



**Department of applied information technology**

# SkillMatch

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# 1. Introduction

According to our research IT-students have a hard time knowing what comes next after graduation. Even if most are certain that there are many job opportunities, it is not always easy to know which of these suit one's skills and interests. This report presents our take on a solution to this problem. By leveraging individuals' programming and database knowledge, the website we created aims to provide personalized job recommendations that match their unique skill set, empowering users to find rewarding and fulfilling career opportunities that will satisfy them. The main goal of our project was to create an innovative website that informs job seekers within the IT industry about jobs based on their specific skills and interests. By using the power of algorithms and data analysis, the SkillMatch website gives the user tailored job recommendations based on their preferences and skills.

## 1.1 Background

In today's fast evolving job market, it can be hard to find a suitable job that aligns with one's skills and interests, especially in the IT industry. This was a problem we could do something about. According to our research job seekers often face difficulties identifying what jobs match their skills and interests. Now that we had a clear problem we could begin with the design thinking process.

## 1.2 Why Design Thinking

There are a couple of well-known methods that are available when it comes to development. During this project, we based our developing methods on Design thinking. This is a good method because it focuses on empathizing with the potential users to understand their needs and problems. By adopting a user-centric approach, design thinking ensures that the final solution truly addresses the pain points and provides a near-perfect solution for the users. Design thinking is an iterative way of working and it's important to not be afraid of revisiting the earlier stages if you feel or notice that the product you are providing is drifting away from the actual problem you are trying to solve. If you insist on not revisiting earlier stages, despite that you've understood that the product or service you are delivering is not what you intended you can end up with technical debt.

## 2. Design Thinking Process

### 2.1 Empathize

We started our project by discussing what problems we could work on within this project. One point during this discussion stood out. We felt that we were unsure of what career paths were available after graduation. The main focus during the empathize phase was to deeply understand the users' needs and perspectives. We began by closely observing students in the IT section by engaging them in conversations and interviews to gather valuable insights.

One of our key objectives was to explore their awareness of career opportunities after graduation. The aim was to grasp their feelings and thoughts as they were about to start their job career. These observations and interviews provided us with valuable firsthand information and shed light on the users' experiences. The interviews were structured with open questions and no follow-up questions to influence the interviewees. We concluded that the uncertainty after graduation was indeed real.

Simultaneously, we created a survey to gather a broader range of perspectives. This survey was structured the same way as the interview questions by not trying to influence. We shared the survey on a Systemvetenskap discord server and Facebook. We aimed to reach a diverse group of respondents and gain a comprehensive understanding of their experiences and challenges. When analyzing the survey responses alongside the insights from the interviews we got a clear understanding of this problem. Through this approach, we gained valuable insights into the problems faced by the users. This understanding of the users' needs and challenges served as a solid foundation for the following phases of the design thinking process. At this point, we also concluded IT students as our problem owners.

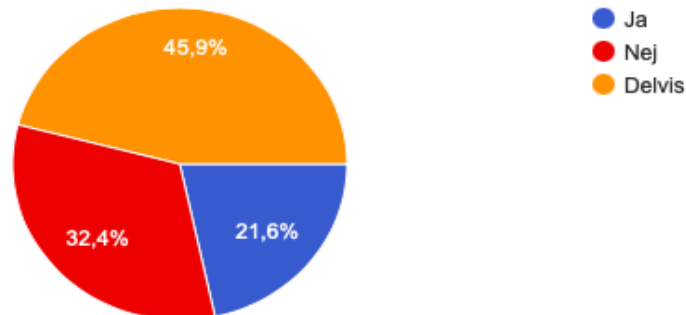
### 2.2 Define

Based on the responses from the survey, it was observed that the majority of respondents were individuals aged between 19 and 25 years. Many expressed uncertainty regarding post-graduate job search, as well as a lack of knowledge about available employment opportunities. Only approximately 20% of respondents had a clear understanding of the professions that align with their competencies. When asked about where to find occupations that match their skill set, approximately 80% of participants reported being unsure.

