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SCUOLA DI INGEGNERIA INDUSTRIALE
E DELL'INFORMAZIONE

Requirements Analysis and Specification Document

STUDENTS&COMPANIES

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1 | Introduction

A. Purposes and Goals

A.1. Purpose

Internships provide students with a valuable opportunity to apply their skills in real job environments while enabling companies to connect with fresh talent. However, the process of finding and securing internships can be challenging for both parties.

Students&Companies (S&C) is a platform designed to facilitate this connection throughout the internship process. It allows students to match their preferences with available opportunities, ensuring internships align with their experiences and skills. Companies can specify project requirements to attract suitable candidates.

The platform supports both students and companies in two phases: recommendation and selection. During the recommendation phase, it utilizes keyword searches and statistical analysis to assess internship information. Students can search for internships and receive notifications about appealing opportunities, while companies can publish offers and get alerts when student CVs match their criteria. Once mutual interest is established, the selection phase begins, where the platform assists with interviews and finalizes the process. It also monitors the internship journey, providing feedback and enabling direct communication to address any questions. Additionally, the universities of the students can oversee the process to unsure the process is going smoothly.

A.2. Goals

[G1] All unregistered users must be able to create an account on the platform using their specific email address.

[G2] Students must be able to upload their CVs on the platform, containing their skills, experiences, preferences, and other relevant information.

[G3] Students must be able to search for available internship offers on the platform based

on their preferences, using a simple keyword search.

[G4] Companies must be able to publish internship offers on the platform, specifying the requirements and job descriptions.

[G5] Students must be able to receive notifications when internships that they may be interested in become available.

[G6] Companies must be able to receive notifications when a student's CV matches their internship offer.

[G7] Students must be able to receive recommendations of companies based on statistical analyses of their profiles and the needs of companies.

[G8] Companies must be able to receive recommendations of students based on statistical analyses of students's profiles and their needs.

[G9] Students must be able to proactively apply for internships they are interested in.

[G10] Companies can select students based on their CVs and other profile information.

[G11] Companies must be able to set up the interview process with the students who have been selected.

[G12] During the interview process, students must be able to respond to the company's questions through questionnaires or other communication tools.

[G13] During the interview process, companies must be able to collect the students' responses.

[G14] Companies must be able to send the results of the interviews to the students.

[G15] Students can accept or reject the offer after receiving the interview results.

[G16] Students and companies must be able to view all feedback and suggestions related to internship experiences.

[G17] Students and companies must be able to write feedback and suggestions regarding their internship experiences.

[G18] Students and companies must be able to communicate with each other through the platform regarding all aspects of the internship process.

[G19] Universities must be able to monitor the internship process to track any events.

B. Scope

B.1. Scope

Students&Companies (S&C) aims to provide the best matching service between students and companies for internships. The platform will be available to students, companies, and universities.

If it is their first time using the platform, Students looking for internships can create an account using their educational institution's email and select their university from a list of the ones that collaborate with the platform. After creating an account, they need to fill out their profiles with keywords that describe their skills, experiences, and preferences. To complete their profiles, they must also upload their CVs. Otherwise they can log in to the platform using their credentials.

The universities associated with the students through their educational emails will be notified about the students' registration on the platform. The system will then add the registered students to the university's list, allowing the universities to monitor their internship activities.

Companies wishing to announce internship opportunities can create an account on the platform, if they do not already have an account. They need to provide the necessary information for the internship announcement such as the job description, requirements, and the number of interns needed etc. Companies can also specify the keywords that describe the skills they are looking for in students.

The platform will use the keywords in the students' profiles and the companies' internship announcements, along with historical feedback and information collected from previous internships, to recommend the best matches for both parties. Students will receive notifications about recommended internships, and companies will be alerted when existing students with matching CVs meet their needs.

Once students apply for the offers they are interested in, the companies will receive the applications and can select the students they wish to interview. The platform will assist companies in setting up the interview process and will allow them to record and store students' responses using the platform. Students will be able to respond to companies' questions through the tools or channels provided.

At the end of the interviews, companies can send the results to the students. Upon receiving the results, students can decide whether to accept or reject the offer, and the companies will be notified of their decisions. If a student accepts the offer and starts

the internship, the platform will update the internship activities about students at their universities. Students and companies can use the channels provided by the platform to communicate with each other during the internship, and at the end, they can provide feedback and suggestions regarding their experiences. Meanwhile, universities can track the internship process and view the messages and information exchanged between students and companies.

