.2.2 Platform Use

Q4: How do I sign up for Career Insight? To sign up, visit the Career Insight website and click on the "Sign Up" button. You will need to provide a valid email address and create a password. Follow the prompts to complete your registration.

Q5: What features does Career Insight offer? Career Insight offers several key features:

- Identification of in-demand skills
- Analysis of industry trends
- Personalized career roadmaps
- Insights into job market dynamics
- Secure and user-friendly interface

Q6: How do I access my personalized career roadmap? After logging in, navigate to your dashboard. From there, you can view and manage your personalized career roadmap, which is updated based on the latest job market data and your profile information.

6.2.3 Troubleshooting

Q7: I forgot my password. How can I reset it? Click on the "Forgot Password" link on the login page. Enter your registered email address, and you will receive instructions on how to reset your password.

Q8: I am having trouble signing up. What should I do? Ensure that you have entered all required information correctly and that your email address is unique. If the problem persists, contact our support team for assistance.

Q9: Why can't I access certain features? Some features are available only to registered and logged-in users. Ensure you are logged in with your account. If you still have issues, check if your subscription plan includes access to the desired features.

6.2.4 Data and Privacy

Q10: How does Career Insight ensure data accuracy? Career Insight partners with reliable data providers and continuously updates its data scraping mechanisms to ensure high-quality, up-to-date information.

Q11: Is my personal information safe with Career Insight? Yes, Career Insight follows strict security protocols to ensure the safety and privacy of your personal information. We use encryption and other industry-standard practices to protect your data.

Q12: Can I delete my account? Yes, you can delete your account by contacting our support team. Please note that this action is irreversible and will remove all your data from our system.

6.2.5 Technical Issues

Q13: What should I do if the website is not loading? First, check your internet connection. If the problem persists, try clearing your browser cache or using a different browser. If the issue continues, contact our support team for assistance.

Q14: How do I report a bug or technical issue? You can report bugs or technical issues by contacting our support team through the "Contact Us" section on the website. Please provide detailed information about the issue you are experiencing.

Q15: Is Career Insight compatible with all browsers? Career Insight is designed to work on most modern browsers. For the best experience, we recommend using the latest version of Google Chrome, Mozilla Firefox, Safari, or Microsoft Edge.

6.2.6 Advanced Features

Q16: Can I integrate Career Insight with other tools? Career Insight is designed to be flexible and may offer integrations with other tools and platforms in the future. Currently, it focuses on providing comprehensive job market insights and personalized career guidance within its own ecosystem.

Q18: How often is the job market data updated? Career Insight regularly updates its job market data to ensure users receive the most current and relevant information. The frequency of updates may vary depending on data sources and market conditions.



6.3 References

1. Similar website

- **LinkedIn**
 - **Website:** [LinkedIn](#)
 - **Description:** A professional networking site that also serves as a job search platform. It is a major competitor as it provides not only job listings but also company reviews, salary data, and professional networking opportunities. It's particularly relevant for understanding industry trends and employer needs.
- **Glassdoor**
 - **Website:** [Glassdoor](#)
 - **Description:** Known for its company reviews and insights, Glassdoor also offers job listings and salary reports. It's valuable for its user-generated content on company cultures and executive leadership, which can guide job seekers in their decision-making.
- **Indeed**
 - **Website:** [Indeed](#)
 - **Description:** One of the largest job search websites globally, Indeed aggregates listings from various sources, providing a comprehensive search engine for job seekers. It's crucial for analyzing market demand for specific job roles and skills.
- **Educative**
 - **Website:** [Educative](#)
 - **Description:** Provides interactive and text-based courses for software developers. Although not a direct competitor in job searching, it's relevant for your project as it helps users enhance their skills and prepare for tech industry roles, complementing your career roadmap feature.
- **Wuzzuf**
 - **Website:** [Wuzzuf](#)
 - **Description:** A leading job platform in Egypt, which is specifically relevant to your project's target market. Wuzzuf offers not only job listings but also insights into the local job market, which can be instrumental for tailored career guidance and market analysis.