Furthermore, over 50% of respondents had no prior experience working in the field of IT.

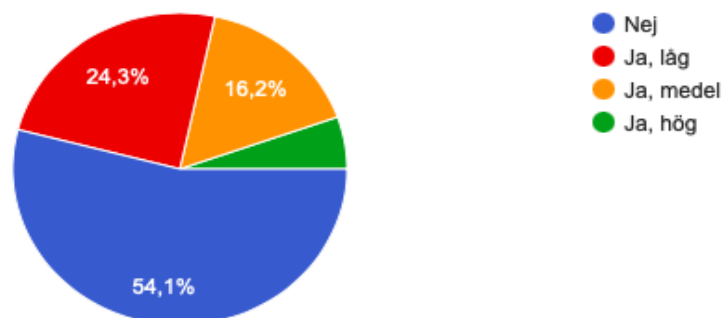
**Vet du hur du hittar arbeten som passar dina kompetenser?**

37 svar



**Har du tidigare arbetserfarenhet inom it? Om ja, vilken nivå?**

37 svar



*Figure 1. Results from our online survey (Google Forms)*

The results from the interviews conducted with former students who graduated from the systemvetenskap program at the University of Gothenburg confirmed our assumptions from the empathize phase. It was evident through our interviews that there was uncertainty regarding future career choices. These students experienced stress during the final six months before graduation, as they only had a vague idea of the available professions. One of the interviewees felt unsure what to do after graduation and therefore applied for a master program instead of working directly after graduation. When all the data was compiled and analyzed, we began creating multiple personas, one of which was Ture:

Ture is studying systemvetenskap at an university in Sweden. He is an ambitious IT student with only 1 year left until his graduation. Ture has no previous work experience in the IT field. The IT sector is something he wants to work in, but he is not completely sure about his skills and the career opportunities available after completing his degree. Ture would like to find relevant professional areas that align with his competence.

Based on the information provided above, we formulated a problem statement as follows: IT students are unaware of the professions that align with their competencies, leading to anxiety and unnecessary stress among students. This not only affects the students but also the job market, as valuable resources may end up in the wrong professional fields. The goal is to guide IT students towards the most relevant working field based on their individual competencies and interests.

On the other side of the problem statement, we made a POV to support our work within this project. The POV is as follows: A student in an IT program without prior work experience needs guidance in their career choice after graduation because many students lack previous work experience and are unaware of the available career options.

## 2.3 Ideate

During the ideate phase, our team engaged in collaborative discussions to analyze our POV and Problem Statement. Through a series of brainstorming sessions, we generated a wide range of ideas aimed at guiding IT students. Initially, the idea of creating a mobile application seemed like the best way to go. However, we ultimately determined that developing a website would be a more practical and effective approach to reach a larger audience. Additionally, we made the decision to focus specifically on jobs within the IT sector, as a broader scope would be impractical.

After determining that a website was the most suitable option, our next step was to choose the design tool. We unanimously agreed on using Figma due to its user-friendly interface and collaborative capabilities, allowing all group members to work simultaneously. Additionally, we recognized the importance of leveraging the dataset provided by Jobtech, which was a necessary resource for this project. Using the Jobtech dataset as our foundation, we decided to create a website quiz that would ultimately present a table of suitable jobs to the users. With these ideas in mind, we proceeded to the prototyping phase.

