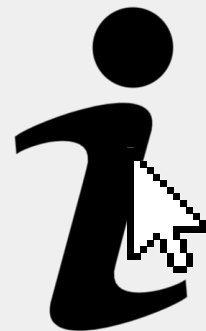


Visualisation of data related to the origin of students from DETI courses and similar

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Course: Information Visualisation, 27th November 2023

Introduction / Motivation

- The title is self explanatory.
 - The general objective:
 - Compare DETI courses and draw conclusions.
 - Compare similar courses of DETI in other universities.
-
- Why we chose this theme:
 - We are both students from DETI courses.
 - We find the analysis of this information is important to make decisions and new strategies.



DATA

- There is no dataset available.



Perform WebScraping on DGES - Direção-Geral do Ensino Superior

Courses

- Aerospace Engineering.
- Computational Engineering.
- Computer and Informatics Engineering.
- Electrical and Computer Engineering.
- Informatics Engineering.

Data Presented

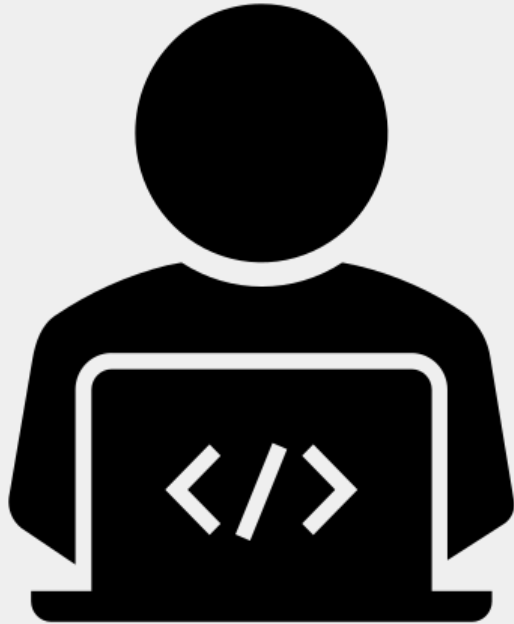
- Number of Candidates/Applicants.
- Choice Option.
- Entrance Grade.
- Last Placed Candidate Grade.

Universities

- University of Aveiro.
- Faculty of Science and Technology of the University of Coimbra.
- Faculty of Science of the University of Lisbon.
- Instituto Superior de Engenharia de Coimbra.
- Instituto Superior de Engenharia do Porto.

Personas

App Developed allows: understand evolution of courses over the years, compare similar courses and analyze distribution of applicants choices and grades.



Johnny

- Data Analyst hired as an external employee.
- Teacher, director of a course, that aims to get more or highly graded students to his course.
- Administrative services.
- Student.