- **Mentoria**
 - **Website:** [Mentoria](#)
 - **Description:** Mentoria is a career guidance platform that helps individuals discover their ideal career paths through personalized advice and interactive tools. The platform leverages assessments and expert consultations to provide users with insights into careers that best match their interests and abilities.
 - **Key Features:**
 - **Career Assessments:** Provides detailed assessments to help users understand their strengths and career preferences.
 - **Expert Consultations:** Offers one-on-one sessions with career experts to guide users through their career decision-making process.
 - **Career Resources:** Includes a wealth of articles, videos, and other resources to educate users about different careers.
 - **Personalized Roadmaps:** Generates customized career roadmaps based on assessment results and expert advice.

2. Online Documentation

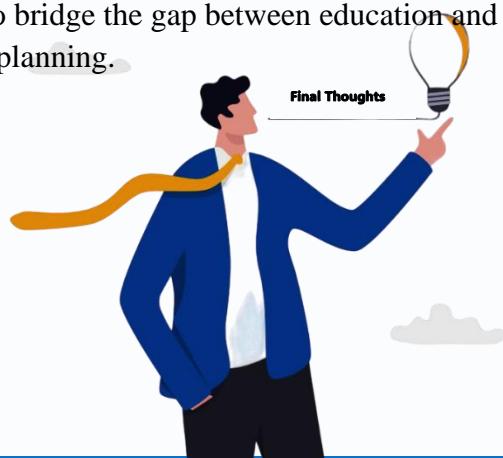
- **React Documentation**
 - **Official Resource:** [React](#)
 - **Description:** Provides comprehensive guides and tutorials on using React for building dynamic user interfaces, crucial for your project's front-end development.
- **Node.js Documentation**
 - **Official Resource:** [Node.js](#)
 - **Description:** Essential for backend development, this documentation offers insights into building scalable network applications in JavaScript.
- **Kubernetes Documentation**
 - **Official Resource:** [Kubernetes](#)
 - **Description:** Covers all aspects of container orchestration, which is key to managing the application's deployment, scaling, and operation.
- **Docker Documentation**
 - **Official Resource:** [Docker](#)
 - **Description:** Provides instructions on deploying applications inside containers which enhances portability and consistency across multiple development and release cycles.
- **Jenkins Documentation**
 - **Official Resource:** [Jenkins](#)
 - **Description:** Offers guidance on automating parts of the software development process, including build, test, and deployment, which is integral for implementing Continuous Integration/Continuous Deployment (CI/CD) pipelines.



- **MongoDB Documentation**
 - **Official Resource:** [MongoDB](#)
 - **Description:** Guides on using MongoDB, a NoSQL database, to manage document-oriented storage systems, which are vital for your project's data management needs.
- **Redis Documentation**
 - **Official Resource:** [Redis](#)
 - **Description:** Offers details on using Redis for in-memory data structure storage, which is used as a database, cache, and message broker.
- **OpenAI API Documentation**
 - **Official Resource:** OpenAI API Documentation: OpenAI API Docs
 - **Key Sections to Focus On:** Introduction: Offers an overview of what the API offers and its capabilities.
 - **Authentication:** Details the process of securing API keys and authenticating API requests.
 - **API Endpoints:** Describes the available endpoints, such as text generation, fine-tuning, and model selection.
 - **Fine-Tuning:** Explains how to train the models on your specific dataset to better meet your application's needs. This could be particularly valuable if your project involves personalized career insights and predictions.
 - **Best Practices:** Provides guidelines on efficient API usage, managing request rates, and minimizing costs.
 - **Troubleshooting:** Assists in resolving common issues and errors that may arise during API integration.

6.4 Conclusion

The Career Insight project represents a significant step forward in aiding job seekers and students to navigate the complex job market. By leveraging advanced technologies such as web scraping, data analysis, and machine learning, we have developed a platform that provides personalized career guidance and insights into labor market trends. This project has demonstrated the feasibility and effectiveness of using technology to bridge the gap between education and employment, enhancing employability and career planning.