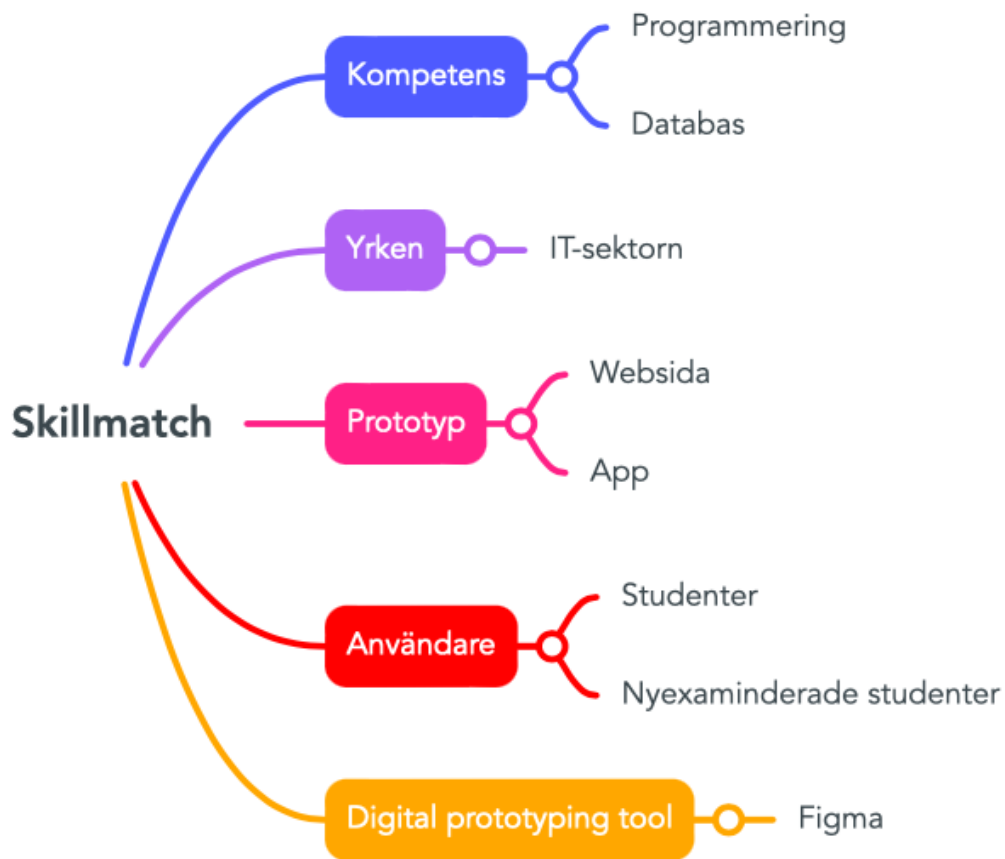


Figure 2. Example from a mindmap (MindMeister)

## 2.4 Prototype

During the prototype phase, it is important that you have gone through the previous stages thoroughly and feel that you have every information that you need to start prototyping such as problem owner and problem statement to mention a few. We began our prototype phase with just some sketches on paper about how we believe a good website should look like.

We showed some different paper prototypes to some potential users and according to some of them the website had a lack of clear guidance. They had concerns that the website might not provide a clear enough guidance on how to interact with the website or the purpose of it. So we needed to rethink that part of the website. Overall they seemed happy with the layout and design.

We then moved over to figma to continue with the prototyping. Figma suited our needs very well because the tool allowed us to easily create interactive elements to simulate user

interactions and Figma's collaborative features allowed us to work simultaneously on the prototype. When we felt we had something we were satisfied with we could easily share a link to our prototype to potential users and ask them to share their thoughts and ideas. Participants were shown the more polished prototype and asked to perform different tasks for example entering their skills and interest.

Their feedback and observations were documented so we could look back and possibly change our prototype for the better. They mentioned that the lower bar containing links and socials was not necessary for this service. After collecting feedback it was time to iterate and change the prototype according to the feedback so the final product can provide as good of a user experience as possible and solve the users problems and needs.