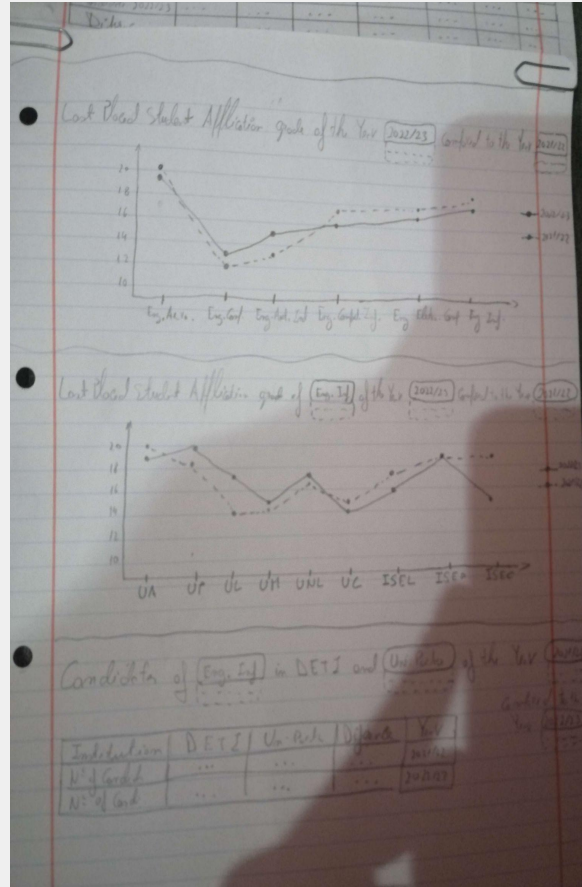
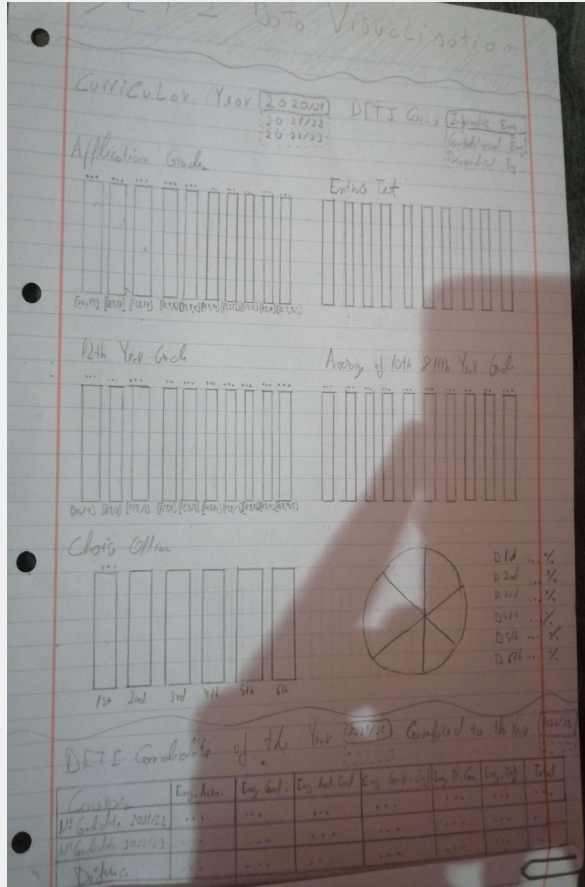
Questions to Answer



1. How many students applied to DETI in each academic year?
2. How many students applied to a DETI course in a specific year?
3. In which year did a particular DETI course witness the highest influx of student applications?
4. How many students applied to a DETI course with a specific choice option in a given year?
5. What was the last grade by the final student entering in a DETI course in a particular year?
6. What was the lowest last grade by the final student across different universities for a similar DETI courses?
7. How many students applied to a DETI course with grades falling within a specified interval?
8. Among the candidates for a DETI course, which option of choice was the most popular over the years?



Low Fidelity Prototype / Mock Up



- Very bold solution. We intended to show a lot of information with a lot of graphics.
- Initial idea was to have just one page that was scrollable.
- Visualization solutions were bar charts, line charts, tables and a pie chart.

Users Feedback

- Too much information and hard to navigate and find information.
- Interactions like selecting years and courses should be general and not for each graph.

Graphics Used - Homepage

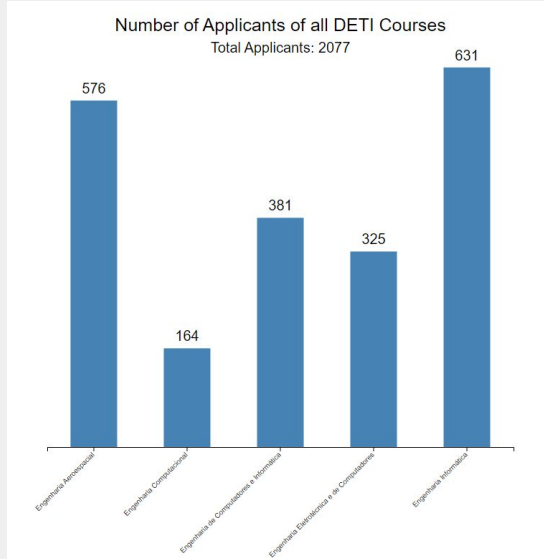


Fig.1

- How many students applied to DETI in each academic year?
- How many students applied to a DETI course in a specific year?