A stylized illustration of a woman with long dark hair and a blue headband, wearing a blue polka-dot dress. She is sitting on a dark grey cloud with small blue spheres on it. Above her head is a large blue circle containing several smaller dashed diagonal lines. The background features a light blue gradient with a large orange-to-white diagonal shape and a white curved shape on the left.

summarizes

English summarizes:

Key Points

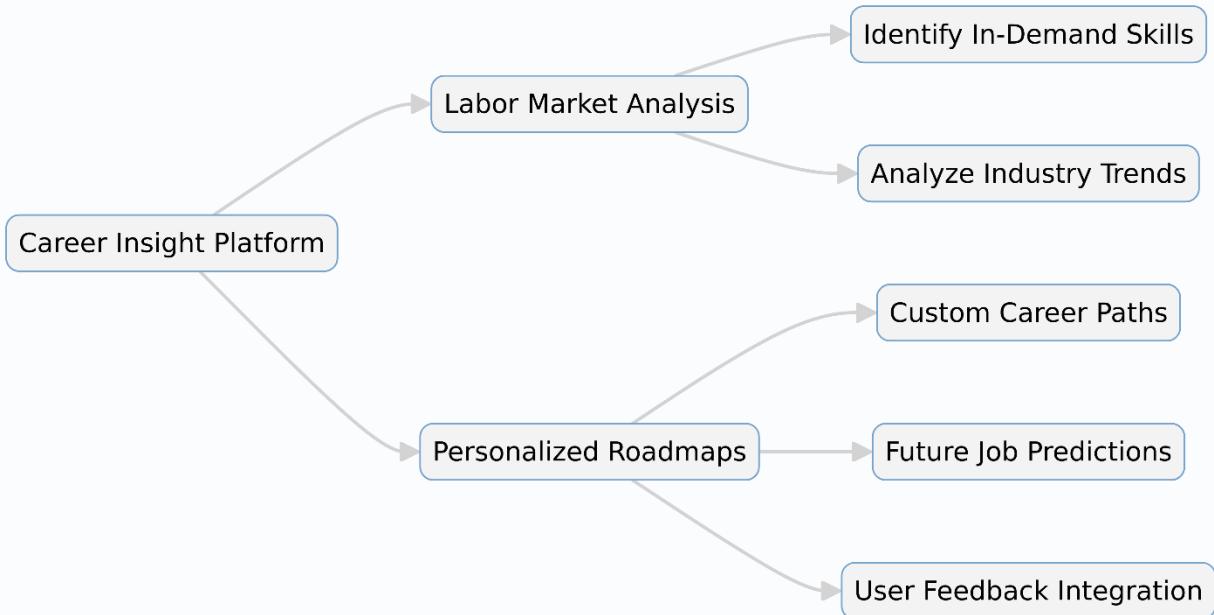
-  **Labor Market Analysis:** Provides users with clear insights into the IT job market.
-  **Personalized Roadmaps:** Creates customized career paths based on user data.
-  **Health Dimensions:** Reduces job-related stress by guiding users to suitable careers.
-  **Social Impact:** Enhances employment opportunities and community development.
-  **Economic Benefits:** Increases employability and individual earnings potential.
-  **Educational Impact:** Encourages continuous learning and skill development.
-  **Data Security:** Ensures user data is secure and follows strict guidelines.
-  **User-Friendly Interface:** Designed for ease of use, making navigation simple.
-  **Real-Time Data:** Continuously updates to reflect current job market trends.
-  **Collaboration Tools:** Uses Scrum methodology for efficient project management.

Summary

1. **Team Overview:** The project was managed by a team specializing in DevOps, data science, front-end and back-end development, network configuration, and visual design.
2. **Abstract:** The project focuses on labor market analysis, guiding individuals through the job market with insights into essential skills, experiences, and market dynamics.
3. **Platform Services:** Offers labor market analysis and generates personalized career roadmaps to aid users in the IT field.
4. **Motivations:** Aims to demystify job searching and empower users with relevant information for career decisions.
5. **Objectives:** Focuses on accurate data collection, insightful analysis, and creating a user-friendly platform for career guidance.
6. **System Functionality:** Uses Scrum methodology for development, ensuring adaptability and continuous improvement.
7. **Tools and Environment:** Utilizes software like Visual Studio Code, Jupyter Notebook, and frameworks like React and Node.js, with Docker for containerization.
8. **Business Model:** Targets university students and recent graduates, providing personalized career insights and partnering with educational institutions.



9. **Market Research:** Focuses on students in Egypt, aiming to expand to other regions with a comprehensive survey for user feedback.
10. **Future Work:** Plans to enhance personalization, expand data sources, implement real-time updates, and develop a mobile application.