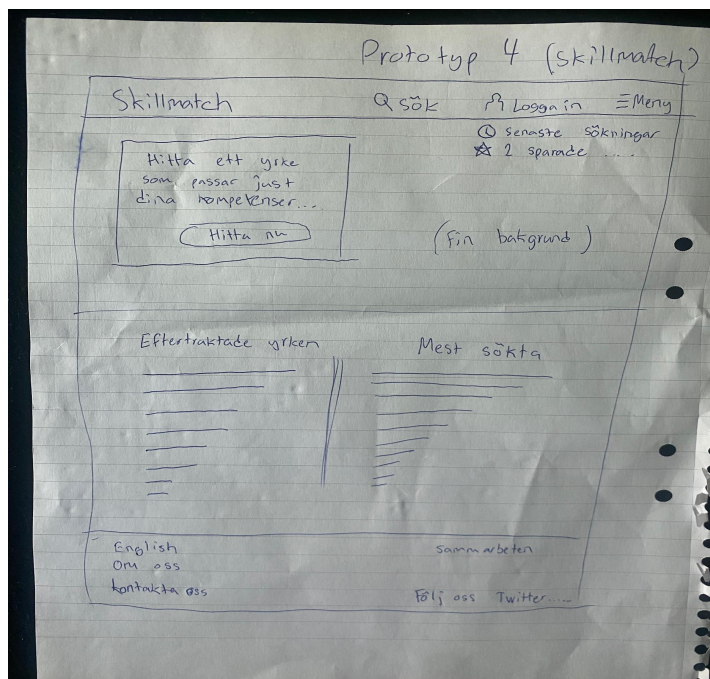


Figure 3. One of our paper prototypes



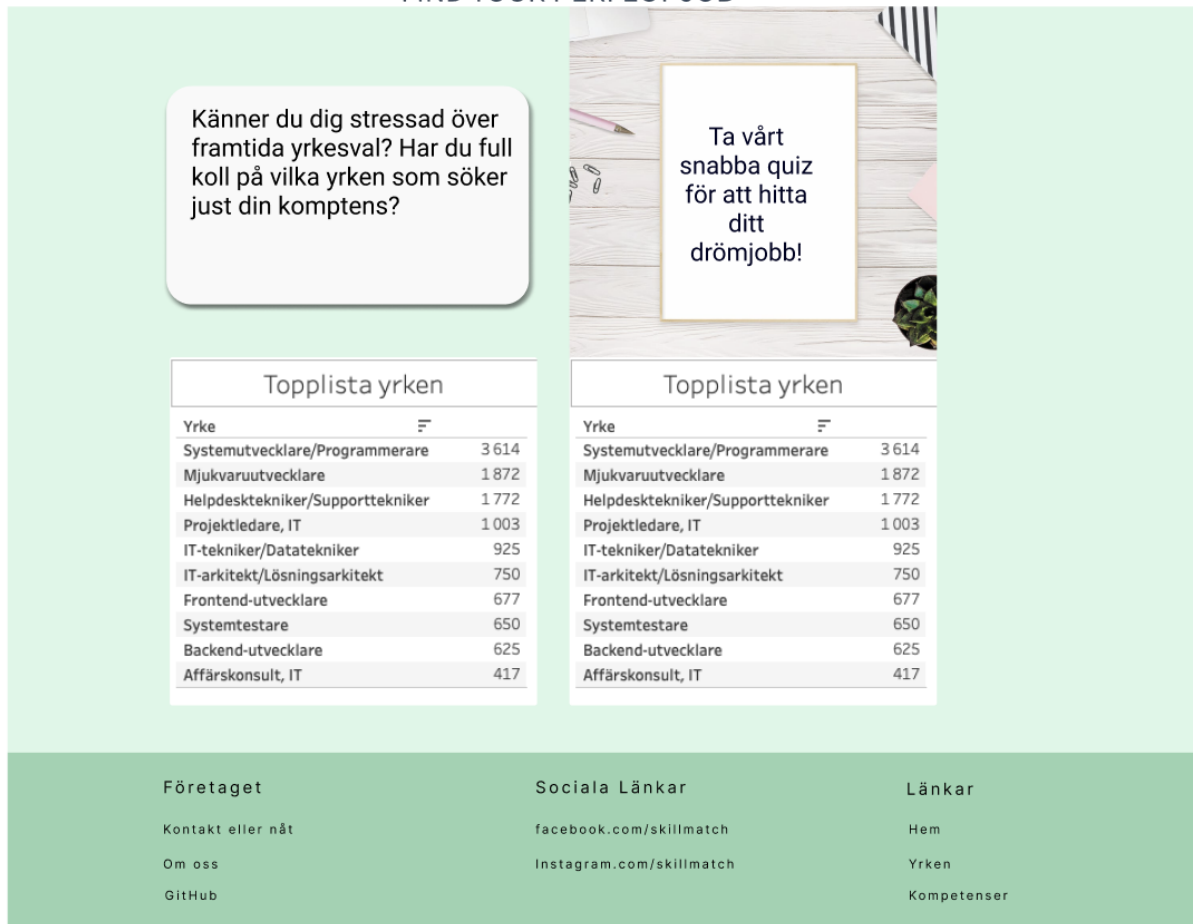


Figure 4. Prototype made with the Digital Prototyping Tool Figma (Figma)

## 2.5 Test

Other than the two tests mentioned in the prototype phase, we did a test in a way on the presentation day. At the time of presentation, our website was not yet complete due to various factors. This resulted in important feedback from our classmates and teachers. The main aspect we had to change was the website itself. Since it wasn't ready on the presentation day, we had to make some adjustments.

One of the changes we made was improving the website's appearance and interactivity. It was clear that it needed some work, so we started by using a color scheme we had previously chosen: green and white. We also added more interactive elements to ensure a user-friendly

experience. One feedback we received was about the rating scale. Instead of asking users to rate their experience on a scale of 1 to 5, we adjusted it to ask for the number of years of IT work experience. These changes significantly improved our website, and we now feel more confident about it. The following image is the improved website.



Figure 5. The finalized website

### 3. Final product

When the prototype and testing phase were done we started working on the actual website with our service embedded in it. We started by exporting a css file from our figma prototype and by integrating these css files into our website code we wanted to maintain the same look and feel as envisioned in the prototype. But this however did not work as well as we expected so we had to build the website without the css files from our figma prototype.

However, we could use the figma prototype as a sort of template when creating the actual website. HTML served as the backbone of our website and was used to structure the content, define elements and create the layout of the website. The job matching algorithm itself was designed in python and it allowed us to process and manipulate the job dataset efficiently. To integrate the back-end (python algorithms) with the front-end (HTML and CSS) we used flask which is a flexible framework written in python.

