Capstone Proposal - Brody Hill

Based on feedback from my mentor, I am going to combine project ideas one and two.

So then, what am I solving for? What's the "Problem Statement'?

How can I identify which combination of GPU and CPU features are most important to overall performance in industry standard benchmarks, to then predict performance in those same benchmarks based on hardware specifications?

The data I have on CPUs and GPUs is extensive, going back about 15 years! Even better, the separate benchmarks for both CPUs and GPUs were collected and published by the same person and collected in the same way! Nice!

I also have data on key CPU and GPU features. Release Date, Process Size in nanometers, Total Power Draw, Die Size (mm^2), Number of Transistors, Frequency in MHZ, and of course brand and vendor.

Using these three distinct data sets in combination, I do believe I have enough data to accomplish the task at hand.

There's many questions we could answer here, but I am focused on how the above features (Process size in NM, TDP, Die Size, and number of transistors, and frequency) relate to benchmark scores, and perhaps how that's changed over time.

While often used for testing rasterization (gaming!) performance, these benchmarks can be key indicators of if a machine is capable of handling enterprise level tasks like 3D modeling, deep learning, video encoding, video editing, and many more.

Given my natural love for hardware, this could be an exciting challenge to take on. I also have a fairly powerful machine myself!

As far as end usability and what I could do with a completed model… I'm sure certain tasks require machines that need to meet a minimum benchmark score. If any person or any business needs new machines but isn't sure what sort of performance they'd need to satisfy their end requirements, this could help!

More personally, I'd love friends to use this when building machines of their own, and be able to pick parts with confidence, knowing the parts they pick will get them the performance they want!