



Internship

Management Application

PREPARED BY

Hexaminds

Members: Sahli Nourchaine - Jaza Bacem - Ben khaled Haythem - Uwobikundiye
Dhiaeddine - Atallah Mohamed Anas - Dahmani Salem

Outline

I. Introduction

II. Sprint 1: Building the Foundation with Machine Learning

- * A. Existing Study (Part 1, Section 2)
- * B. Problematic Aspects - Issues (Part 1, Section 3)
- * C. Proposed Solution (Part 1, Section 4)
- * D. Functional and Non-Functional Requirements (Part 1, Section 5)
- * E. Use Case Diagram (Part 1, Section 6)
- * F. Class Diagram (Part 1, Section 7)
- * G. Revised Scenario with Automatic Redirection (Part 1, Section 8)

III. Future Development Roadmap

- * A. Spring-Angular Development (Sprints 2 & 3)
 - A. Introduction Jira (Part 1)
 - B. Implementation Details (Part 2)
 - Include separate sections for:
 - Admin Functionality (Part 2, Section 3)
 - Student Functionality (Part 2, Section 4)
 - Academic Supervisor Functionality (Part 2, Section 5)
 - Company Functionality (Part 2, Section 6)
 - Workshops Functionality (Part 2, Section 7)
 - Assigning Deadline Functionality (Part 2, Section 8)
 - Forum Functionality (Part 2, Section 9)
- * B. Data Mining Sprints (Part 3 Objectives 1 & 2)
 - A. First Objective: Sentiment Analysis (From Part 3, Section 1)
 - B. Second Objective: Internship Success Prediction (From Part 3, Section 2)
 - Data Mining Conclusion

IV. Conclusion

V. Reference Page

I. Sprint 1- Introduction

In the dynamic world of the 21st century, the close connection between technology and human progress has led to a significant shift known as digitalization. This global change goes beyond borders, affecting various sectors and changing the way our societies function. At the forefront of this transformation is the integration of artificial intelligence (AI), a powerful force that is reshaping industries, governance, and education worldwide.

The wave of digitization, driven by AI, has become a crucial part of countries' visions for the future. Nations around the globe are actively embracing the digital age, recognizing its potential to drive innovation, improve efficiency, and tackle complex societal challenges. As we explore this digital era, it's essential to grasp the profound impact of these technological advancements globally.

Education, a cornerstone of societal development, is also part of the ambitious global digitalization agenda. The integration of AI in educational frameworks reflects a forward-thinking approach to prepare students for the challenges and opportunities of the digital age. The digitalization of education goes beyond just adopting technology; it signifies a commitment to nurturing a technologically literate workforce capable of contributing meaningfully to a globalized knowledge economy.

In the broader context of global digitalization, we, as students and future engineers, find ourselves at the intersection of experiences that go beyond academics. With a wealth of experiences gained throughout our educational journey, we deeply understand the crucial role that technology plays in shaping our academic and professional paths.

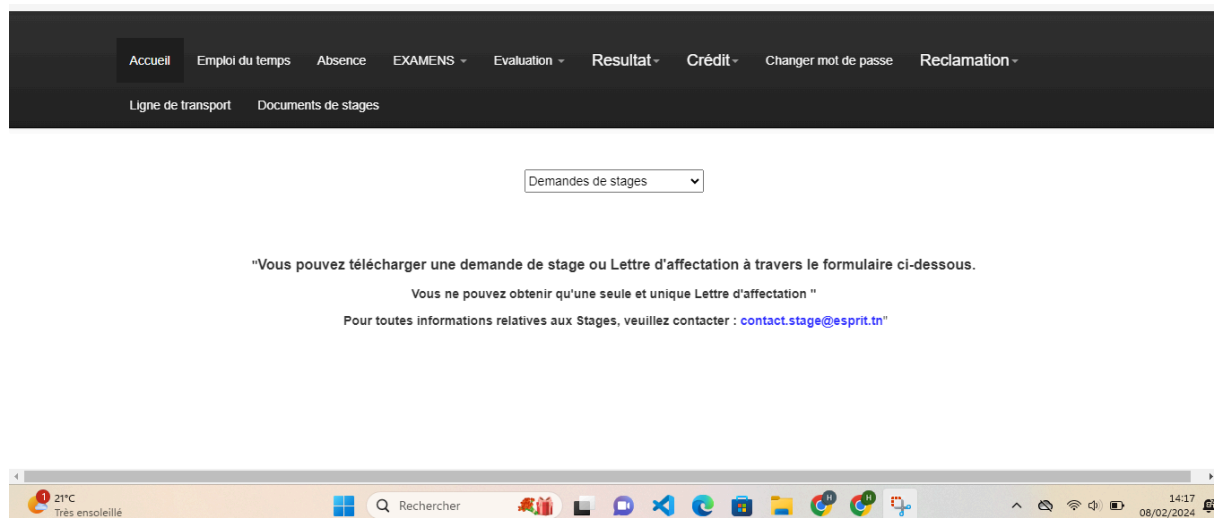
Against this backdrop, we are drawn to the realms of education and internships, recognizing their intrinsic value in shaping the next generation of professionals. As future engineers, we bring a nuanced perspective to the importance of digitizing internship processes, understanding that optimizing these experiences aligns seamlessly with the broader goals of educational institutions and the technological ambitions globally.

As we navigate through the complexities of our integration project, we do so with a profound appreciation for the global context of digitalization and the personal significance of our chosen focus. The following sections will delve into specific aspects of this overarching theme, examining existing systems, presenting challenges, and outlining our vision for a more digitally advanced and inclusive future in internship management within the educational sphere.

II. Existing Study

In the current state of our internship management system at Esprit, a conspicuous gap exists in the form of an independent internship management service within our university. When navigating the student portal on our website, the sole available functionality is a button to download the internship application form. However, it's noteworthy that this form is available exclusively in French, limiting accessibility for opportunities at non-French-speaking companies.

Esprit



Tunis, le : 08/02/2024

A l'aimable attention de la Direction Générale

Objet: Demande de Stage

Madame, Monsieur,

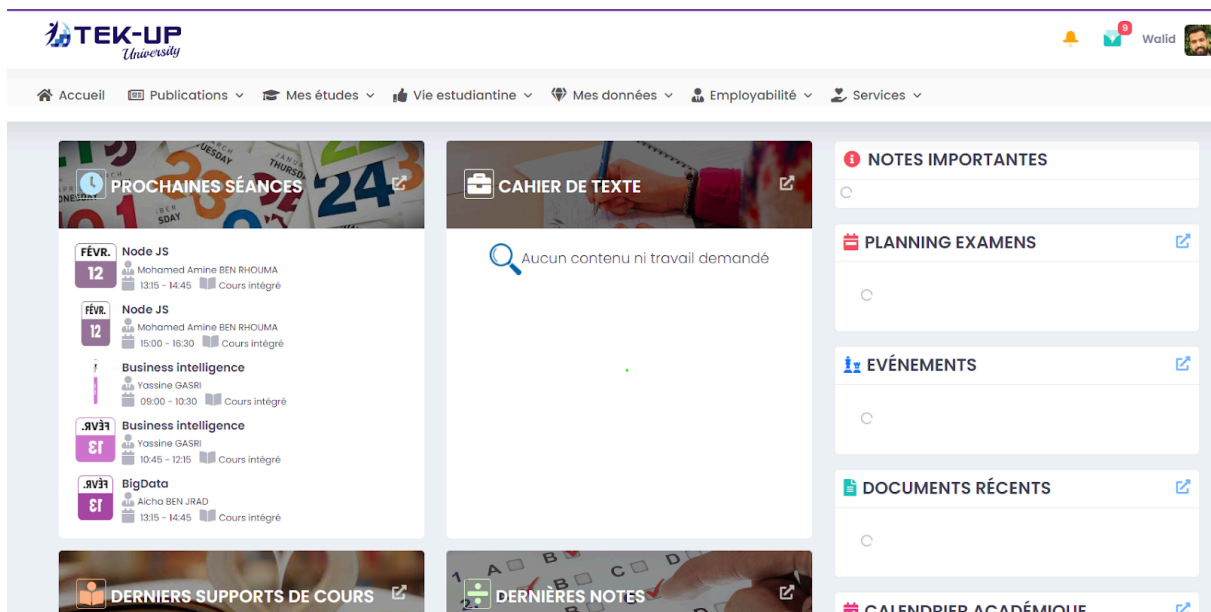
L'Ecole Supérieure Privée d'Ingénierie et de Technologies, ESPRIT SA, est un établissement d'enseignement supérieur privé ayant pour objet principal, la formation d'ingénieurs dans les domaines des technologies de l'information et de la communication.

Notre objectif consiste à former des ingénieurs opérationnels au terme de leur formation.

Tekup

The TekUp platform revolutionizes the student internship experience by offering a comprehensive suite of services that align closely with our project's goals. Its opportunity-seeking functionality stands out as a key feature, providing students with a user-friendly interface to explore and apply for diverse internship opportunities.

Much like our envisioned project, TekUp's emphasis on opportunity discovery underscores its commitment to bridging the gap between students and valuable internship experiences, thereby serving as a compelling model for our platform's development.



