Rise of Web Based Computing Trends on the Client Side

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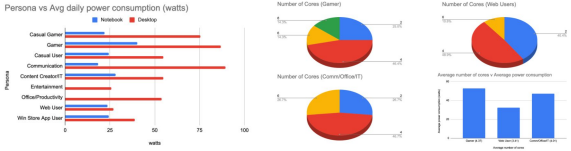
INTRODUCTION

- This project looks at new and updated web based computing trends on the client side and this project is mentored and made possible by Intel.
- We explore behaviors and trends of web-based usage as users have been spending more and more time on the internet and have been interacting with web-based applications
- Through this project we are trying to identify trends that potentially might be helpful for future product development.

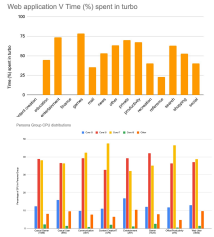
POWER CONSUMPTION

- Studied power consumption across different persona groups and different chassis types. Gamers consistently consumed the most power while web users the least. Users who operated on desktops consumed more than laptop users.
- Our analysis showed users who consume more power had more cores in their machines as those groups ran activities with higher demand/performance.



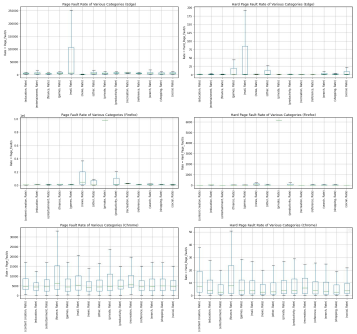
TURBO BOOST MODE

- Intel processors have turbo boost technology which speeds up the processor and increases graphics performance for heavy load. Allows the it to operate above normal power [1].
- Our analysis looked into the amount of time each persona group spent in turbo mode. Gamers and entertainment users had machines that spent the majority of their time in turbo mode.
- This is interesting because entertainment does not have a very high average power consumption.
- We can see in the last graph entertainment has a high number of lower performance cpus such as the Core i3 and i5. Which could contribute to the high turbo mode percentage but medium power consumption.



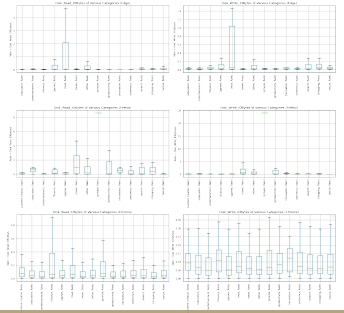
BROWSER PAGE FAULT ANALYSIS

- Page Faults is a type of exception raised by computer hardware when running a program accesses a memory page that is not mapped by the memory management unit into the virtual address space of a process.
- From the analysis we can see that for Chrome Finance and Private activities cause the most page faults



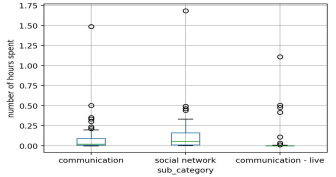
BROWSER DISK READ/WRITE IO BYTE ANALYSIS

- Disk Read/Write IO Bytes allow us to look at the bytes read/written by a executable program when it is running.
- From the boxplots we can see that for Chrome, Finance and Private activities have unusual rate of page faults and for Edge mail is the one that stands.
- These results are in line with the results we saw in page faults.



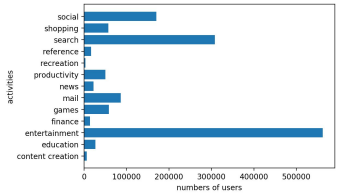
USER PERSONA GROUPS AND THEIR CPU CHOICES

- The bar chart shows that the entertainment persona group takes up the most among all chrome users
- The box plot shows that how many time that people in social persona group spends their time on different social activities
- People in social persona groups shows that live communication is not popular for majority of the chrome users in social persona group



CPU STUDY

- Many people in search or social persona groups choose I5 or I7 which I3 could possible sufficient with their need
- There are some users choose Xeon(CPU that designed for server) as their PC's CPU.



CONCLUSION

- Throughout our work this we explored various user web usage attributes as well as specific user hardware attributes to help Intel find meaningful trends in user behaviors.
- Even though our project concludes at the end of Spring 2021 we hope that our findings and insights will be useful for future product development.

FUTURE WORK AND REFERENCES

- Scaling up of to 30GB dataset
- Explore other attributes in dataset
- *Because of insufficient number of data for firefox it is hard to make a definitive conclusion in terms of page faults and disk read/write

[1] https://www.intel.com/content/www/us/en/architecture-and-technology/turbo-boost/turbo-boost-technology.html

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