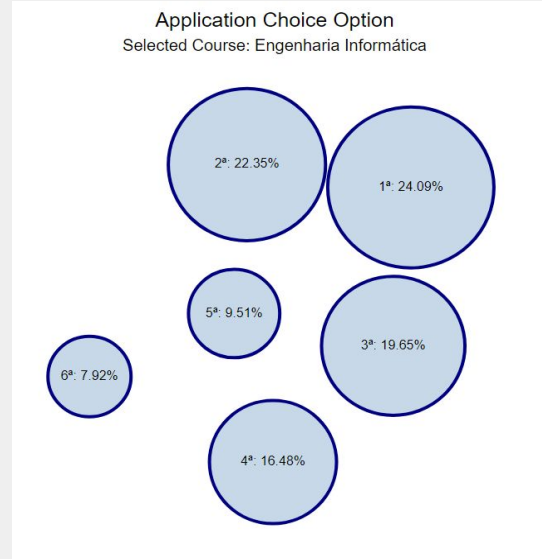


Fig.2

- How many students applied to a DETI course with a specific choice option in a given year?

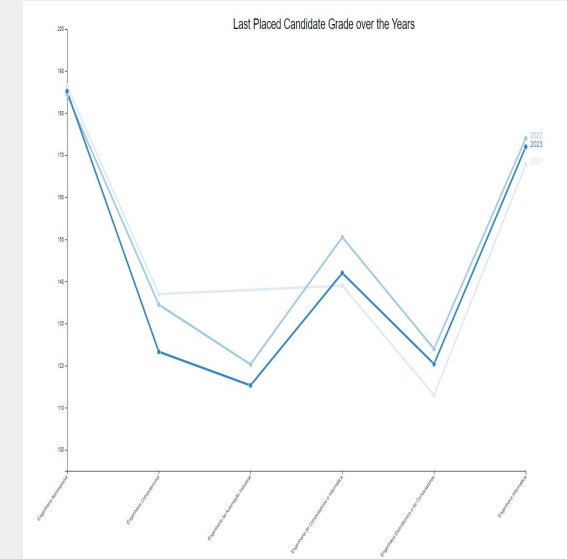


Fig.3

- What was the last grade by the final student entering in a DETI course in a particular year?

Graphics Used - Course Page

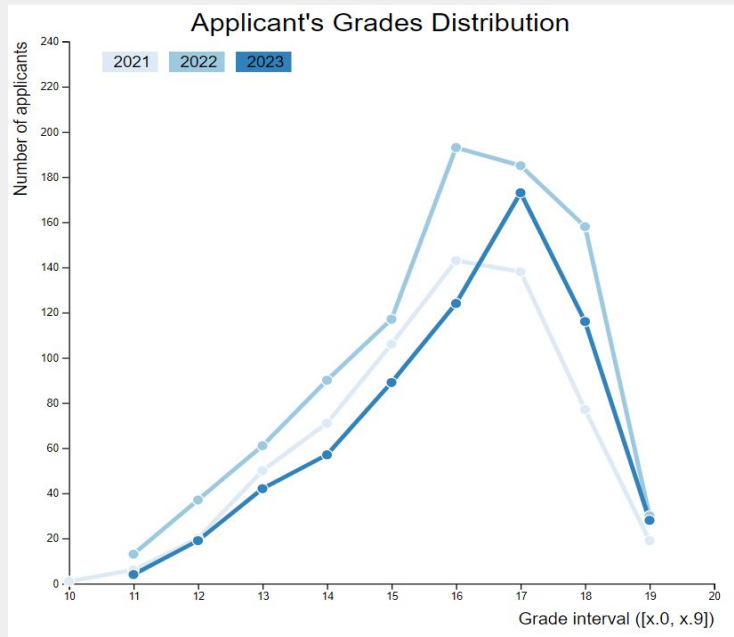


Fig.4

- How many students applied to a DETI course with grades falling within a specified interval?