Filtre

Intitulé

Nature de stage

--Sélectionner--

Etablissement

--Sélectionner--

Encadrant

--Sélectionner--

🔍 Appliquer

🔄 Réinitialiser

Offres de stages

Aucune offre de stage n'est disponible !

Nouveau message

Discussions

Envoyés

Important

Blockchain Training-Pepolls

Nesrine ZLIMA (Personnel) • 3 p et 1 media 08/07/2024 10:24

📎

Dear Students,

Are you interested in Blockchain?

Our professional partner Pepolls are organising a training of blockchain which will be for 12 weeks.
The objective of the training is to enhance and improve the Blockchain knowledge and the qualifications to create applications and intelligent contracts.

To participate on the training you are required to fill in the below form

Link Form <https://forms.gle/wqHkZT2acJ5QuvB>

Deadline to complete the form 12.01.2024 at 12:30.

Répondre

Votre réponse ne sera visible que pour Nesrine ZLIMA.

Fichier Modifier Afficher Insérer Format Outils Tableau Aide

🔗 ↶ ↷ B I U ✎ Police système 12pt Paragraphe

Répondre ...
div 0 mots

Fichiers

+ Parcourir
Choisissez un fichier via le bouton Parcourir ou déposez un fichier ici.

III. Problematic Aspect - issues

The prevailing issue across various internship management systems lies in their decentralized nature and language limitations, impeding streamlined processes and hindering comprehensive oversight. This fragmentation not only introduces potential vulnerabilities but also limits inclusivity, highlighting the need for a more cohesive and technologically advanced solution across diverse educational institutions.

IV. Proposed Solution

Our envisioned solution involves the development and implementation of a centralized digital internship management platform, leveraging artificial intelligence and digital tools. This platform will streamline the entire internship process, from application to monitoring, enhancing efficiency and transparency.

By incorporating multilingual support, the solution addresses language limitations, ensuring accessibility for a diverse student population. The integration of AI will facilitate personalized insights, automated communications, and robust security measures, creating a comprehensive and user-friendly system adaptable to various educational institutions.

V. Functional Requirements & Non-Functional Requirements

Functional requirements are the specific features, capabilities, and behaviors that a system, product, or project must exhibit to meet the needs and expectations of its users. These requirements outline the fundamental functionalities that the system should perform, describing how it will respond to various inputs, user interactions, and scenarios.

- Account Management : Admin can create accounts for different users.
- Admin Dashboard : Admin can view statistics regarding overall engagement and success of internship

- Internship Validation & Document Check : Admin can validate internships and check documents for authenticity.
- Reject internships with over 10% plagiarism
- Company Blacklisting : Admin can blacklist certain companies
- Comment Moderation : Admin can moderate comments and reviews from students and partner companies.
- Internship Matching : Students can view internship offers matching their CV and specialty.
- Application Submission: Students can apply to internships directly through the platform, submitting their CV and required documents easily.
- Access to Workshops : Students can access workshops and webinars through the platform
- Feedback Submission: Students can post feedback about their internship experiences
- Report Validation : Academic supervisors can validate internship reports
- Communication : Academic supervisors can communicate with students and check their progress
- Expert Validation : Experts can validate reports and associated applications.
- Internship Posting : Companies can publish internship offers detailing roles and requirements.
- Application Review : Companies can review applications and select candidates.
- Company Dashboard : Companies can view statistics of students who applied as interns for the company

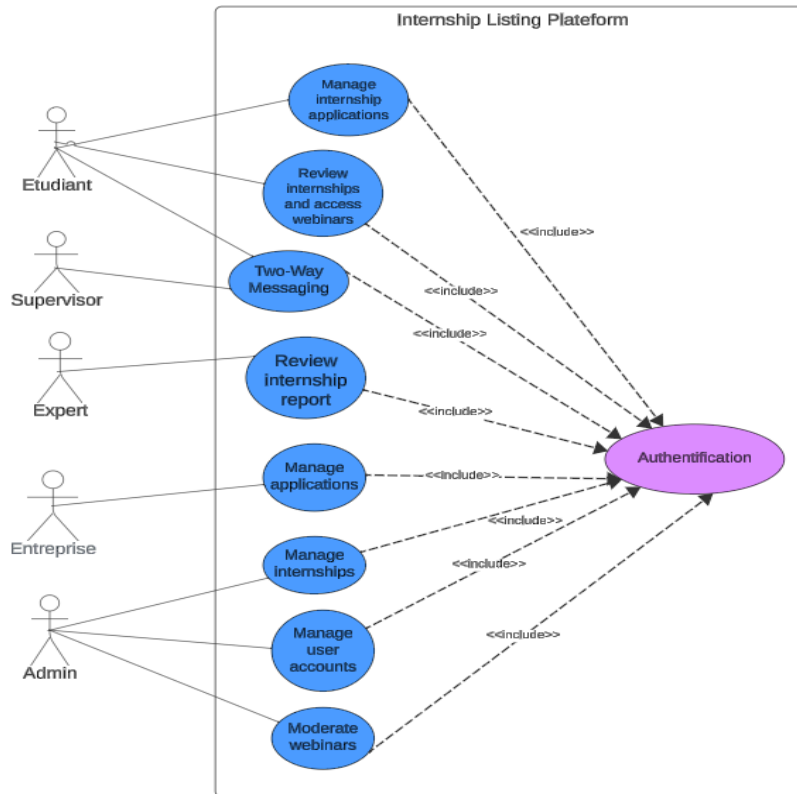
Non-functional requirements define the qualitative aspects and constraints that characterize the overall performance, reliability, and usability of a system without explicitly detailing its functionalities. These requirements address the "how" rather than the "what" of a project, specifying criteria that influence the system's behavior, rather than its specific features.

- Usability: A student looking for an internship is usually stressed and in a hurry to find one but struggles to do so, the application will provide him with an intuitive and user-friendly interface to enable students to navigate the application effortlessly and view relevant internship opportunities.
- Availability: Website should be always available because a lot of students will be connecting at around the same time and while searching for

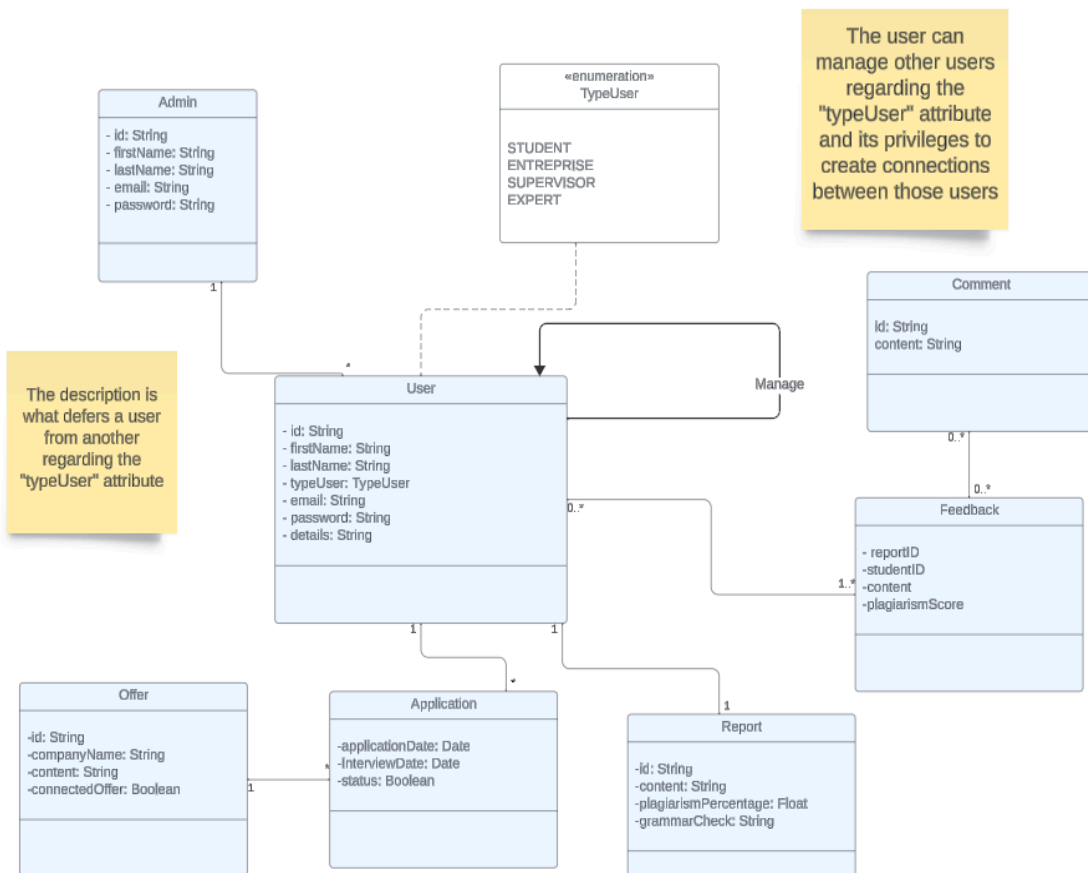
internships or submitting internship documents; therefore we need to ensure that the website is able to support multiple connections in order to find an internship quickly and apply without any technical issues.