Arabic summarizes:

رؤية مهنية - مشروع التخرج

يهدف المشروع، الذي يحمل عنوان "رؤية مهنية"، إلى مساعدة الأفراد في التقل في سوق العمل من خلال تقديم رؤى شاملة وجام البيانات المتكرر من المصادر عبر OpenAI حول اتجاهات سوق العمل ومعايير الصناعة. تستخدم المنصة نموذج الإنترنت لإنشاء خرائط طريق مهنية مخصصة والتتبُّع بسوق العمل المنظور.

الخاتمة

يهدف مشروع "رؤية مهنية" إلى تبسيط عملية البحث عن وظيفة من خلال تقديم تحليل مفصل لسوق العمل، مع التركيز على قطاع تكنولوجيا المعلومات. تقوم المنصة بإنشاء خرائط طريق مهنية مخصصة، مما يساعد المستخدمين على اتخاذ قرارات مستنيرة حول مساراتهم المهنية. يعطي المشروع أبعاد الصحة والاجتماعية والاقتصادية والعلمية من خلال تقليل الضغط المرتبط بالعمل، وتعزيز فرص التوظيف، وزيادة النمو الاقتصادي، وتشجيع التعلم المستمر. استخدم الفريق أدوات مثل React لتطوير منصة سهلة الاستخدام، مع ضمان أمان البيانات وتجربة مستخدم سلسة Docker وNode.js.

النقط الرئيسية

-  **تحليل سوق العمل:** يوفر للمستخدمين رؤى واضحة حول سوق وظائف تكنولوجيا المعلومات.
-  **خرائط طريق مخصصة:** ينشئ مسارات مهنية مخصصة بناءً على بيانات المستخدم.
-  **أبعاد الصحة:** يقلل من الضغط المرتبط بالعمل من خلال توجيه المستخدمين إلى وظائف مناسبة.
-  **تأثير الاجتماعي:** يعزز فرص التوظيف والتنمية المجتمعية.
-  **الفوائد الاقتصادية:** يزيد من قابلية التوظيف وإمكانية تحقيق الأرباح الفردية.
-  **تأثير التعليمي:** يشجع على التعلم المستمر وتطوير المهارات.
-  **أمان البيانات:** يضمن أمان بيانات المستخدم ويتبع إرشادات صارمة.
-  **واجهة مستخدم سهلة:** مصممة لتكون سهلة الاستخدام، مما يجعل التنقل بسيطاً.
-  **بيانات في الوقت الفعلي:** يتم تحديثها باستمرار لتعكس اتجاهات سوق العمل الحالية.
-  **أدوات التعاون:** تستخدم منهجية Scrum لإدارة المشروع بكفاءة.

الملخص

1. **نظرة عامة على الفريق:** تم إدارة المشروع من قبل فريق متخصص في DevOps ، علم البيانات، تطوير الواجهة الأمامية والخلفية، تكوين الشبكة، والتصميم البصري.
2. **الملخص:** يركز المشروع على تحليل سوق العمل، وتوجيه الأفراد من خلال سوق العمل برأي حول المهارات الأساسية، والخبرات، وдинاميكيات السوق.
3. **خدمات المنصة:** تقدم تحليل سوق العمل وتولد خرائط طريق مخصصة للمستخدمين في مجال تكنولوجيا المعلومات.
4. **الدافع:** تهدف إلى إزالة الغموض عن البحث عن وظيفة وتمكين المستخدمين بالمعلومات ذات الصلة لقراراتهم المهنية.
5. **الأهداف:** تتركز على جمع البيانات بدقة، وتحليل الرؤى، وإنشاء منصة سهلة الاستخدام للإرشاد المهني.
6. **وظائف النظام:** تستخدم منهجية Scrum للتطوير، مما يضمن التكيف والتحسين المستمر.
7. **الأدوات والبيئة:** تستخدم برامج مثل React، Jupyter Notebook ، Visual Studio Code ، Docker، مع Node.js لتوفير بيئات ثابتة.
8. **نموذج العمل:** يستهدف الطلاب الجامعيين والخريجين الجدد، ويوفر رؤى مهنية مخصصة ويتعاون مع المؤسسات التعليمية.
9. **أبحاث السوق:** تتركز على الطلاب في مصر، مع خطط للتوسيع إلى مناطق أخرى مع استطلاع شامل للحصول على ملاحظات المستخدمين.
10. **العمل المستقبلي:** يخطط لتعزيز التخصيص، توسيع مصادر البيانات، تنفيذ التحديثات في الوقت الفعلي ، وتطوير تطبيق المحمول.