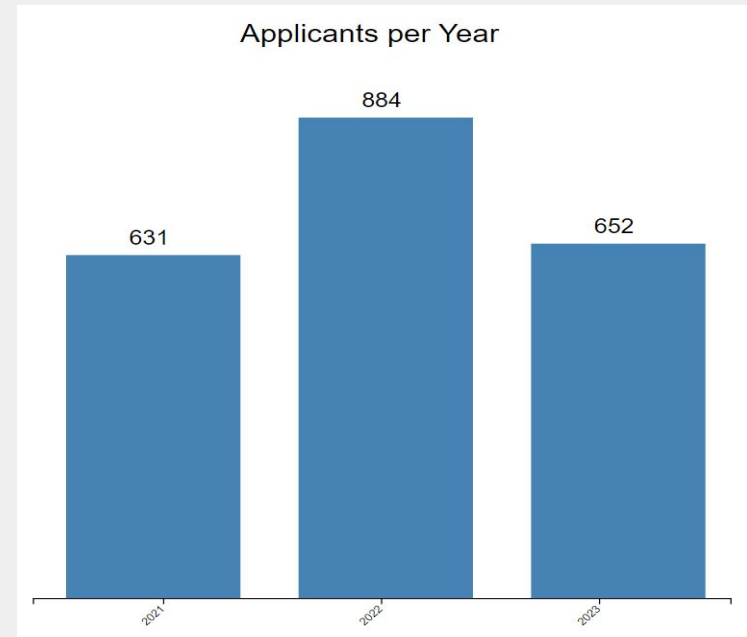


Fig.5

- In which year did a particular DETI course witness the highest influx of student applications?

Graphics Used - Course Page

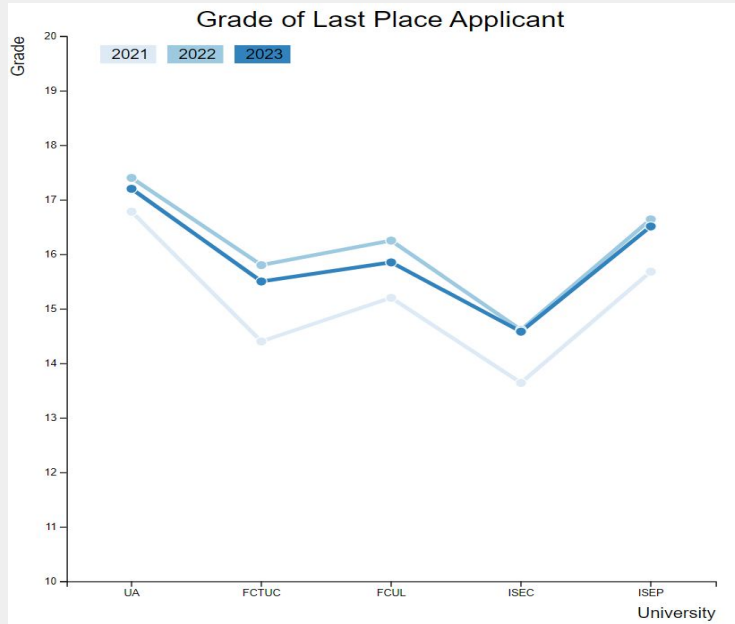


Fig.6

- What was the lowest last grade by the final student across different universities for a similar DETI courses?