- Performance: The application must be performant so that it provides high responsiveness to enable quick navigation within the web application thanks to features such as SPA.
- Multilingualism: Use translation or internationalization mechanisms to make app content localizable and adaptable to different languages. Make sure the documents of either the enterprise or Esprit are correctly translated for the students and check for linguistic consistency.
- Security: Protecting data is an important non functional requirement in the application in the way that the site contains sensitive information concerning user personal information and internship data which must be protected.
- Confidentiality: Implement strict data privacy policies to protect users' personal information. Limit access to sensitive data only to authorized users and apply appropriate access controls. This data could be confidential documents provided by the company or the university.
- Transparency: Provide clear and detailed information about internship roles and expectations to attract qualified candidates.

VI. Use case diagram



VII. Class diagram



VIII. Revised Scenario with Automatic Redirection

Logging In:

- You navigate to the login page of the internship app.
- You enter your credentials (username/email and password) and click on the "Login" button.

Automatic Redirection:(

- Upon successful login, the app automatically redirects you to your personalized dashboard, which serves as the statistics page.
- The dashboard displays various statistics.

View My Profile:

- Interested in how your profile appears to others, you navigate to your profile page by clicking on the profile option.
- The app loads your profile, showcasing your personal information and any other relevant details you've provided.
- You have the option to edit your profile if needed.

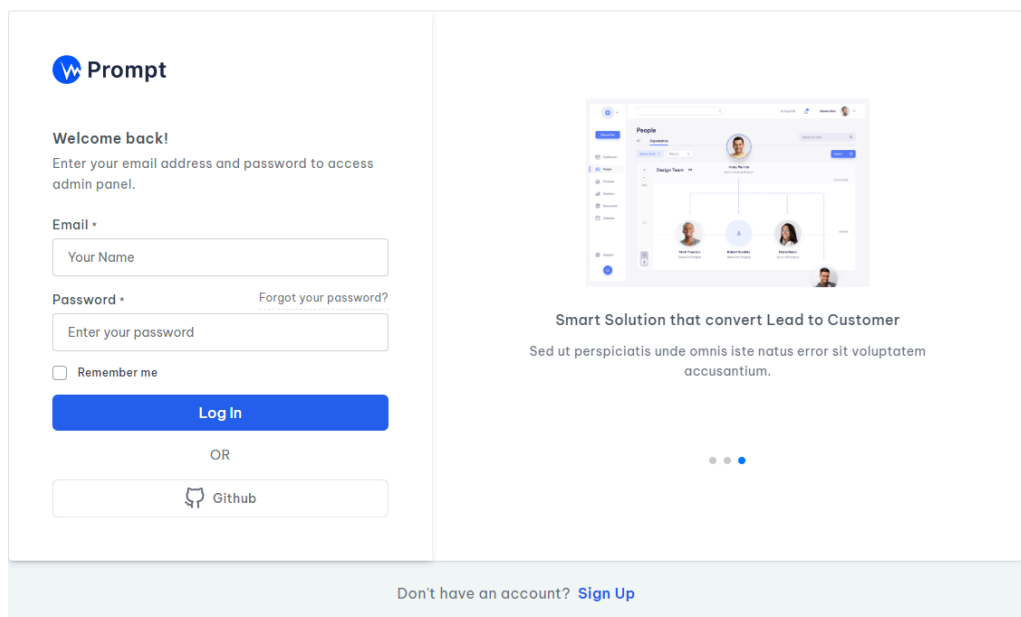
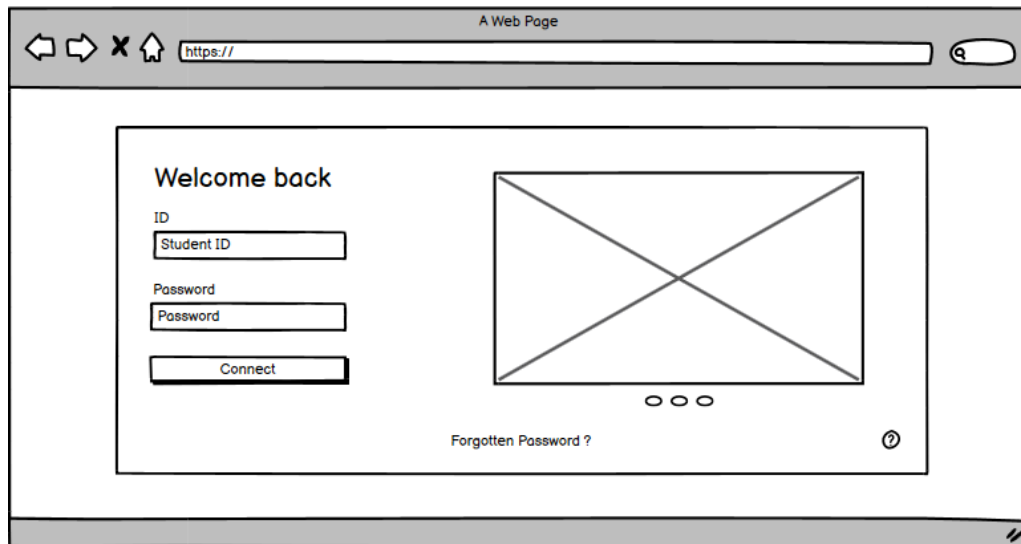
View Internships:

- As you're actively searching for internship opportunities, you decide to explore the available listings.
- Clicking on the "Internships" option, the app presents you with a list of available internships.
- Each listing includes details such as the company name, internship title, location, duration, requirements, and application deadline.
- You can filter and search for internships based on various criteria such as industry, location, duration, and company size to find the best matches for your interests and qualifications.

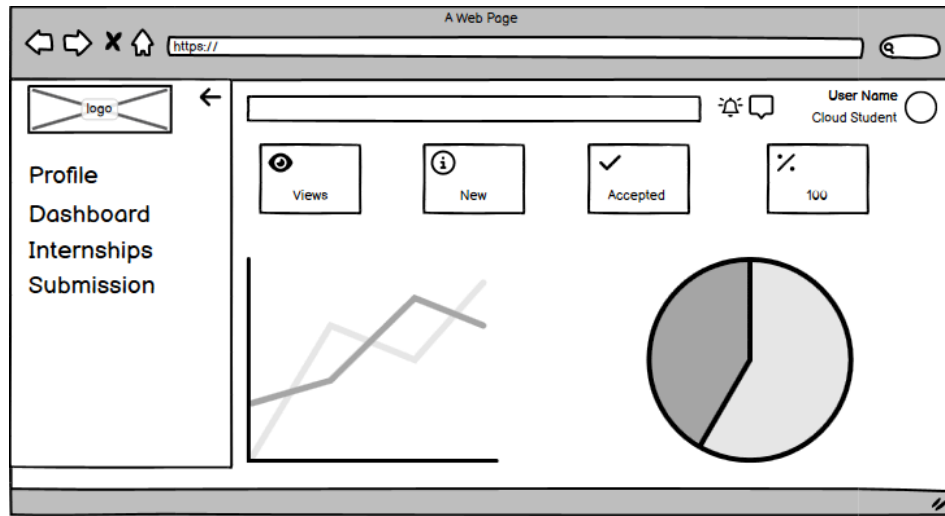
Submit Report:

- Having completed a task or milestone in your internship, you need to submit a progress report.
- You select the "Submit Report" option from the dashboard.
- You have the option to attach files or documents relevant to the report.
- After filling out the form, you submit the report, which is then recorded and potentially reviewed by your supervisor or mentor.

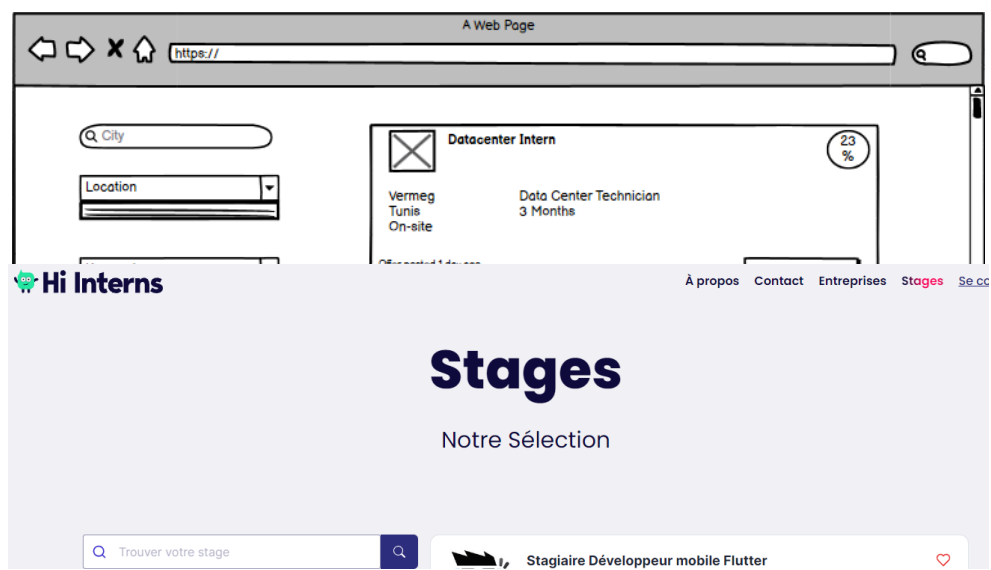
Login Page



Dashboard



Internship Opportunities



Account Settings

A Web Page

https://


Account Settings

Change your account settings

- Account
- Password
- Notifications

Account Information

Your Avatar



Name


Display Name

Email

Phone

Resume

Additional certifications, formation etc..