## 4. Conclusion

In conclusion, we followed a design thinking approach throughout the project. We managed to provide a website to address the problems IT students face when identifying suitable career paths. Working in an iterative way made us rethink and readjust. Through this process, we developed a website that gathers the users' skills and interests to provide tailored job recommendations.

To create the website we used CSS and HTML coupled with a Flask framework. We ensured an appealing and well-structured UI. The website incorporates Python coding to process a comprehensive job dataset to enable accurate job matching. Based on algorithms our website offers tailored job suggestions that empowering users to make informed career decisions.

By testing and user feedback we successively improved our prototypes and made new iterations to improve our product. Even if the website wasn't fully developed during our presentation, we still got insightful feedback which helped us make the website even better.

To work with this process using design thinking was challenging in the beginning, but the closer to the end we got the more natural it felt. From the first day we only saw the problem from our own perspective and now at the end we have got so much more insight by the help of people around us. Hopefully this product can help struggling people find their dream job. The website is functional today, but there's always room for development. By saving the results from previous users and asking them to rate the recommendations the algorithm could easily be improved over time. More questions as well as adjusting the weights of each question are just a couple of ways that this could be done.

Some valuable lessons we have learned during this project is that it's important not to rush through any of the phases to avoid, for example, technical debt. We also learned the importance of really empathizing with the potential users to stay on track to solving their problems and not drift away from the actual goals.