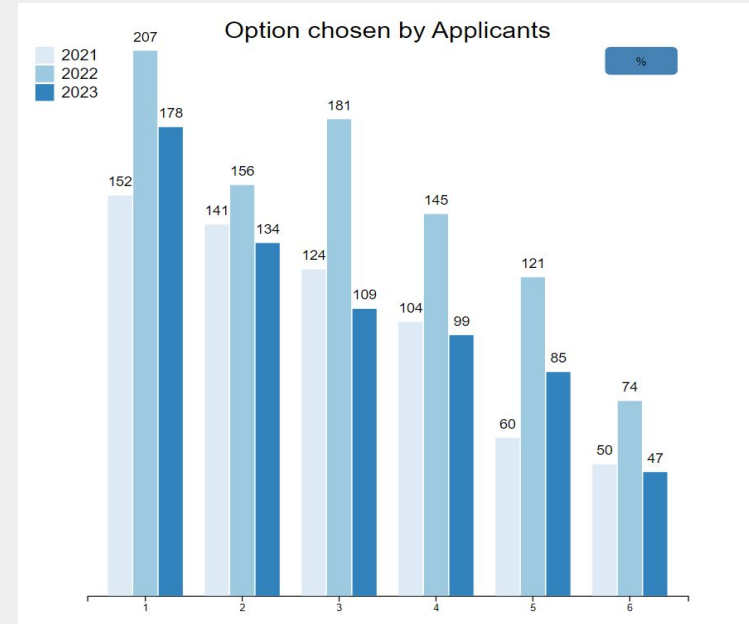
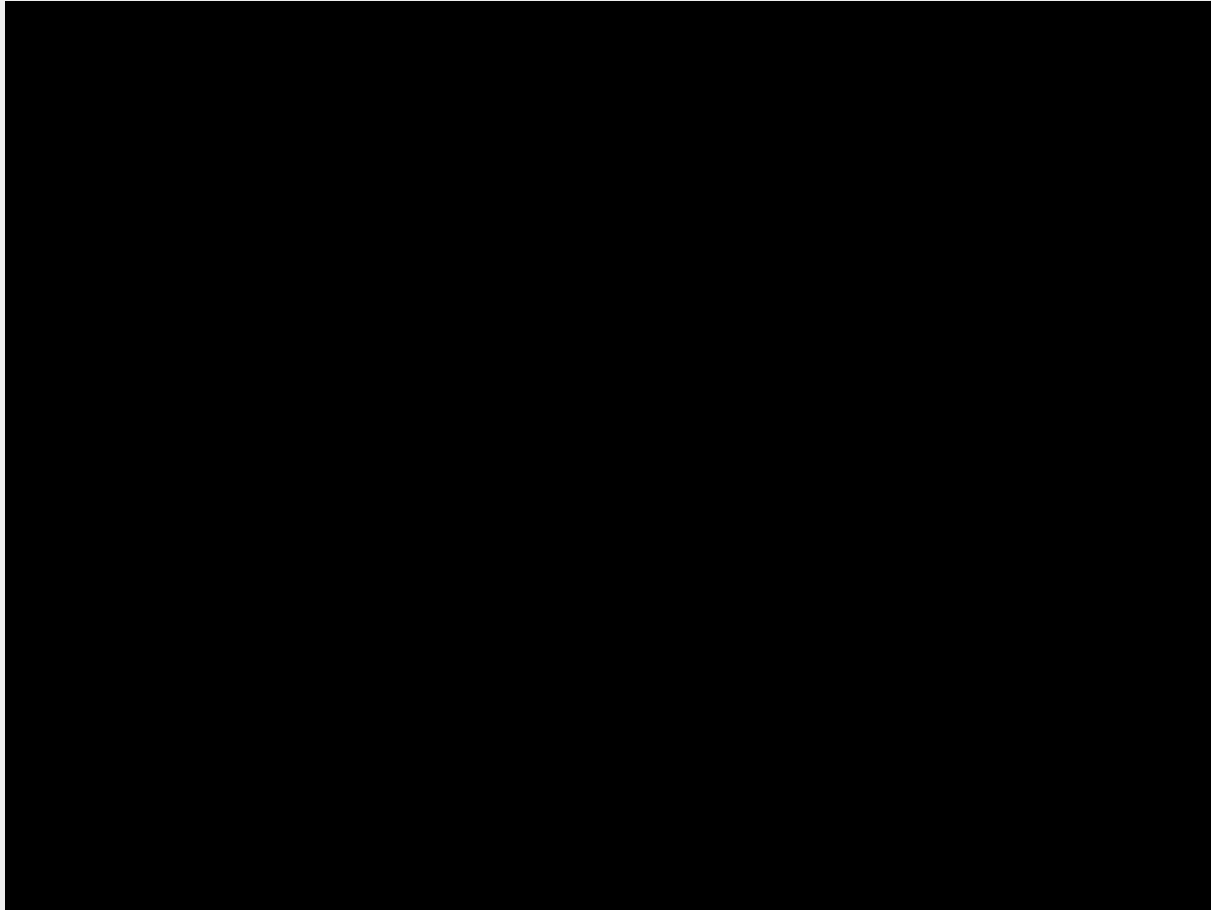


Fig.7

- Among the candidates for a DETI course, which option of choice was the most popular over the years?