B.2.   Phenomena

Referring to the Jackson-Zave distinction between the world and the machine in the context of the S&C platform, the following phenomena are identified, specifying which parts are controlled by the machine and which parts are controlled by the world, shown in table 1.1.

Phenomena based on the Jackson-Zave model

Code	Phenomenon	Shared	Who controls it
P1	User registration	Yes	World
P2	User login	Yes	World
P3	Check username and password	No	Machine
P4	Student creates CV using text editor	No	World
P5	Student uploads CV in profile	Yes	World
P6	Student update profile information	Yes	World
P7	Student searches internship available	Yes	World
P8	Company publishes internship offers	Yes	World
P9	Platform notifies users that a deadline has expired	Yes	Machine
P10	Platform suggests recommendations	Yes	Machine
P11	Platform add student in university's list	No	Machine
P12	Student applies offer	Yes	World
P13	Student rejects or accepts internship	Yes	World
P14	Company selects candidates to interview	Yes	World
P15	Student participates interview	Yes	World
P16	Company send interview results	Yes	World
P17	Stu&Comp write feedback of internship	Yes	World
P18	Stu&Comp view feedback of internship	Yes	World
P19	Student view the offers' description	Yes	World
P20	Company view the students' profile	Yes	World
P21	University view the list of its students	Yes	World
P22	University track the internship process	Yes	World

Table 1.1: Phenomena in the S&C context

C. Definitions, Acronyms, Abbreviations

C.1. Definitions

- **Student:** A person who is looking for internships.

- **Company:** An organization which wants to announce internship opportunities to

students.

- **University:** An educational institution that related to students and their internships.

- **User:** A generic term for students, companies, and universities who use the platform.

- **Internship:** A opportunity offered by companies to students to gain practical experience in a real job environment.

- **CV:** Curriculum Vitae, a document that contains all necessary information about students to able to apply for internships.

- **Recommendation:** A suggestion made by the platform to students and companies based on their statistical analysis and simple keyword searches.

- **Selection:** The process of choosing students and companies to process the interview.

- **Feedback:** Comments and suggestions written by students and companies about their internship experiences.

- **Notification:** A message sent by the platform to inform students and companies about important events, such as new internship offers, matching CVs or interview results etc.

- **Interview:** A meeting between students and companies to decide an assignment of the internship offer.

- **Platform:** The Students&Companies (S&C) system that provides the services to students, companies, and universities about internships.

- **Keyword:** A label or tag that describes the skills, experiences, and preferences of students and companies.

C.2. Acronyms

- **S&C:** Students&Companies

- **CV:** Curriculum Vitae

- **UI:** User Interface

- **UX:** User Experience

C.3.   Abbreviations

- **[Gn]:** Used to number the goals, where Gn is the n-th goal.

- **Stu&Comp:** students and companies

D.   Revision History

E.   Reference Documents

- " The World and the Machine: A model for the functional architecture " by Michael Jackson and Pamela Zave.

- Assignment RDD AY 2024–2025.

F.   Document Structure

This document is structured as follows:

- **Section 1: Introduction**
  It contains the purpose, goals, scope, and phenomena identified in the context of the S&C project, including the specification of definitions, acronyms, and abbreviations of the terms used in this document. In addition, it notes the revision history for updates to the document and the reference documents that were used during the development of this document.

- **Section 2: Overall Description**

- **Section 3: Specific Requirements**

- **Section 4: Formal Analysis**

- **Section 5: Effort Spent**

- **Section 6: References**

2 | Overall Description

A.   Product perspective

A.1.   Scenarios

Scenario 1: Mr.Spongebob registers on the platform

Mr.Spongebob, a final-year student at the University of Bikini Bottom, is looking for an internship to practice the knowledge he's gained. To do so, he asks advice from Professor Puff, who suggests using the Students&Companies platform to search for internship opportunities. Following her advice, Mr.Spongebob registers as a student on the platform, selecting the University of Bikini Bottom from the list of universities and verifying his student status with his educational email and password. Then, he fills in all the required personal information, including his name, date of birth, and other details. He also inserts keywords to describe his skills and the fields of jobs he might interested in. Finally, after uploading his CV, which contains all the necessary information and details, Mr.Spongebob completes his registration and can begin searching for internships. Meanwhile, Professor Puff, who oversees internship activities using the official account of the University of Bikini Bottom, is notified of Mr.Spongebob's registration.

