Part 1

Mining cryptocurrency is a popular way of producing profit, but how to choose an affordable cryptomining set up to maximize the profit? By choosing the correct graphic cards for mining cryptocurrency, Vancouver people can earn an extra 5972.4$ per year with only one month's salary as the cost for setting up a suitable mining computer. The paper will explain why "Nvidia RTX 3080" is the most competitive choice by comparing its hash rate, power, and price.

Cryptomining is like solving a function with an award. For example, if the teacher asks students to solve a high-degree function, the first student who solves the function can get the candy. Cryptomining is the process of students calculating the function. Graphic cards are students. The calculating speed, which is hash rate, decides which student can get the candy, the cryptocurrency[1]. As the price of cryptocurrency increases, cryptomining becomes popular.

The most popular cryptocurrency now is the Bitcoin(BTC) and Ethereum(ETH). Bitcoin was created as the world's first cryptocurrency in 2009, and Ethereum was issued as the second biggest cryptocurrency in 2015. Although they are cryptocurrencies, Ethereum and Bitcoin have some differences in design and goal. While Satoshi Nakamoto created Bitcoin as an alternative to national currencies and aspires to be a medium of exchange and value store, Ethereum was intended to facilitate immutable, programmatic contracts and applications via its currency. The design of them reflects their goal differences. The total number of Bitcoin is fixed to 21,000,000, while Ethereum keeps issuing[2].

Graphics cards are the primary character in crypto mining. Graphics Processing Units (GPU), as the heart of the graphic card, have been used in the mining process for years because they are more efficient than their immediate counterparts. A GPU is responsible for the digital rendering in a computer system and efficient in mining due to its speed and efficiency. For example, a Radeon HD 5970 GPU could calculate 3,200 32-bit commands per clock, 800 times more than the speed of one single CPU, which is four 32-bit instructions per clock. The GPU property makes them suitable and better for cryptocurrency mining, as the mining process requires higher efficiency in performing similar kinds of repetitive computations. The mining device continuously tries to decode the different hashes repeatedly, with only one digit changing each attempt[3]. If taking the example of crypto mining mentioned above, CPU is like a college student and GPU is an assembly line consist of thousands of primary school students. If they are asked to solve a high-degree function, the GPU will win due to the accumulated calculation, which is the hash rate. If one computer owns the hash rate exceeds 50% of the total hash rate of people mining the cryptocurrency, it will guarantee that this computer can get the cryptocurrency since it is always the first one who solve the function. In other words, it is the baseline where the electricity is free.

So how to choose graphic cards to purchase maximized profits? It depends on the price, hash rate of the graphics and the electricity costs. The only cost of crypto mining is the price of all essential computer setups and the electricity cost. The more

power a graphics card has, the more electricity fee it will cost. The picture below exhibits some popular graphic cards used for mining cryptocurrency.

GPU	Hashrate (MH/s)	Power (W)	Price (CAD)
Nvidia RTX 3090	121	350	$2,050
AMD Radeon VII	105	300	$2,380
Nvidia RTX 3080	97	320	$1,100
Nvidia CMP 90HX	86	320	$1,000
Nvidia RTX 2080 Super	45	250	$1,900
AMD RX 6900 XT	61	350	$1,600
Nvidia GTX 1080Ti	49	250	$2,400
Nvidia Titan XP	49	250	$1,650

Figure 1 : GPU data and specification for mining cryptocurrency.

If we divide the price by its hash rate, we will get the price of 1 MH/s for each graphic card below.

GPU	CAD / MH per second
Nvidia RTX 3090	16.94
AMD Radeon VII	26.67
Nvidia RTX 3080	11.34
Nvidia CMP 90HX	11.63
Nvidia RTX 2080 Super	42.42
AMD RX 6900 XT	26.23
Nvidia GTX 1080Ti	48.98
Nvidia Titan XP	33.67

Figure 2 : CAD / MH per second data for each graphic card.

As the graph showed, "Nvidia RTX 3080" is the best choice for Cryptomining since it is the most cost-efficient graphic card. It is excellent for people who plan to mine cryptocurrency to have more than one 3080 GPU since the hash rate will double if two graphic cards work simultaneously, tenfold if ten graphic cards. Although the power grows at the same rate, it has little effect on crypto mining's profit. There is no limit for the number of graphic cards used for crypto mining, as long as there is a graphic card working. In fact, some people use 78 Nvidia RTX 3080 to mine Ethereum, producing 600 to 800 US dollars every day, and it takes only six months to earn the capital back.

Figure 3: Cryptocurrency miner Simon Byrne and features 78 custom Nvidia 3080 graphics cards[4]

How to set up an affordable computer, so that maximize the profits?

- Nvidia RTX 3080 x 2 : 2200 CAD
- Motherboard: 500 CAD
- CPU: 250 CAD
- Memory (RAM): 200 CAD
- Hard Drive: 150 CAD
- Power Supply Unit (PSU) 350W x 2: 200 CAD

The setup above maximizes the profits and totally affordable for people in Vancouver. The average salary in Vancouver is 3689.5 CAD/ month[5], the total cost of the computer setup is 3500 CAD. With the electricity fee of 0.0930 CAD per kWh[6], Vancouver people can produce 14.19 CAD pure profit every day, and it takes only 8 months to earn the capital cost back. Cryptomining could produce 5177.65 CAD per year after earning the capital cost back[7]. Even if the price of ETC falls below $1000 or even $100, the value of 3080 still exists, since 3080 is one of the most popular graphics cards, which is nearly 2600 CAD yet still hard to buy[8].

In conclusion, choosing "Nvidia RTX 3080" will maximize the profits of cryptomining. If Vancouver people set up their computer using "Nvidia RTX 3080," they could earn an extra 5177.65 CAD per year and even more if the profits are used to buy more 3080 graphic cards. "Nvidia RTX 3080" is the most cost-efficient graphic card, has a 97 MH/s hash rate and 320w power, it only cost 1100 CAD. Nvidia RTX 3080 still holds its value if the price of the cryptocurrency falls. It is time for Vancouver people to set up their computers and earn extra money through crypto mining.

References:

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Part 2

Just-in-time compilation executes source code or executes bytecode translated machine code at running time. A just-in-time compiler analyses the running code and identifies the accelerated code.

Explain:

In the first sentence, I deleted the abbreviations, changed the noun to verb, and combined it with the second sentence because the sentence's subject can be integrated into the first sentence's object.

In the second sentence, I changed the noun to an abjective form and merged it into the first sentence. Also, I deleted the "which is then executed directly" because deleting it does not affect the sentence's core meaning.

In the third sentence, I changed the "A system implementing a JIT compiler" to "A just-in-time compiler" and changed the "the code being executed" to "the running code," making it more understandable. Then I changed the sentence "the part of the code where the speedup gained from compilation or recompilation would outweigh the overhead of compiling that code. " to "the accelerated code, "making it more concise and accurate.