Demo



Heuristic Evaluation / Usability Testing

Secção 1 de 12

Experiência de Utilizador em WEB

Este formulário tem como intuito fazer um pequeno estudo de UI/UX, design de experiência do utilizador, do WebSite desenvolvido na unidade curricular Visualização de Informação de modo a perceber se a estrutura do mesmo é intuitiva e fácil de utilizar.

O website desenvolvido tem como objetivo a visualização de dados relativos à origem dos estudantes do DETI, departamento de eletrónica, telecomunicações e informática, da Universidade de Aveiro.

Realizado por:

- André Fernandes - Mestrado em Engenharia Computacional - andre.fernandes16@ua.pt
- Gonçalo Machado - Mestrado em Engenharia Informática - goncalofmachado@ua.pt

Website para realização do questionário: <https://goncalo-machado.github.io/Project-VII/>

NOTA: Realizar num PC

A sua Idade *

Texto de resposta curta

A sua Área de Trabalho ou Formação Académica ou Experiência Profissional *

Texto de resposta curta

Fig.8

Estadísticas

Média
8,63 / 10 pontos

Mediana
9 / 10 pontos

Intervalo
4 – 10 pontos

Distribuição do total de pontos



Fig.9

Heuristic Evaluation / Usability Testing

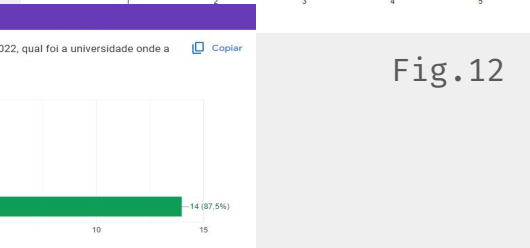
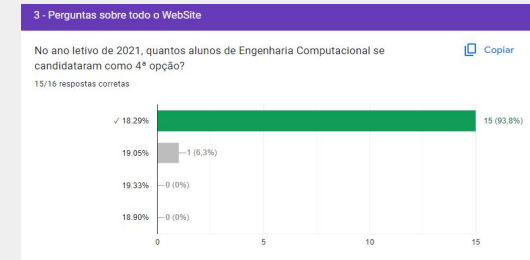
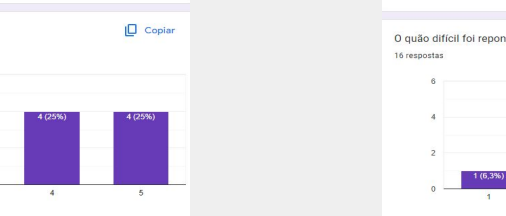
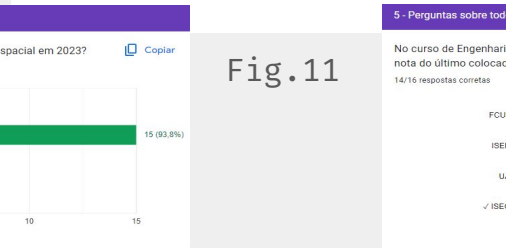
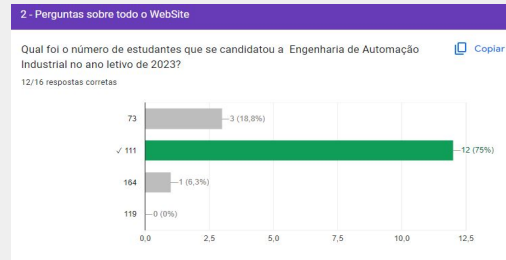
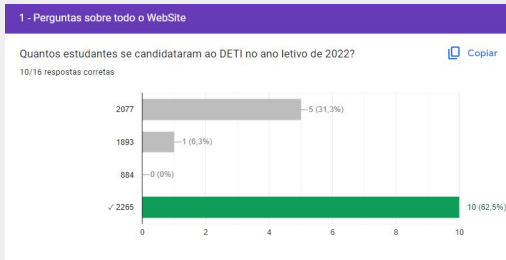