Scenario 2: Mr.Krabs publish an internship offer

Due to the rapid evolution of Technology, Mr.Krabs decides to collaborate with his competitor Mr.Plankton, on a new project. They plan to develop a "Hamburger super secret formula detector" that can detect each customer's thoughts just by looking at them, in this way to create the perfect personalized hamburger! To achieve this, they need to hire a student specializing in Computer Vision and AI to study the visual data. So Mr.Krabs logs into the Students&Companies platform using the official company account and navigates to the "Publish Internship" section to create a new announcement. He fills in all the required information: the title of the internship as "Computer Vision and AI Intern", location as "Krusty Krab Technology Lab" at Bikini Bottom, role as "Intern",

application deadline as "25th December 2024", number of positions as "2", duration as "6 months", employment type as "full-time", description as "We are looking for a student who can contribute to the development of the Hamburger super secret formula detector by Developing algorithms that collect and analyze visual data. The candidate should also love hamburgers" and required skills such as "Computer Vision, AI, Python, and Deep Learning". After that, Mr.Krabs published the internship offer, which can be seen in the "Internship Offers Published" section. Immediately after the publication, he receives a notification of recommended student profiles that may match the offer requirements.

Scenario 3: Mr.Patrick searches internship

In the last semester of his studies, Mr.Patrick is very worried about finding an internship before completing his degree in Food Engineering. At this point, he remembers the Students&Companies platform, which he used to find an internship at the beginning of his studies, so he decides to take another look at the platform. He logs in and updates his profile and CV, adding the new skills he has acquired during his master's degree. He navigates to the search bar and types "Hamburger" to look for internships related to hamburger studies. When he doesn't find anything that interests him, he scrolls through the recommended internships list. Finally, he finds Mr.Krabs' posting and becomes very interested in the project, so he applies for the internship and waits for the company's response. After applying, he can check the status of his application in the "Internship" section.

A.2.   Scenario 4: Krusty Krab Technology Lab Interview

After the application deadline, Mr.Krabs and Mr.Plankton review all the applications received for the intern position. They select the candidates by reviewing their profiles and CVs, and then send them an invitation for an interview. For the first round of interviews, Mr.Plankton decides to formulate a set of short questions to know more about the candidates' skills and experiences. In the form he also includes the date, time and location of the interview and the necessary information to better prepare the candidates. After sending the invitations, the candidates selected for the interview receive a notification from the platform, who is not selected will receive a notification of rejection. At the end of the interview, Mr.Plankton evaluates the candidates and discusses with Mr.Krabs to decide who to hire. Finally, they send an offer to the best candidates and wait for their acceptance to start the internship.

A.3.   Scenario 5: Ms.Sandy start her internship

Ms.Sandy is very passionate about space and is thrilled to have been selected for an internship at the Underwater Space Agency. She receives and accepts an offer from the company. At the same time, the Bikini Bottom University of Aerospace's professor Manta received the notification about the new activity started by Sandy. However, she is a bit anxious, so she logs into the platform and navigates to the "Internship" section to find her assigned mentor's profile. She starts a chat with him to ask some questions about how she should prepare in the coming days and for any advice he can give her to have a good start in the internship.

A.4.   Scenario 6: Mr.Squidward finished his internship

At the end of his internship at the "Krusty Krab Technology Lab" as a data science intern, Mr.Squidward is surprised by the experience he has gained, even though he has several complaints about the heavy workload. He decides to leave a warm message for Mr.Krabs and Mr.Plankton to thank them for the opportunity. After that, he navigates to the "Internship" section to add a review of his internship experience and rate the company. It is also the section where he can check the feedback left by his mentors regarding his internship, which is only visible to the company and the university.

A.5.   Scenario 7: Track the internship activities

As the internship period progresses, Professor Puff is responsible for overseeing the students' activities at the University of Bikini Bottom. She is curious to know how the students are doing in their internships, particularly Mr.SpongeBob, who is using the platform for the first time. She logs into the platform with the university credentials and looks at the list of students, searching for SpongeBob's name. She finds, in his active internship section, that he has been selected for an internship at the "Krusty Krab Technology Lab". By reading the feedback left by the company throughout the different stages of the internship, she is very glad to see that SpongeBob is doing well in the field he is passionate about!

3 | Specific Requirements

4 | Formal Analysis Using Alloy

Organize this section according to the rules defined in the project description.

5 | Effort Spent

Section	Jie Chen	Riccardo Bonfanti
1 - Introduction	TBD	5 hours
2 - Overall Description	TBD	TBD
3 - Specific Requirements	TBD	TBD
4 - Formal Analysis Using Alloy	TBD	TBD

Table 5.1: Effort spent for each section

6 | References