



UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH

Escola Superior d'Enginyeries Industrial,
Aeroespacial i Audiovisual de Terrassa

Study of material interpolation for 3D lightweight structures

Document:

Budget

Author:

Geli I Cerdan, Jofre

Director:

Ferrer Ferre, Alex

Degree:

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BACHELOR'S FINAL THESIS

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Budget

The budget of the thesis is calculated with an hourly pay rate of 18 €/h. First, the report document budget is carried out in Table 1 and then, Table 2 determines the total human cost of the project. Besides that, the cost of software, hardware and electricity consumption is computed. Finally, the total cost is shown in Table 3.

Table 1: Report document cost

Report section	Identification	Level of effort (h)	Cost (€)
1	Introduction	30	540
2	Git	60	1080
3	Object Oriented Programming	100	1800
4	Test Driven Development	80	1440
5	Clean Code	6	108
6, 7, 8	Topology Optimization	50	900
9	Interpolation Curves	10	180
10	Hashin–Shtrikman bounds	40	720
11, 12	Comprehensive Simp-All	40	720
13	Swan code Refactoring and modification	30	540
14	Comparision Simp and Simp-All	15	270
15, 16	Environmental impact and Conclusion	10	180
Report cost		471	8478

The total human cost is presented in the following table, where the project charter, the report and the budget, as well as the presentation and the defense are considered:

Table 2: Total human cost

Task identification	Level of effort (h)	Cost (€)
Project charter	20	360
Report	471	8478
Budget	3	54
Presentation and defense	30	540
Total human cost	524	9432

Regarding the software used, Matlab (250 € year licence), GitHub (Free), Microsoft Office package (120 € year licence), Latex (free software), Lucid (free plan) and Gid (free software).

$$\text{Software cost} = 250\text{€} + 120\text{€} = 370\text{€} \quad (1)$$

On the other hand, the hardware used to perform the project has been a laptop with a cost of 1550€. Assuming a 20 % annual amortization and a period of 52 weeks (1 year), the cost can be

computed as:

$$\text{Hardware cost} = 1550 \cdot 0.2 = 310\text{€} \quad (2)$$

An electricity cost of 0.33 €/kWh has to be included. Considering a computer power consumption of 145 W and the length of the study, 524 h. The electrical cost can be computed as:

$$\text{Electrical cost} = 0.33 \cdot 0.145 \cdot 524 = 25.07\text{€} \quad (3)$$

Finally, the total cost is presented in the following table.

Table 3: Total budget

Identification	Cost (€)
Human cost	9432
Software cost	370
Hardware cost	310
Electrical cost	25.07
Total Cost	10137.07