Fig.11

Fig.12

Fig.13

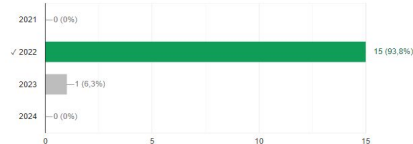
Fig.14

Heuristic Evaluation / Usability Testing

6 - Perguntas sobre todo o WebSite

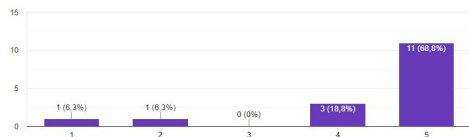
Qual o ano onde o número de candidatos do curso Engenharia Eletrotécnica e de Computadores foi maior?

15/16 respostas corretas



O quão difícil foi responder à pergunta acima?

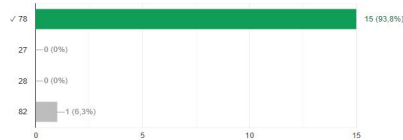
16 respostas



9 - Perguntas sobre todo o WebSite

Em Engenharia Aeroespacial, quantos foram os candidatos em 2021 que colocaram o curso em 5ª opção?

15/16 respostas corretas



O quão difícil foi responder à pergunta acima?

16 respostas

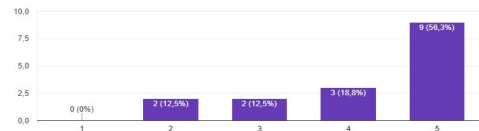
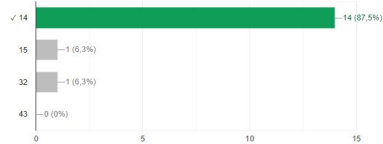


Fig.18

7 - Perguntas sobre todo o WebSite

Em 2022, quantos alunos se candidataram a Engenharia Computacional com uma nota entre 16 e 16.9?

14/16 respostas corretas



O quão difícil foi responder à pergunta acima?

16 respostas

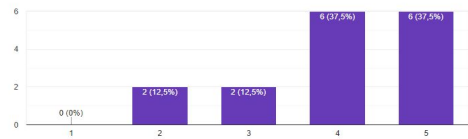
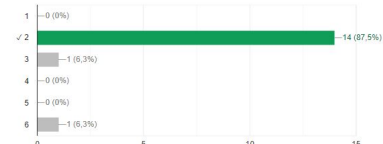


Fig.16

8 - Perguntas sobre todo o WebSite

A maioria dos candidatos ao curso de Engenharia de Computadores e Informática coloca o curso em que opção de escolha (Option Chosen)?

14/16 respostas corretas



O quão difícil foi responder à pergunta acima?

16 respostas

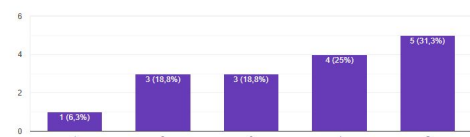
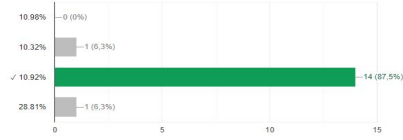


Fig.17

10 - Perguntas sobre todo o WebSite

Em Engenharia Computacional, qual foi a percentagem de alunos que se candidatou em 2023 como primeira opção?

14/16 respostas corretas



O quão difícil foi responder à pergunta acima?