Prompt [Home](#) [Projects](#) [Tasks](#) [Reports](#) [Settings](#)  **Greeva N**
Admin


Account Settings

Change your account settings

- Account
- Password
- Notifications

Account Information

Your Avatar



Name*

Display name

Email*

Phone*

Profile Visibility

☒ Public ☐ Private

Making your profile public means anyone can see your information

Contact Info Visibility

☒ Public ☐ Private

Making your contact info public means anyone can see your email and phone number

Remove account your account you will lose all your data

Sprint 2-3: Spring-Angular Developement

I. Introduction Jira

In building our internship management platform, we've chosen to use Jira as our tool for keeping everything organized. Jira makes it easy for each team member to break down their tasks and clearly show where things stand. It's like our project headquarters where we can customize how we work and keep everyone on the same page. Jira's user-friendly features help us collaborate smoothly, and its real-time updates make it simpler for us to track our progress. This tool has really boosted our efficiency and made our development process more successful.

0 ticket sur 0 visible(s)

▼ Backlog (9 tickets sur 52 visible(s)) 4 5 0

■ KAN-19 As a student, I want to upload my resume to the platform.	RESUME AND DOCUM...	EN COURS ▼	
■ KAN-20 As a student, I want to modify my resume on the platform.	RESUME AND DOCUM...	EN COURS ▼	
■ KAN-21 As a student, I want to remove my resume from the platform.	RESUME AND DOCUM...	EN COURS ▼	
■ KAN-22 As a student, I want to create a resume with an actual template provided by the platform.	RESUME AND DOCUM...	EN COURS ▼	
■ KAN-26 As a student I want to find the most suitable internship opportunities with statistics showing the percentage match.	ADVANCED SEARCH FU...	À FAIRE ▼	
■ KAN-28 As a student I want to choose and apply to any internship I'm interested in.	ADVANCED SEARCH FU...	EN COURS ▼	
■ KAN-31 As a student, I can access and install files provided by the university.	RESUME AND DOCUM...	À FAIRE ▼	
■ KAN-122 As a student I want to upload required documents for the internship's opportunity	SEARCH FUNCTIONALITY	À FAIRE ▼	
■ KAN-123 As a student I want to modify documents uploaded for the internship	SEARCH FUNCTIONALITY	À FAIRE ▼	

+ Créer un ticket

▼ Backlog (5 tickets sur 52 visible(s)) 1 4 0

■ KAN-4 As an academic supervisor I want to check the internship journal by day and give a grade	ACADEMIC SUPERVISO...	EN COURS ▼	H
■ KAN-48 As an admin I can examine student documents	ADMIN VALIDATION F...	EN COURS ▼	H
■ KAN-54 As an academic supervisor I can assign grades	ACADEMIC SUPERVISO...	EN COURS ▼	H
■ KAN-57 as an admin , i can view internship reports submitted by students.	ADMIN VALIDATION F...	EN COURS ▼	H
■ KAN-76 As an academic coordinator I load in a list of teachers to the site	ACADEMIC COORDINAT...	À FAIRE ▼	H

+ Créer un ticket

▼ Backlog (4 tickets sur 52 visible(s)) 1 3 0

■ KAN-42 As a user I want to react on an exiting post	FORUM FEEDBACK SIM...	EN COURS ▼	AA
■ KAN-55 As a user I want to view posts with most interactions on the top	FORUM FEEDBACK ADV...	EN COURS ▼	AA
■ KAN-58 As a user I can remove my reaction on a post.	FORUM FEEDBACK SIM...	EN COURS ▼	AA
■ KAN-95 As user I want to receive notifications about interactions with my posts.	FORUM FEEDBACK ADV...	À FAIRE ▼	AA

+ Créer un ticket

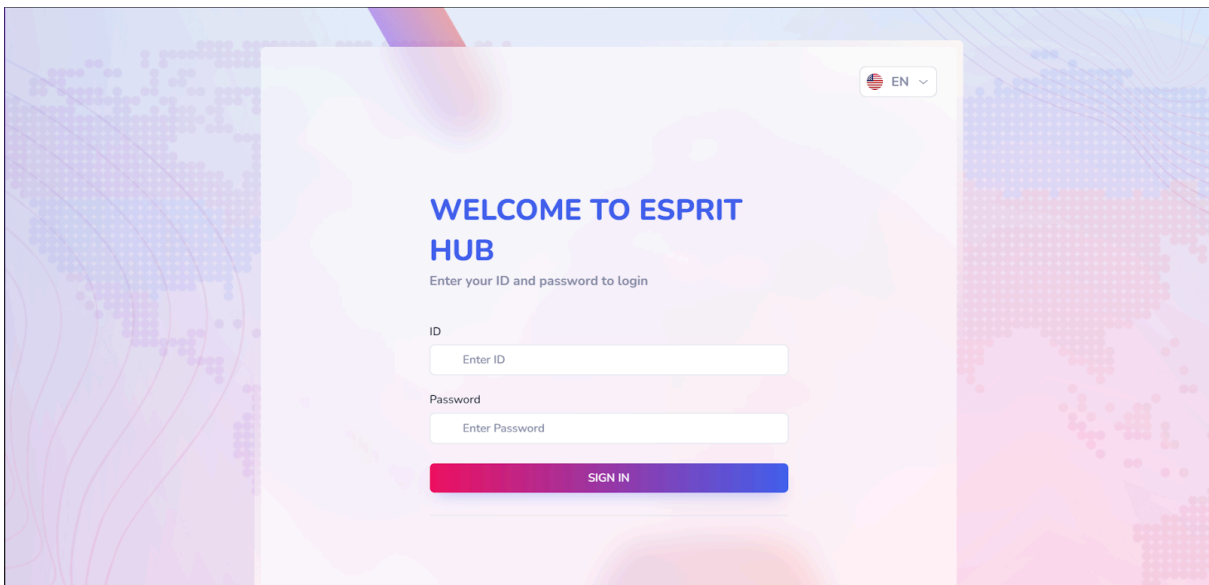
▼ Backlog

(7 tickets sur 52 visible(s))

II. Implementation

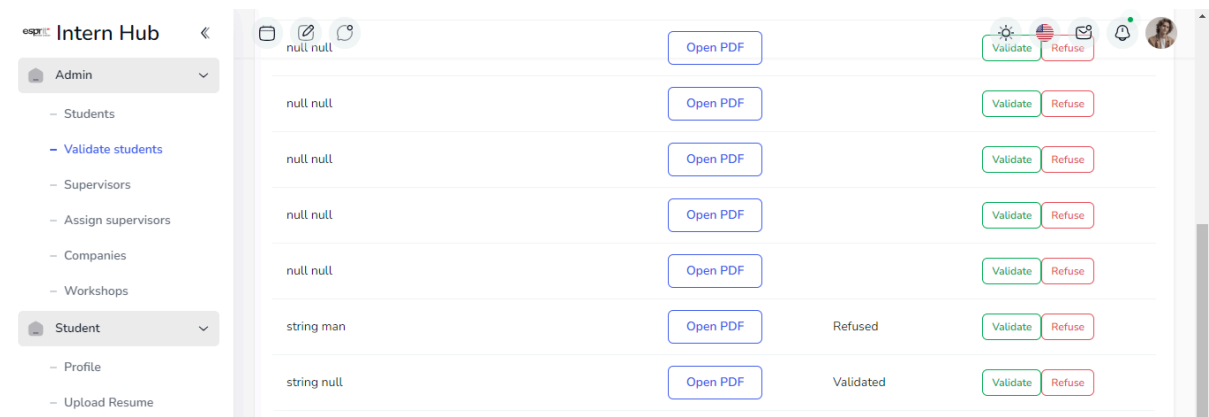
The internship platform project represents a collaborative endeavor aimed at revolutionizing the internship experience for students, academic supervisors, coordinators, administrators, and companies alike. Leveraging the latest advancements in technology, our project harnesses the power of Spring Boot for the backend and Angular for the frontend to create a dynamic and comprehensive ecosystem. With a focus on user-centric design principles and functionality, our platform aims to streamline every aspect of the internship process, from opportunity discovery and application to supervision, evaluation, and feedback. By providing a seamless and intuitive interface coupled with powerful backend capabilities, our project seeks to foster meaningful connections between students and employers while facilitating academic excellence and professional development. As we embark on this journey, our vision is to empower individuals

and organizations to navigate the internship landscape with ease and efficiency, ultimately shaping the future of talent acquisition and career advancement.

