

Pick Your Processor

Comparison of Computer Processors (CPU and GPU) Project Proposal

Summary

Finding a graphics card and CPU for your computer is a time-consuming ordeal that requires you to scour the internet, comparing countless brands and stats. Many people don't know the first thing when it comes to computer parts, but they will need new parts as their computer ages. Lack of time or knowledge shouldn't be a barrier keeping someone from replacing the parts on their computer at a fair price, and this project aims to make the task more accessible for all through a streamlined interface. The application features breakdowns of specific CPUs and GPUs as well as layman comparisons between two or more processors of the same category. Since gamers and 3D artists are usually the ones most heavily affected by computer performance, we will orient much of the functionality of our app towards this demographic. People can specify variables of interest, such as their dollar budget, their screen resolution or their target FPS, as parameters to be fed to the database. They may also search by brand name or model name of the part. When users create their carts of the parts they have found they can choose to share this with their friends or any other user. These public carts can help users to find pre-built PC's that fit their needs without having to do any actual searching.

We will use HTML/CSS for the frontend aspect of this project, and MySQL will handle the operations which will be performed on the database itself. We will use Flask (Python), templated with Jinja2, to create a streamlined communication between the frontend and the backend.

Description

The primary purpose of the project is to ease the tedious task of picking out parts for a PC. Ideally, we would undertake the challenge of visually representing the parts (being compared by the user), either graphically with corresponding images or with some other intuitive structure. Since the application will be built with Flask, we will likely be able to handle visuals using Matplotlib or another Python-based data visualization library. A graph is always useful for representing multi-variable relations, such as picking

out a graphics card where other factors, such as resolution and CPU cores, exist in tandem.

Usefulness

Our website would provide invaluable help to people who do not want to spend hours comparing brands and figures. Several other websites exist for comparing GPUs which all use a formula to compute an aggregate performance score, which is ultimately ambiguous and does not mean anything to the consumer. We would use more clear metrics, such as the speeds and the relative metrics compared to other similar products. For users interested in the more granular On top of that, users would be able to share and modify each other's carts when given permission by the original user. This allows users to build PC's and share the specs with friends or make them public for everyone.

Realness

In regards to datasets, we have four CSV files from Kaggle and GitHub detailing CPUs and GPUs that we intend to implement into our application so that users can get a detailed overview as they evaluate and compare their options. Processors from several manufacturers will be included in the database, with some major names being NVIDIA, AMD, and Intel. The datasets contain 1115 intel processors with the columns - productname, release date, cores, threads, cost, brand, Max Turbo Freq, Base Freq, TDP(W), cache. 2317 GPUs with 15 columns including four metric scores and another 2 data sets of about 1500 more GPUs with similar data which we will need to check for duplicate info. Since price, speed, and compatibility will likely be a major consideration for our users, it will act as an overarching metric upon which the users will be able to filter and sort their results along with brand types and the ability to share and see public carts of other users. Most frequently used carts will appear first to users.

Functionality

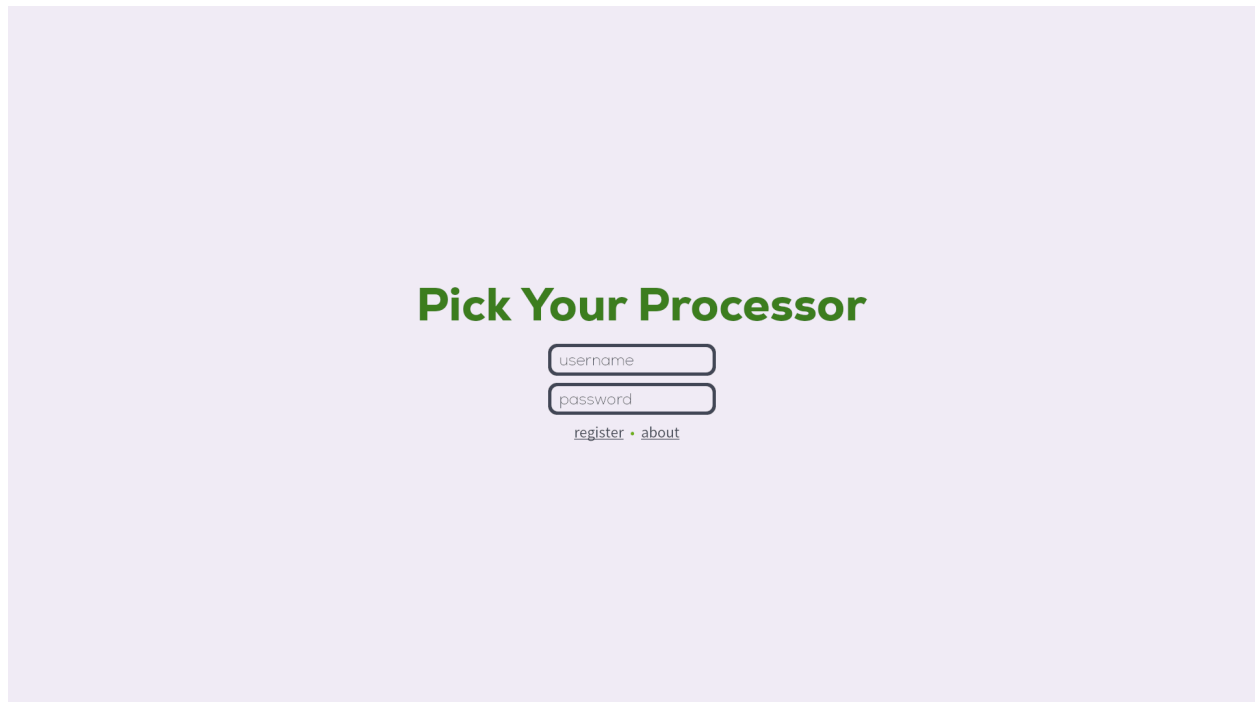
The user can search either by brand name or specific stats. They can search, sort, and filter CPUs or GPUs, but can only view comparisons of products under the same category. Each user will be able to login to view their simplified cart, which will be able to hold one CPU and one GPU at a time. We chose to limit each cart to one CPU and one GPU in order to keep selections straightforward and to focus on the parts that most heavily affect performance. The user will be able to, upon creating their cart, designate other users with either 'Read' or 'Write' permissions, depending on how many

