SRS document for final project:

AI-Scheduler

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1. Introduction

In this document we will describe our final project, the “AI-Scheduler”.
The AI-Scheduler is an intelligent system that will compute a work schedule for workers based on their roles, preferences, restrictions, etc.

1.1. Intended Audience and Intended Use

Our customers are companies and businesses that work in a shift system.
Our SRS document will be accessible by the product developers and the project moderator.

1.2. Product Scope

The product will save time and unnecessary preoccupation managing the employees’ shift schedule and make the shifts fair as possible.
Unlike other shift’s programs, the “AI-Scheduler” will learn the optimal work schedule for each worker and suggest it to them. The product will be marketed to companies and businesses that have poor shift management or an inferior product.

1.3. Definitions and Acronyms

The product may not be suitable for all company requirements because our system is general and not specific to each company's needs.

2. Overall Description

AI-Scheduler provides an easy and interactive way for both employers and employees to manage scheduling at work. This system already exists in the market. However, we are not going to renew it, we are building totally new software with different abilities of AI/ML. Our system uses machine learning to know the preference of the employers and to offer their preferred shifts. The AI-Scheduler system will analyze all essential data and automatically create a shift schedule for the upcoming week, thus saving precious time and hassle. Additionally, AI-Scheduler allows you to view, export and share your schedule with others and help to switch shifts between employees. The system will come in a form of user friendly web application that will make life easier for employers and employees and will result in a better working experience for everyone.

2.1 User Needs

Our primary and secondary users will be the employers and employees who will use the product on a regular basis daily, weekly or even monthly, it’s their own choice.

2.2 Assumptions and Dependencies

The more adapted we make our system and with more features, it might have an impact on our ability to fulfill the requirements or at least slow us. As long as we make our software more general all these factors will affect less.

Due to the fact we are building our product from zero and the software components, we won't be dependent on any external factors or reusing from another project.

3. System Features and Requirements

3.1 Functional Requirements

Employees:

- Login: user login page.
- Insert shifts: inserting new shifts (the page will display shifts due to the ML data).
- Delete shifts: deleting shifts.
- Offer shifts or swap shifts: employees can offer or swap shifts between each other and ask for approval from the manager.

Employers:

- Login: manager login page.
- Create shift schedule: creating a new shift schedule for next week using ML.
- Manage shifts: manager can approve offering or swapping shifts between employees, add and delete employees' shifts.
- Add a new employee: entering new users.
- Delete employee: deleting users.

3.2 External Interface Requirements

User Interfaces

Login Interface
In case the user is not registered yet, he can enter the required details and register.
The login system will ask the user to type his username and password. If the username or password fields are incorrect, an error message will occur.

Employee Control Panel
This control panel will allow employees to see their weekly\monthly shifts plans presented in tables, gives them the option to request a certain weekly\monthly shift schedule when needed by allowing them to edit the tables and submit the requests. When the requests are finalized, there won't be an option for changes until the next request session. The panel will also contain a personal info page where employees can see their personal project, describe their personal progress and leave notes.

Employer Control Panel
This control panel will allow employers to see the global weekly\monthly shifts schedule of all their workers presented in a table. It will allow them to manually make changes to these tables as they see fit and the ability to finalize the schedule so there won't be an option to make any more changes. In addition the panel will give them the ability to review all of their workers personal info and to see what they are currently working on.

Hardware Interfaces

Only the basic requirements of a computer system are needed to run the software, no other specific hardware is needed.

Software Interfaces

- Any standard internet browser that can view web pages
- Fully functional operation system

3.3 System Features

3.3.1 Shift Schedule Suggestion

The AI-Schedule will use a ML algorithm that will learn the cyclical's shift the employee chose when s\he fill up his\er shift board, and the systems will automatically suggest a shift board in the next time the employee will need to fill up the shift schedule, based on the previous shift boards and preference.

3.3.2 Workers Managing Site

The AI-Schedule will include a site that will allow the manager or team leader to manage and supervise the projects and tasks for each employee. The manager will be able to write notes, set deadlines, see the employee progressing, etc.

3.4 Nonfunctional Requirements

Error handling

The system will handle expected and unexpected errors in ways that prevent loss in information and long downtime periods.

Performance Requirements

The system shall accommodate a high number of users and board shift data without any fault.

Safety Requirements

System use shall keep user personal information secure.

Security Requirements

- System will use a secured database.
- Normal users can just read information, but they cannot edit or modify anything except their personal and some other information.
- System will have different types of users and every user has access constraints.