CS665: Programming Assignment-1 Report

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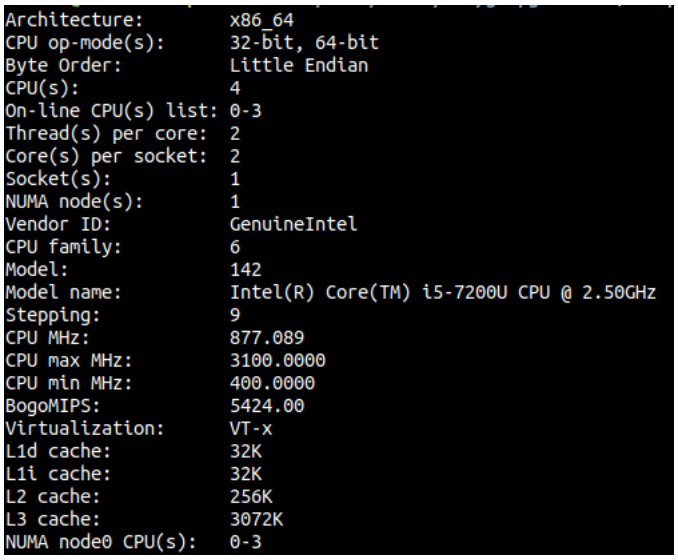
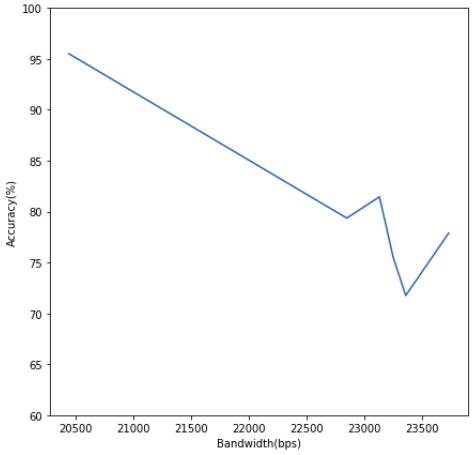
1 System Specifications



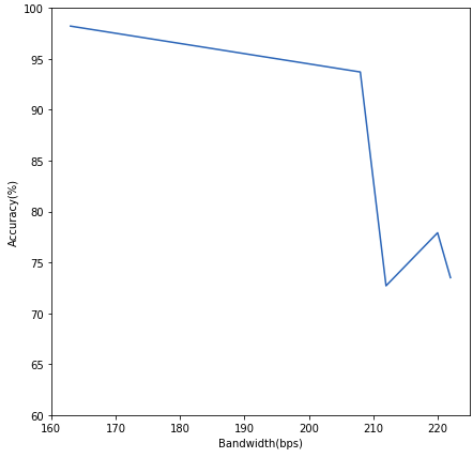
2 Tasks

2.1 Task1a



Reason: The accuracy is decreasing with increase in data size

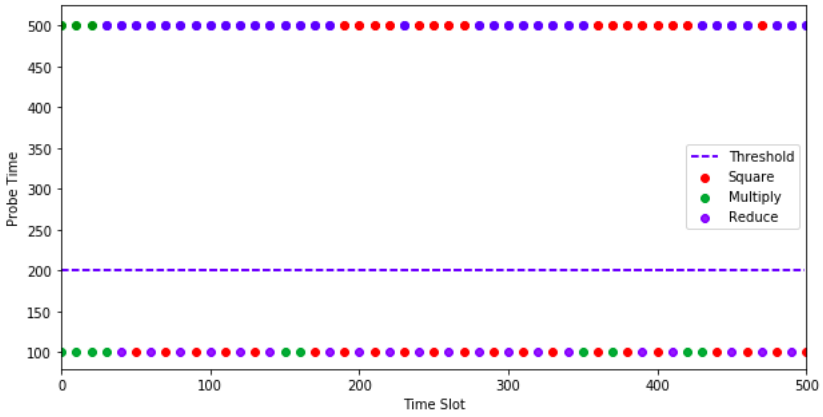
2.2 Task1b



Reason: The accuracy is decreasing with increase in data size

2.3 Task2a

The table 1 is for checking different probe times to see which works better.

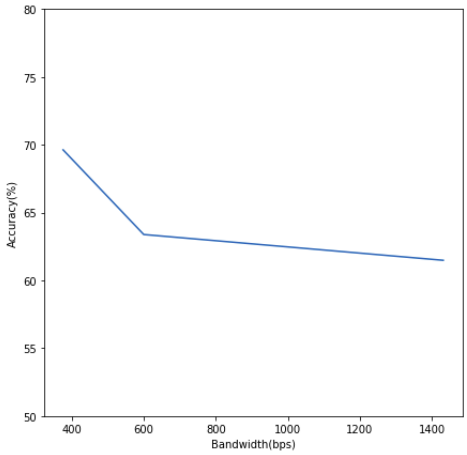


Probe Time	Average TPR	Average FPR
100	0.789	1.24
500	0.732	0.93
1000	0.73	0.973
2000	0.868	0.848
3000	0.738	0.50
4000	0.59	0.42

Table 1: Table to check different probe times

2.4 Task3a

Reason: The accuracy is decreasing with increase in data size



3 Insights/Experiments

3.1 Task1a and Task1b

Synchronization

- Synchronization for sender and receiver is must inorder to make them start work at the same time.
- Synchronization here is achieved by applying certain condition on rdtscp value, the condition looks like if rdstcp's value falls between a certain range of values then the loop will break, this occurs at the same time in sender and receiver as well, since both sender and receiver are reading the same read_time_stamp_counter.

Bit reading

- Once synchronization is achieved, sender is flushing/do nothing as per the bit for a certain period of time and at the same time receiver accesses the cache block to infer the data with good prediction.
- By doing this activity for a certain period of time is required else the sender and reader's one time activity will get overlap and so we can't infer the data with good prediction.
- The certain period of time is set to a particular rdtscp time period.

Pattern

- Once receiver starts, it keeps on accessing the cache block and inorder to inform the receiver to start store the inferred bits as the sender starts sending bits, we need to use a pattern sending technique(used in tcp/ip headers in networking) for the same.

- Once receiver reads the pattern from sender, receiver will start storing the inferred bits.

Issue with threshold

- We tried to calculate the threshold by repeatedly doing maccess and clflush the block in the receiver code but this doesn't give constant threshold and so huge drop in accuracy.
- We have also tried integrating calibration code into our code but the accuracy here is also dropping sometimes.
- Finally we come with a threshold value 100 which is giving proper output in most of the systems.

3.2 Task2a

- **Probe Time:** Different probe times are checked with a fixed threshold of around 200 as mentioned in table 1

3.3 Task3a

- We do not get the image as the accuracy is very low as shown in the graph. For images, the binary files need to have a very high accuracy.

4 Work Division

1. **Siva:** Task1a, Task1b, Report
2. **Tushar:** Task2a, Report
3. **Sumaiya:** Task1a, Task3a, Report