collaborators they would like on their cart. The primary consideration will be the budget consumption and stat matching/comparing which will display a prominent figure on the screen. If the budget is exceeded, the user will be notified of this and will have the option to increase it. All search results will be displayed to the user through a simple dropdown from which they can click on a product and add it to the cart. When comparing, a different interface is opened which provides visuals for the differences between the stats of the two products.

We expect that all four of us will work on both the backend and the frontend, with everyone contributing to every aspect of the project. The work distribution is as follows:

Brice	-	Project Manager
Dennis	-	Reflector and Writer
Jet	-	Backend Implementation
Hasan	-	Frontend Implementation

Interface Design



Pick Your Processor

username

password

[register](#) • [about](#)

Pick Your Processor

[login](#) • [about](#)

Your Carts

Your current budget is:

\$500

High-end Rig

Mid-range Rig

Joey's top picks

JD NEW PC



\$



\$1516

View



\$425

View



\$1029

View



\$490

View

Mid-range Rig

GPU



Notes

I'm thinking about the ASRock Challenger RX 7600 for my build. It uses AMD's RDNA 3, which should give me smooth, detailed graphics for gaming and 3D work. The 8GB of GDDR6 memory seems enough for high-res textures and complex models. The PCI Express 4.0 x8 interface should keep up with future software. It's also praised for staying cool and running quietly. Overall, it seems like a reliable mid-range choice.

CPU



I'm considering the Intel Core i5-13400F for my rig. With 10 cores, it balances heavy tasks and background work well. Its speed up to 4.6 GHz should be good for gaming and multitasking. The 20MB cache is a plus for accessing large files quickly. Though it doesn't have integrated graphics, it pairs well with a dedicated GPU like the RX 7600. It seems like a solid, budget-friendly option for a mid-range setup.



Budget Usage



GPUs

Name	Cost ↕	Release Year ↕	Base Freq. (MHz)	Memory (GB) ↕
GeForce RTX 5090	\$XXX	20XX	2235	28
GeForce RTX 4060	\$XXX	20XX	1830	8
Radeon RX 580	\$XXX	20XX	1257	8
Radeon RX 6600	\$XXX	20XX	1626	8
GeForce RTX 4070 SUPER	\$XXX	20XX	1980	16
Radeon RX 7900 XTX	\$XXX	20XX	1929	12

ASRock AMD Radeon RX 7600 Challenger



Info:

Manufacturer: AMD
Year Released: 2023
Cost: \$XXX

Specs:

Base Frequency (MHz): 1720
Memory Size (GB): 8
GPU Clock (MHz): 2250

Notes:

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Links For Data Sets:

- <https://github.com/toUpperCase78/intel-processors> V1.8 Core Processors - 1115
- <https://www.kaggle.com/datasets/shilongzhuang/gpu-prices-prediction> - 306
- <https://www.kaggle.com/datasets/alanjo/gpu-benchmarks> - 2317
- <https://www.kaggle.com/datasets/alanjo/gpu-scores-with-cuda-metal-opengl-vulkan> - 1212