16 respostas

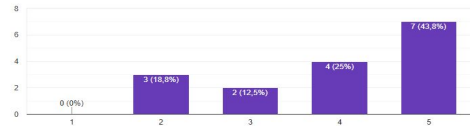


Fig.19

Heuristic Evaluation / Usability Testing

- Two similar comments from different participants:
 - "Visual hints when something was clicked, like different colors".
 - "When an year was selected in line charts, in the legend, make a line crossing the legend so it would be noticed what was clicked".
- About the colors:
 - "With the color scheme used, sometimes it's hard to distinguish information".
 - "... despite the colors meeting a standard, having weaker or stronger shades of the same color for each year highlights some years and not others ... A cold color palette helps maintain the same pattern and would not highlight any of them".

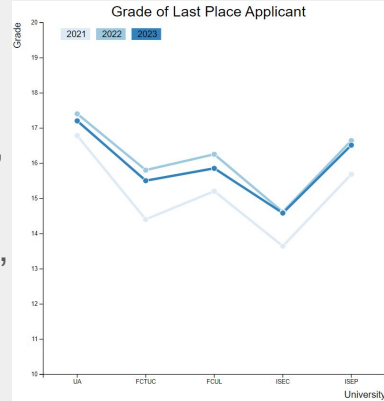


Fig.6

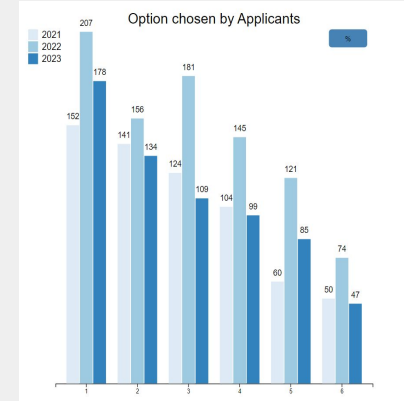
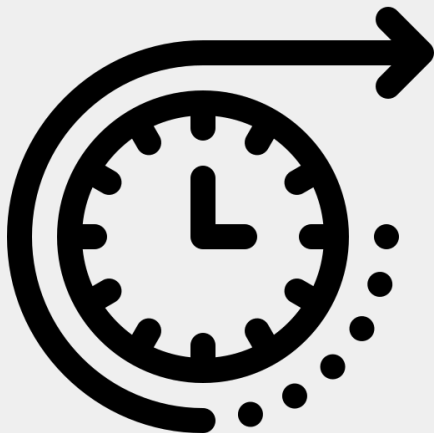
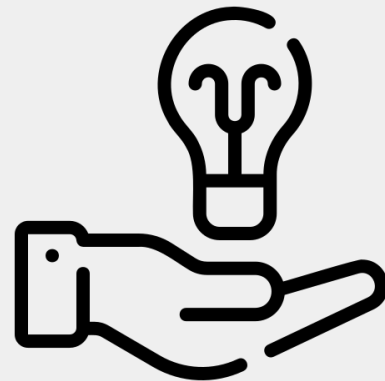


Fig.7

- Some mention that instructions on how to interact with graphs or make them more intuitive would make the usability easier.
- Comments on the button of Figure's 7 graph:
 - May be confused because when one data is plotted, the button shows the other.
 - Suggestion on putting two buttons, one for each data.

Conclusion and Future Work

- To conclude, after the results and feedback from users we consider that, given that users had no prior contact with the platform, answer more than 8 questions out of 10 correctly, the work was developed with success.



- Priority would be given to implementing user suggestions, namely the new color scheme and graphics with more intuitive interactions.
- A new usability test would be carried out and only then would new visualizations and data would be implemented.
- Over time, heuristic assessments would be made to understand what could be improved to increase productivity and usability.

Bibliography

Our Github Repository:

- <https://github.com/goncalo-machado/Project-VI>

Our WebSite:

- <https://goncalo-machado.github.io/Project-VI/index.html>

Images:

- <https://www.iconpacks.net/free-icon/information-348.html>
- <https://thenounproject.com/browse/icons/term/objective/>
- <https://thenounproject.com/browse/icons/term/stickman/>
- https://www.flaticon.com/free-icon/programmer_2354282
- <https://icon-icons.com/icon/question-mark/151137>
- https://www.freepik.com/icon/conclusion_9541265