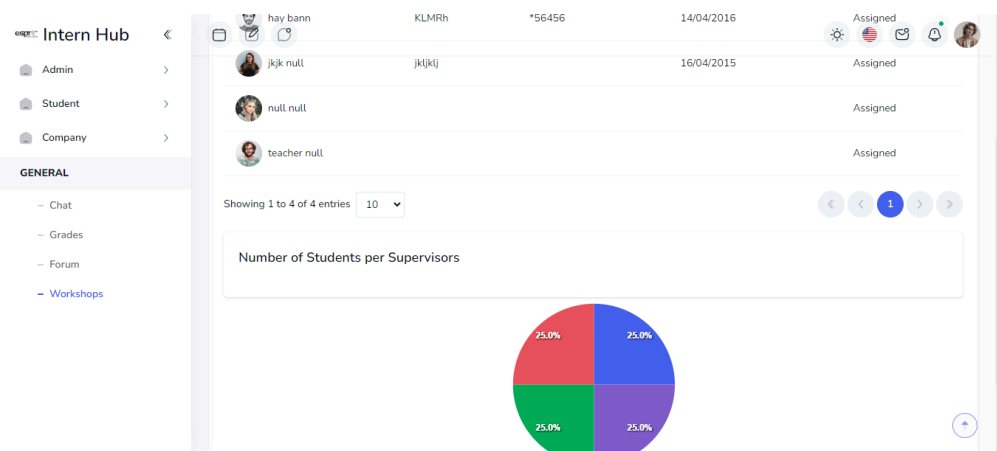


Admin Functionality:

As an integral part of the internship platform's administration, the role of an administrator is paramount in ensuring the smooth operation and efficient management of all platform functionalities. With our implementation utilizing Spring Boot for the backend and Angular for the frontend, administrators wield powerful tools to orchestrate various tasks seamlessly. Employing Spring Security within the backend architecture, we have meticulously crafted a robust system for user authentication and authorization, fortified with role-based access control (RBAC) mechanisms. Through Angular's dynamic and responsive frontend interfaces, administrators can effortlessly create user accounts and tailor permissions according to organizational hierarchies, ensuring optimal control over platform accessibility.

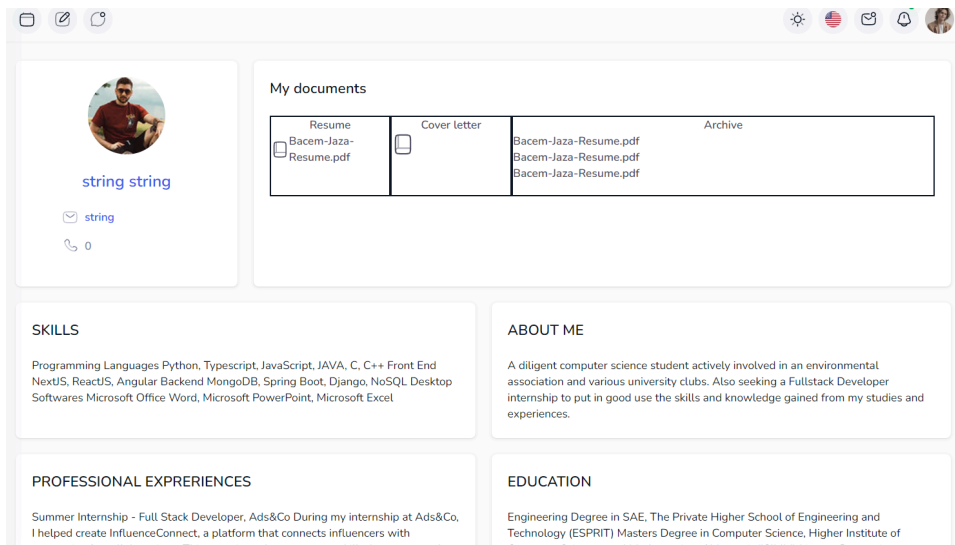


Moreover, our utilization of Spring Boot's advanced features facilitates the implementation of a secure password reset process, guaranteeing the confidentiality and integrity of user credentials. By leveraging Angular's versatile form components, administrators can seamlessly guide users through the password reset procedure, enhancing user experience and minimizing potential security vulnerabilities. Additionally, Spring Boot's data processing capabilities are harnessed to streamline internship validation procedures and manage associated documents effectively. With Angular's intuitive data visualization tools, administrators gain valuable insights into internship placement statistics and user engagement metrics, empowering data-driven decision-making and strategic planning.

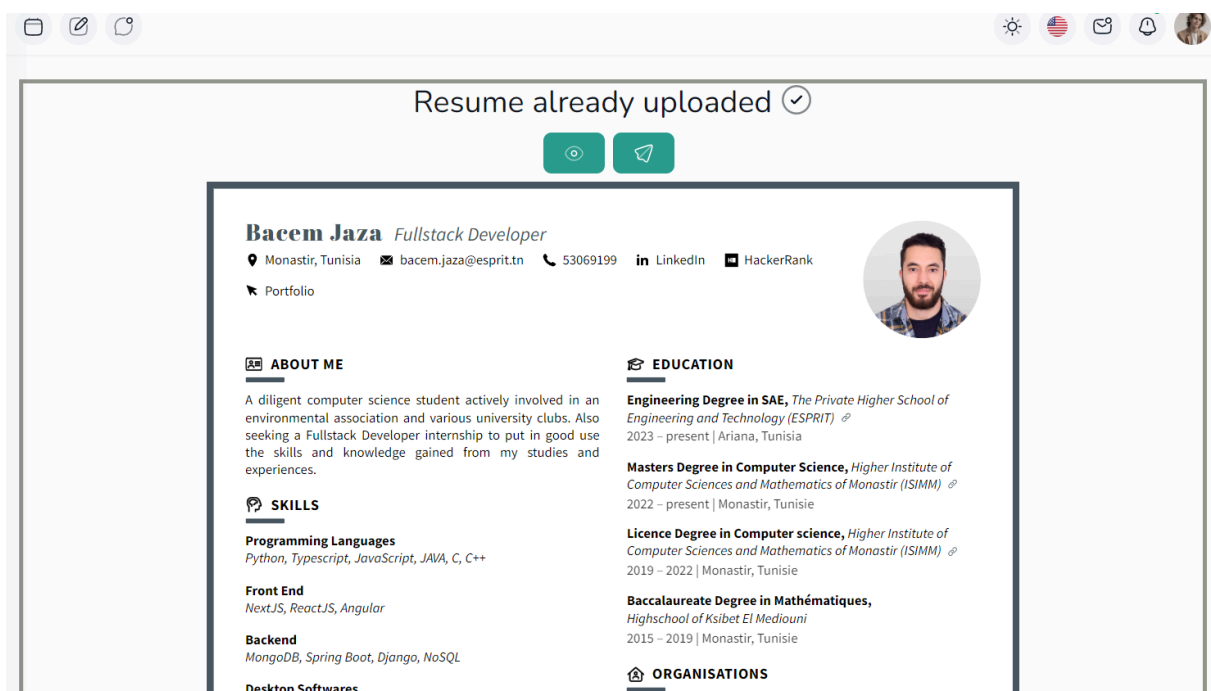


Student Functionality:

For students navigating the internship platform in pursuit of professional development opportunities, our implementation harnesses the combined power of Spring Boot and Angular to provide a comprehensive and user-centric experience. Through Angular's dynamic frontend interfaces, students can effortlessly manage their resumes, utilizing Spring Boot's RESTful APIs for seamless data retrieval and manipulation. Angular's reactive architecture enhances the user experience, facilitating swift navigation and interaction with platform features. Leveraging Spring Boot's robust backend capabilities, we have implemented advanced search functionalities, empowering students to explore internship opportunities tailored to their interests and skillsets effectively.

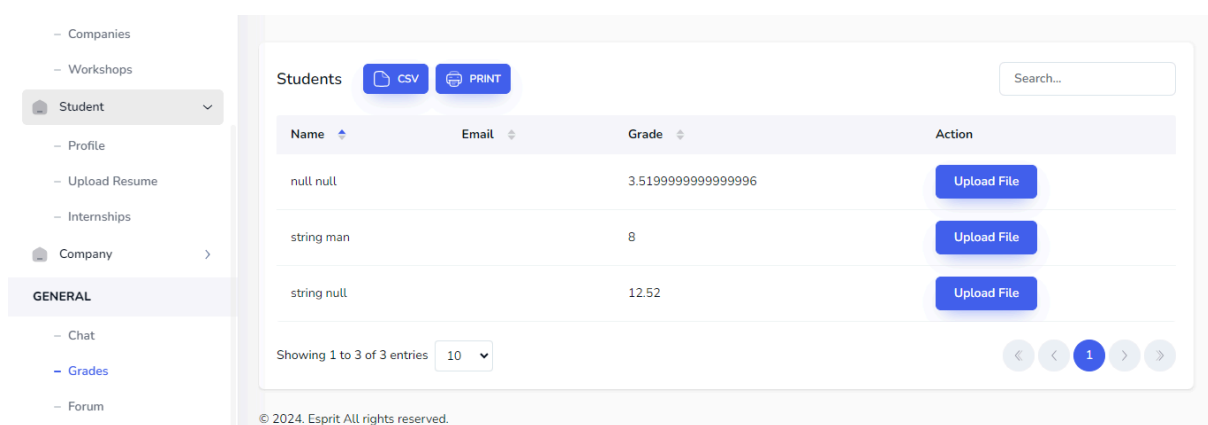


Furthermore, the integration of Angular's real-time notifications and feedback submission forms ensures timely communication and active participation among students. Spring Boot's data processing capabilities facilitate the automation of document verification processes, providing students with prompt updates on verification status. Additionally, through Angular's versatile components, students can access a diverse array of learning materials, enhancing their skillsets and professional competencies. Overall, our implementation prioritizes user-centric design principles, delivering a seamless and intuitive experience for students seeking to navigate the internship landscape and advance their career aspirations.



