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Incremental Algorithm for large Netwotks

Project management (GEP)
Deliverable 3: Budget and Sustainability of the project

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Budget

In this section I will identify the costs of the project. I will break down the costs into different categories, then I will estimate the costs of each one and finally I will propose a management control system to monitor the costs.

1.1 Identification of costs

Here are all the cost group by categories that I will consider in this project.

Hardware

In my project the only hardware that is needed is a computer. We need a computer for all the process: research, programming, writing the documentation, etc. If we needed to test our algorithm with a large dataset, we maybe would need a computer with a high performance or a more specialized hardware, but in this work I will not consider this case. I will consider a generic computer / laptop.

Software

In this project is only planned to use a few software tools. Starting with the programming language, I will use Haskell. Haskell has a compiler called Glasgow Haskell Compiler (GHC) and would be sufficient for the project. I'm also using Visual Studio Code as a text editor, for both writing the code and the documentation. The next software that I will use is LaTeX, for writing the documentation. I also will use GitHub for the version control of the project, that uses Git.

Human resources

Truthy I'm the only human resource that is working in this project, but I will consider me as a person assuming different roles. First I will be a researcher, considering tasks talk before. I will also be a programmer, developing all the Haskell code. I also will be doing a Project manager role, planning the project and monitoring the progress.

Other costs

I will not consider other costs as the cost of the internet connection, the electricity and the cost of the paper and ink for printing the documentation. As I consider very specific costs and do not have a huge impact in the total cost. Other cost that could be considered is the cost of the transportation, cost of the supervisor and co-supervisor work and other stuff that could be needed for the project. As I consider that these costs are difficult to estimate, I will not consider them in this project.

1.2 Cost estimates

Now that all costs are identifies, here I will estimate the cost of each one, considering the duration of the project and the cost of each resource.

Hardware

I will consider a standard price for a good laptop, that is around 1000 euros. Obviously a laptop have a longer life than the project duration, so I will consider the cost of the laptop as a cost that is distributed in time, amortization.

$$\text{Amortization} = \text{Laptop Cost} \cdot \frac{\text{Project Duration}}{\text{Laptop Lifespan}}$$

Normaly, laptops have a lifespan of 3 to 5 years with a avegare of 40 hours per week, so I will consider 4 years, 40 hours per week as the lifespan of the laptop. **empty citation** Also I will consider that the whole project will need the laptop, so there will be a total of 460 hours.

$$\text{Amortization} = 1000€ \cdot \frac{460\text{hours}}{4\text{years} \cdot 52\frac{\text{weeks}}{\text{year}} \cdot 40\frac{\text{hours}}{\text{week}}} = 55,29€$$

Software

All the software that I will use is free **empty citation** So the total amount of money spend in software will be 0€.

Human resources

I will be tacking the average salary of each role from glassdoor [1] [2][3], a well known website for job search and salary information. We will check Spain salaries and we will consider 2000 hours per year. Here we can see the cost of the human resources, assuming a social security multiplier of 1.3.

Role	**Avg. Salary (€/h)**	**Hours**	**Total (€)**	**Total with Social Security (€)**
Researcher	15	85 hours	1275	1657.5
Haskell Developer	18	200 hours	3600	4680
Project Manager	20	175 hours	3500	4550
Total	18.2	460	8375	10887.5

Table 1.1: Human Resources Cost, self elaborated

Risk plan

Some risks may appear during the project, so I will add some extra money to the budget to cover it.

1. Laptop damage: The laptop could be damaged and need to be repaired. I will consider 100€ for this risk.
2. Extra hours: The project could take more time than expected and each hour of the workers is so expensive. Considering 10 % more time, gives us 837 €, so I will add 1000€ to the budget.
3. For other risks and unexpected costs, I will add 10 % of the total budget, to cover it, 1100 €.

Total budget

Lets sumarize all the costs and calculate the total budget.

Source	**Cost (€)**
Hardware	55,29
Software	0
Human Resources	10887.5
Unexpected	2037
Total	**12979.79**

Table 1.2: Total budget, self elaborated

1.3 Management control

Sustainability report

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