Academic Supervisor Functionality:

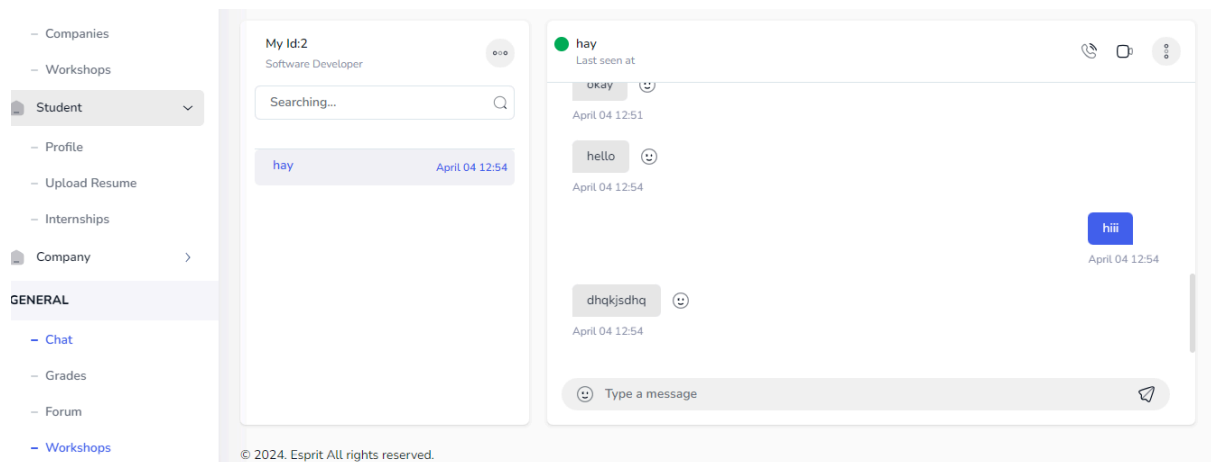
Academic supervisors and coordinators play a pivotal role in facilitating student progress and fostering effective communication between students and potential employers. With our implementation leveraging Spring Boot for the backend and Angular for the frontend, academic stakeholders benefit from a comprehensive suite of functionalities tailored to their needs. Through Angular's intuitive interfaces, academic supervisors can seamlessly view internship journals submitted by students, utilizing Spring Boot's data processing capabilities for efficient data retrieval and visualization. Moreover, Angular's dynamic components enhance teacher assignment and resource management, enabling academic coordinators to optimize educational workflows and allocate resources effectively.



Furthermore, our utilization of Spring Boot's advanced data handling features enables academic supervisors to export student grades and access analytics on internship placements and student performance. By harnessing Angular's real-time collaboration tools, academic stakeholders can facilitate seamless communication and coordination, fostering a conducive environment for student learning and professional development. Additionally, with Angular's versatile data visualization capabilities, academic supervisors gain valuable insights into student progress and internship placement trends, empowering informed decision-making and strategic planning. Overall, our implementation prioritizes user experience and efficiency, equipping academic supervisors and coordinators with the tools they need to support student success and academic excellence.

A basic chat service integrated into the academic institution's website offers a direct and efficient communication channel between academic supervisors and students. This feature allows students to easily reach out to their supervisors for guidance,

feedback, or clarification on academic matters. With simple functionalities such as direct messaging, file sharing, and real-time notifications, students can quickly connect with their supervisors from any device with internet access. This enhances collaboration, fosters a supportive learning environment, and ensures that students receive timely assistance when needed.



Company Functionality:

For companies seeking to engage with the internship platform and connect with potential interns effectively, our implementation harnesses the combined power of Spring Boot and Angular to deliver a seamless and intuitive user experience. Through Angular's dynamic frontend interfaces, companies can effortlessly publish internship offers and evaluate candidate applications, utilizing Spring Boot's robust backend architecture for secure data management and processing. Leveraging Angular's responsive design principles, companies can access analytics and

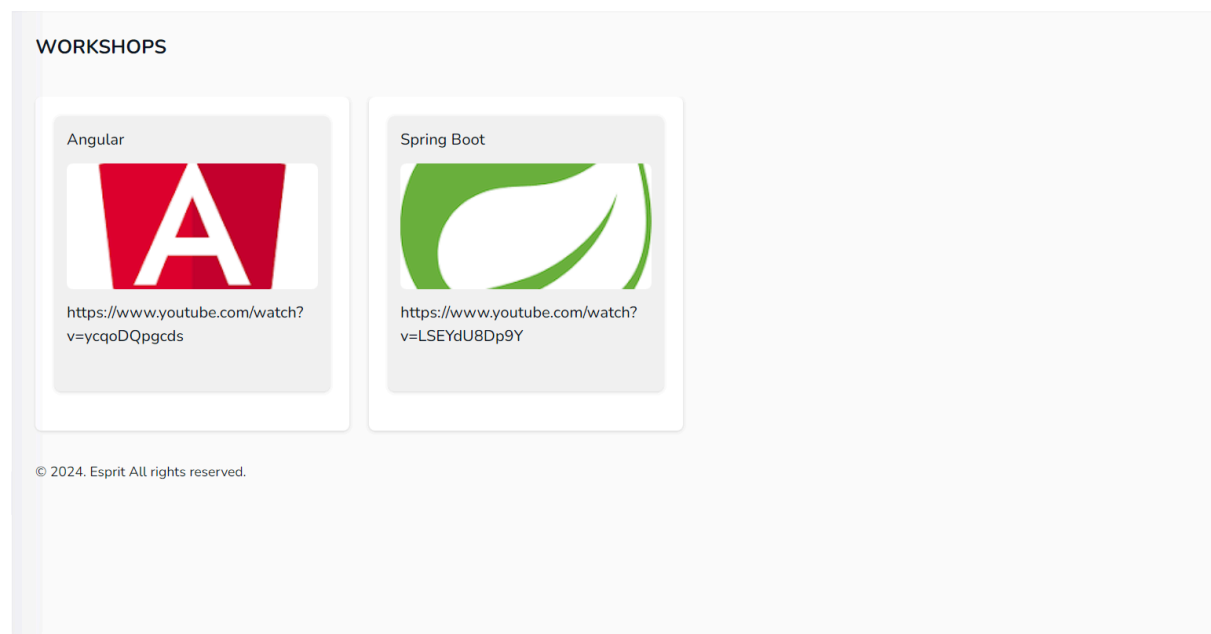
predictive insights on student applications and engagement, empowering informed decision-making and strategic planning.

Moreover, Spring Boot's advanced security features ensure the confidentiality and integrity of data, safeguarding companies' proprietary information and ensuring compliance with data privacy regulations. With Angular's versatile data visualization tools, companies gain valuable insights into candidate profiles and internship placement trends, enabling them to identify the most suitable candidates for their organizational needs effectively. Additionally, our implementation prioritizes scalability and performance, ensuring that companies can seamlessly navigate the platform and engage with potential interns without encountering

technical constraints. Overall, our implementation empowers companies to streamline their hiring processes and connect with top talent, driving organizational growth and success in the dynamic internship landscape.

Workshops Functionality:

In our internship platform project, administrators play a crucial role in facilitating the growth and development of students by creating workshops. These workshops are designed to provide students with valuable insights, skills, and knowledge that are essential for their professional journey. Administrators carefully curate the workshop content, ensuring it aligns with the latest industry trends and requirements. The workshops cover a wide range of topics, including resume building, interview preparation, networking, personal branding, and professional etiquette. Through these workshops, administrators aim to equip students with practical tools and strategies that will enhance their employability and give them a competitive edge in the job market. By empowering students with valuable resources and guidance, administrators contribute to their overall academic and career success, fostering a culture of continuous learning and professional growth within the internship ecosystem.



Assigning deadline Functionality:

In our internship platform project, administrators play a pivotal role in ensuring the smooth progress of internships by assigning deadlines for uploading reports. These deadlines serve as important milestones for students, encouraging them to stay organized, focused, and accountable throughout their internship experience. Administrators carefully consider the duration of internships and the nature of the projects involved to determine appropriate deadlines. By setting clear and realistic deadlines, administrators create a sense of structure and urgency, motivating students to complete their reports in a timely manner. This not only facilitates efficient communication and evaluation but also cultivates a sense of responsibility and discipline among students. By adhering to the assigned deadlines, students demonstrate their commitment to their internship responsibilities and contribute to the overall success of the internship program. Administrators closely monitor the progress and compliance of students, providing necessary guidance and support to ensure that deadlines are met and reports are submitted in a timely fashion, thereby fostering a culture of accountability and professionalism.

Manage Deadlines for Reports

Create and Affect Deadline

Manage Deadlines

All Deadlines

DESCRIPTION	DATE
test	May 10, 2024
non	Apr 26, 2024

Select a Deadline

Class:

All classes

Affect Class

Specialty:

Enter specialty

Affect Specialty

Offer Type:

Enter offer type ID

Affect Offer Type

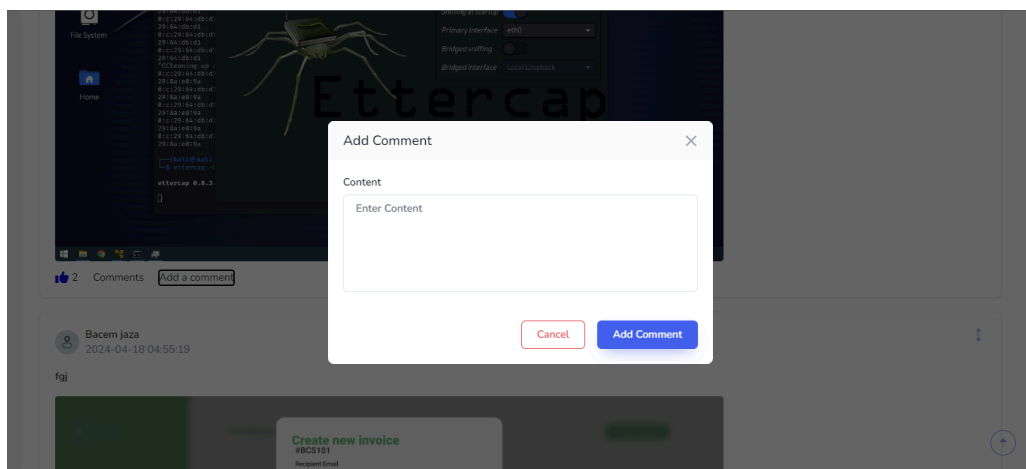
Stage ID:

Enter stage ID

Affect Stage

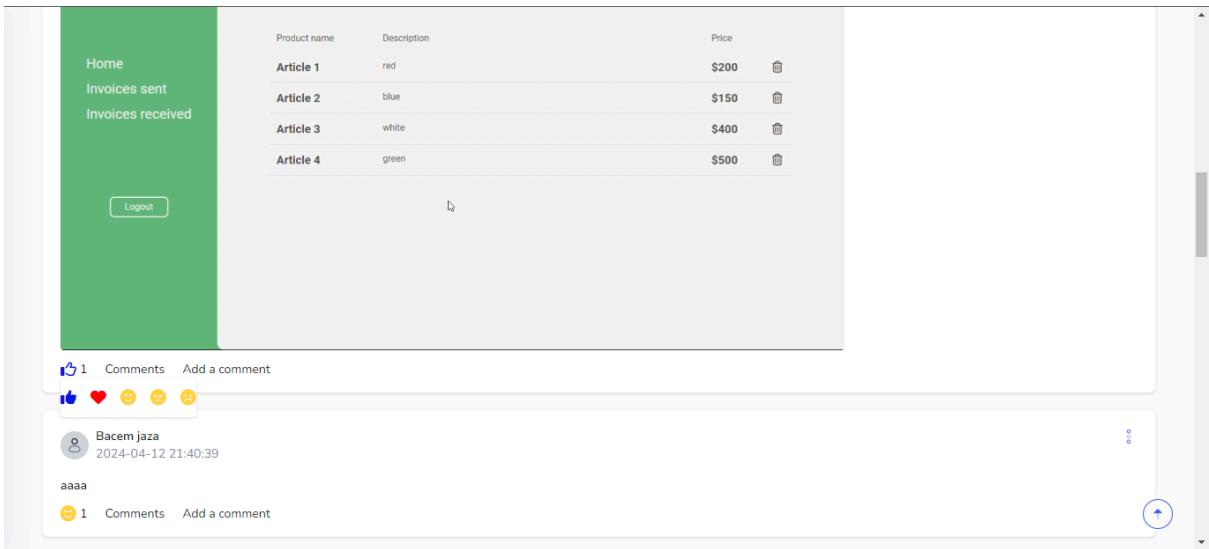
Forum Functionality:

The implemented functionality in our application/website allows users to seamlessly create and share engaging posts with images, while also providing a code generation feature. This enhanced feature set aims to optimize the user experience and promote efficient content sharing. Users can now effortlessly upload images of their choice and pair them with corresponding text posts, resulting in visually appealing and captivating content. The system effectively manages the storage and display of these images, ensuring a smooth and uninterrupted user experience. In addition, the code generation feature generates unique codes for each post, enabling users to easily reference and share their content with others. These codes serve various purposes, including direct linking to specific posts and facilitating tracking and analytics. By incorporating these functionalities, our application/website empowers users to express their creativity while providing them with a convenient means to manage, showcase, and distribute their content effectively.



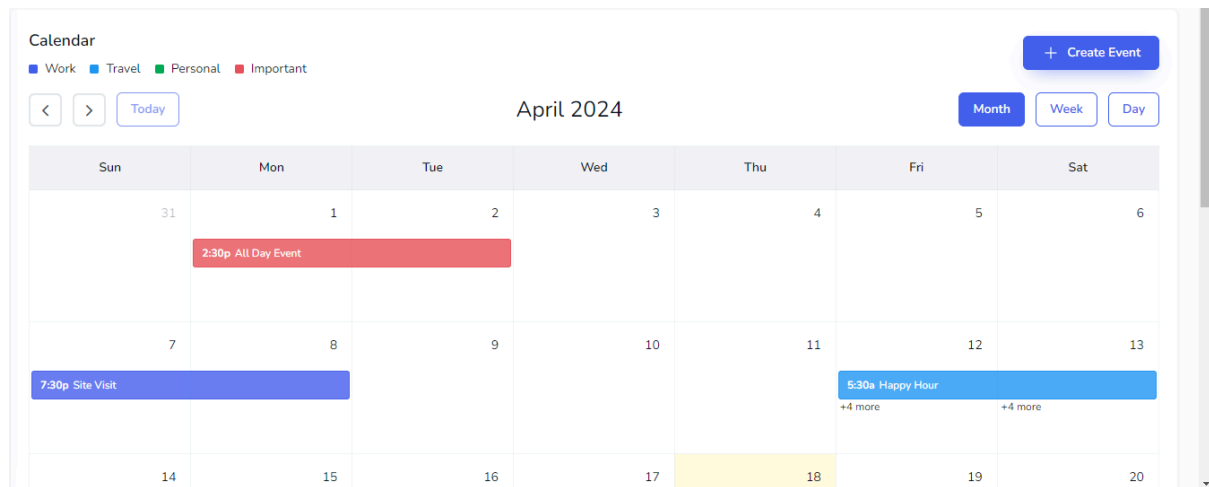
The newly implemented comment functionality in our application/website allows users to actively engage and interact with posts shared by others. With this feature, users can easily add comments to any post, fostering meaningful discussions and promoting a sense of community within the platform. By providing a user-friendly interface, individuals can express their thoughts, opinions, and feedback on specific posts. The comment section ensures that conversations remain organized and easily accessible, enabling users to follow discussions and reply to comments seamlessly. This functionality enhances user engagement and promotes a collaborative environment where individuals can share their perspectives and connect with like-minded individuals. By incorporating this comment feature, our application/website fosters a dynamic and interactive user experience while

encouraging a vibrant community of users to actively participate in conversations surrounding shared content.



Our application/website now incorporates a versatile multi-reaction system for posts, enabling users to express a wide range of emotions and opinions with a single click. This feature enhances user engagement by providing a more nuanced and expressive way to interact with content. Users can now choose from a diverse set of reactions, such as like, love, laugh, wow, and more, to convey their sentiments towards a post. This multi-reaction system adds depth and richness to the user experience, allowing individuals to share their thoughts and reactions in a more personalized and meaningful manner. By implementing this feature, our application/website fosters a sense of inclusivity and encourages users to engage actively with the content, promoting a vibrant and interactive community. Furthermore, the system accurately tracks and aggregates the reactions, providing valuable insights into the popularity and impact of each post. Overall, the multi-reaction system enhances user satisfaction and encourages deeper engagement with the shared content, enriching the overall user experience within our application/website.

Share



Our application/website now incorporates a comprehensive and feature-rich calendar system, allowing users to seamlessly manage and organize their events and reminders. With this enhanced functionality, users can effortlessly add events or reminders to specific dates or even define a range of days for their scheduling needs. The calendar provides a user-friendly interface that enables individuals to navigate through different months, weeks, and days with ease. By selecting a particular date or a range of days, users can input event details, such as the title, time, location, and any additional notes or descriptions. The system efficiently stores and organizes these entries, ensuring that users have a clear overview of their scheduled events and reminders. Furthermore, the calendar system incorporates alerts or notifications to remind users of upcoming events or approaching deadlines, ensuring they never miss an important occasion. This robust and versatile calendar functionality empowers users to effectively manage their time, stay organized, and efficiently plan their activities, ultimately enhancing their productivity and contributing to a seamless user experience within our application/website.



Sprint Data Mining CRISP-DM

Primary Objective: Sentiment Analysis

1. Business Understanding Rather than focusing solely on the content of comments, sentiment can be analyzed in the same way that a business gauges customer satisfaction. Just as analyzing spoken language trends can reveal valuable insights, classifying comments as positive, negative, or neutral can provide crucial information. This allows us to

identify areas where students are satisfied and those where they may have concerns, which will ultimately allow us to improve their experience.

2. Data Understanding

Our dataset comes from forum internship comments. It contains 3 elements: a unique ID per comment, the content of the comment, and a unique ID for the user. No data is missing and all fields are filled in. However, this data only applies to the forum and user IDs do not reveal their motivations. Additionally, the sentiment of the comments is not indicated and requires analysis. The amount of data depends entirely on the comments left in the forum.

3. Data Preparation

Data preparation consists of several steps:

- **Tokenization:** Break the sentences into a list of tokens, i.e. individual words.
- **Stop word removal:** Remove common words that don't have much meaning for the specific topic you're analyzing (e.g., "the", "a", "is"). This helps to focus on the keywords that reveal more about the themes discussed in the comments.
- **Lemmatization:** Reduce variations of the same word according to its grammatical function (e.g., "walk", "walking", "market") to its common root, the "lemma" ("walk" in all three cases). This helps the topic modeling algorithm to group words with similar meanings, even if they appear slightly differently.
- **Bag-of-words conversion:** Transform the preprocessed text into a numerical representation for the algorithm. Imagine a bag where each word is an item. Each unique word becomes a "key" in a dictionary. The "value" associated with each key is the number of times that word appears in the entire set of comments.

4. Modeling

To analyze the general sentiment expressed in the comments, we used two machine learning techniques: K-Nearest Neighbors (KNN) and Support Vector Machines (SVM). KNN classifies each comment based on the sentiment of its nearest neighbors in the training data. This approach is efficient and easy to implement. The SVM, on the other hand, creates a hyperplane that best separates positive and negative comments in the training data. This method aims to maximize the margin between classes, which can lead to better generalization when analyzing unseen comments.

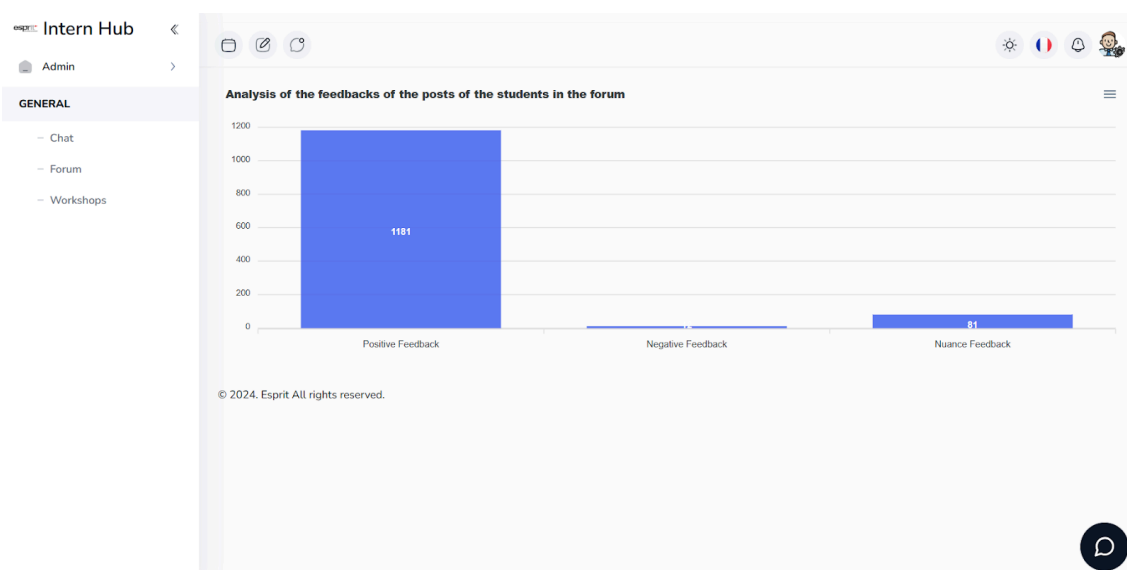
5. Evaluation

While KNN and SVM are both valid options for sentiment analysis of our internship forum comments, the best choice depends on the size of the data and the desired level of interpretation. For very large datasets, we can experiment with both and choose the most

accurate model. For smaller datasets or if understanding why comments are classified in a certain way is important, KNN may be slightly easier to interpret. However, if capturing the nuances of user sentiment is crucial, exploring SVMs with appropriate kernels could be beneficial.

We found that SVM was the most effective for this sentiment analysis task.

6. Deployment After using the algorithms, we integrated the work into our site. We found that the majority of comments are positive with a minority negative and some that are neutral.



Second Objective: Acceptance Probability

1. Business Understanding

In the competitive internship market, it is essential to effectively match users to increase their satisfaction and the credibility of the platform. The main objective is to develop a predictive model that determines the probability of a user obtaining an internship through the platform. This model aims to allow the platform to proactively support users who may have difficulty finding an internship and to improve the overall user experience by adapting the platform's recommendations and support services.

2. Data Understanding

This dataset includes information on 1000 fictitious users. Each user is identified by a unique ID and has a randomly generated first name. Each user's level ranges from 1 to 5, and they may have completed an internship (0 for no, 1 for yes). In addition, each user may

have a certificate (0 for no, 1 for yes). The number of posts for each user is between 50 and 150. Users have randomly generated addresses, and each user has an application number between 1 and 100. Finally, each user is associated with a user ID of the form "USR" followed by a number between 200 and 1000.

3. Data Preparation

To achieve these results, the data preparation phase followed several steps:

- **Conversion of the "application_nbr" column:** If this column was initially represented as a string, it was transformed to be usable in classification algorithms.
- **Normalization of the number of posts:** The values in the "posts_nbr" column were normalized using the min-max normalization method. This means that each value was scaled between 0 and 1 based on the minimum and maximum value of the column. The formula used is:

$$\text{normalized_posts} = \frac{\text{posts_nbr} - \text{min_posts}}{\text{max_posts} - \text{min_posts}}$$

where min_posts is the minimum value of "posts_nbr" and max_posts is the maximum value of "posts_nbr".

- **Removal of the "First_name" column:** This column was removed from the dataset because it was not necessary for the classification analysis.

After performing these data preparation steps, the data was used to train two classification models: a decision tree and a random forest. The performance of these models was then evaluated using metrics such as precision, recall, and F1 score, which gave the results you obtained.

4. Modeling

We presented the objective of developing a predictive model to estimate the probability of an internship success for a user. Two machine learning models were implemented and evaluated: decision tree and random forest.

- **Decision Tree:** A decision tree is a supervised machine learning model that uses a tree structure to make decisions and predictions. It is built by recursively dividing the data based on specific criteria until each leaf of the tree represents a prediction class. Decision trees are simple to interpret and visualize, making them a popular choice for classification problems like predicting internship success.

- **Random Forest:** Random forest is an ensemble machine learning model that combines multiple decision trees to achieve better overall performance. Each decision tree is trained on a random subset of the data and with a random subset of the features. The final predictions of the random forest are obtained by aggregating the predictions of all individual trees. Random forest is robust to overfitting and can handle problems with large and high-dimensional datasets.

5. Evaluation

After preparing the data for analysis, we used two classification models: a decision tree and a random forest. The performance of these models was evaluated using metrics such as precision, recall, and F1 score. For the decision tree, we obtained an overall accuracy of 47.33%, with accuracy scores of 54% for class 0 and 40% for class 1. The recall was 49% for class 0 and 45% for class 1. For the random forest, the overall accuracy was 49%, with accuracy scores of 56% for class 0 and 42% for class 1, and recalls of 51% for class 0 and 46% for class 1. These results indicate a moderate performance of the models, with room for improvement.

Data Mining Conclusion

This project has explored the potential of machine learning and sentiment analysis to enrich a platform that connects students with internships. By integrating a predictive model for internship success and a sentiment analyzer for the forum, the platform now offers a more comprehensive and personalized user experience.

Key contributions of this project:

- **Improved user support:** Predicting internship success allows for the identification of at-risk students and the provision of targeted support to increase their chances of success.
- **Better understanding of user needs:** Analyzing forum sentiment helps to identify user concerns, expectations, and suggestions, facilitating the improvement of the platform and the services offered.
- **Data-driven decisions:** Leveraging data from machine learning models and sentiment analysis enables more informed and relevant decisions to be made for the development of the platform.

Overall, this part of the project demonstrates the potential of artificial intelligence to improve the user experience and optimize the operation of a platform that connects students with internships. By leveraging data and exploiting it intelligently, the

platform can play a crucial role in student success and the achievement of their professional goals.

Project Conclusion :

In conclusion, the internship platform project represents a culmination of innovation, collaboration, and dedication to enhancing the internship experience for all stakeholders involved. Through the integration of Spring Boot and Angular, we have created a robust and user-friendly platform that addresses the diverse needs of students, academic supervisors, coordinators, administrators, and companies. Our project not only streamlines the internship process but also fosters a supportive and inclusive environment for learning, growth, and professional development.

By leveraging advanced technologies and prioritizing user-centric design principles, we have established a foundation for facilitating meaningful connections between students and employers while promoting academic excellence and career advancement. From resume management and internship search functionalities to event management and analytics-driven decision-making, our platform offers a comprehensive solution that empowers individuals and organizations to navigate the internship landscape with confidence and efficiency.

As we reflect on the journey of developing this project, we are proud of the milestones we have achieved and the impact we have made in reshaping the future of internship management. Moving forward, we remain committed to continuous improvement and innovation, striving to further enhance the platform's capabilities and deliver even greater value to our users. Together, we are shaping a brighter future for the next generation of talent and paving the way for a more collaborative and impactful internship ecosystem.

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