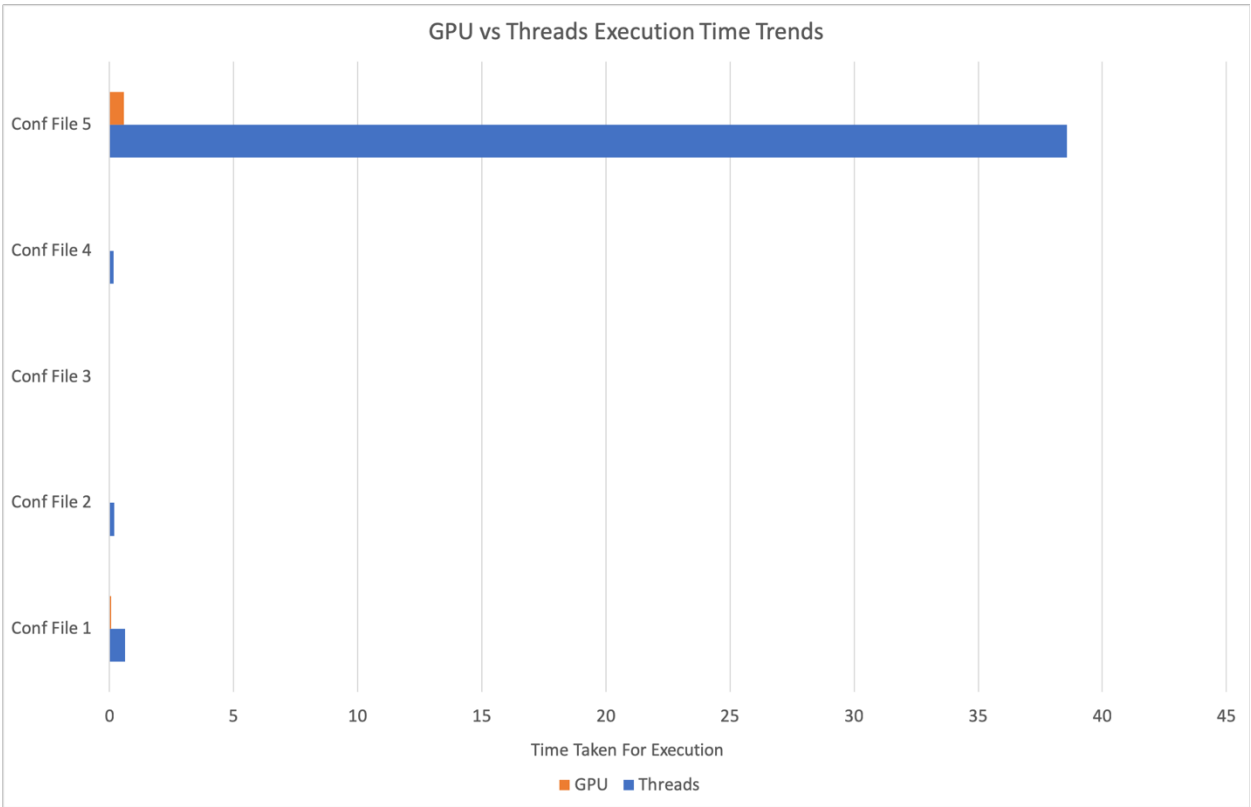
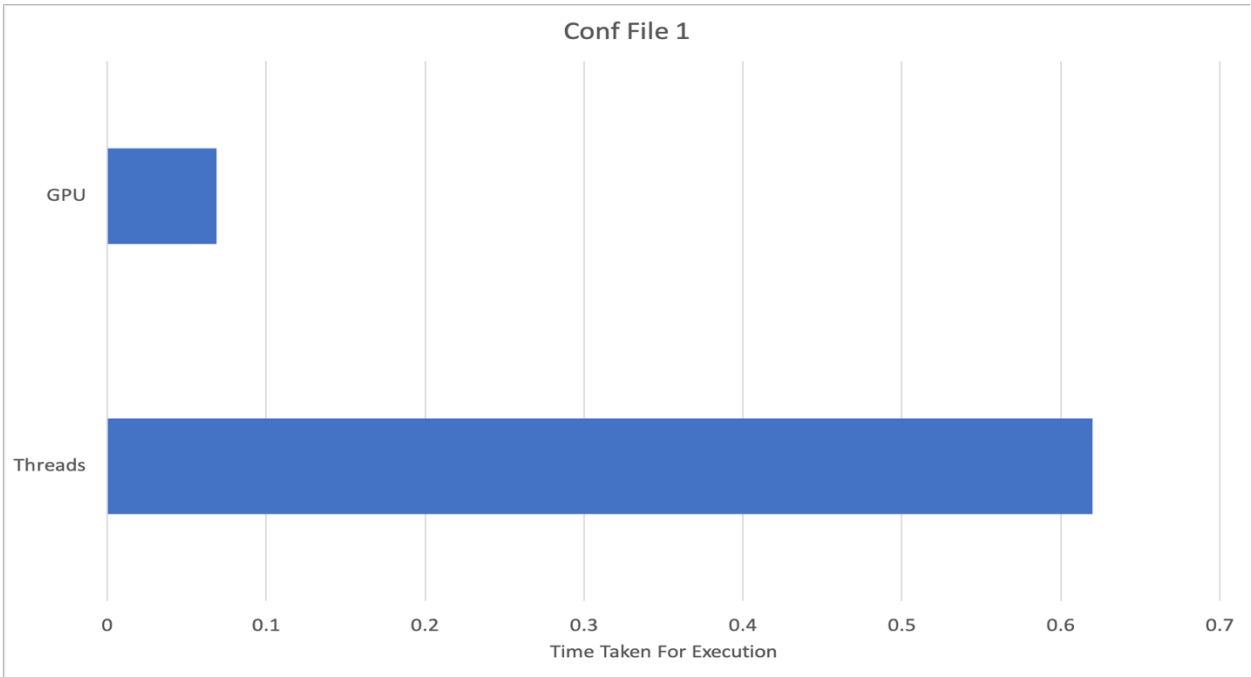


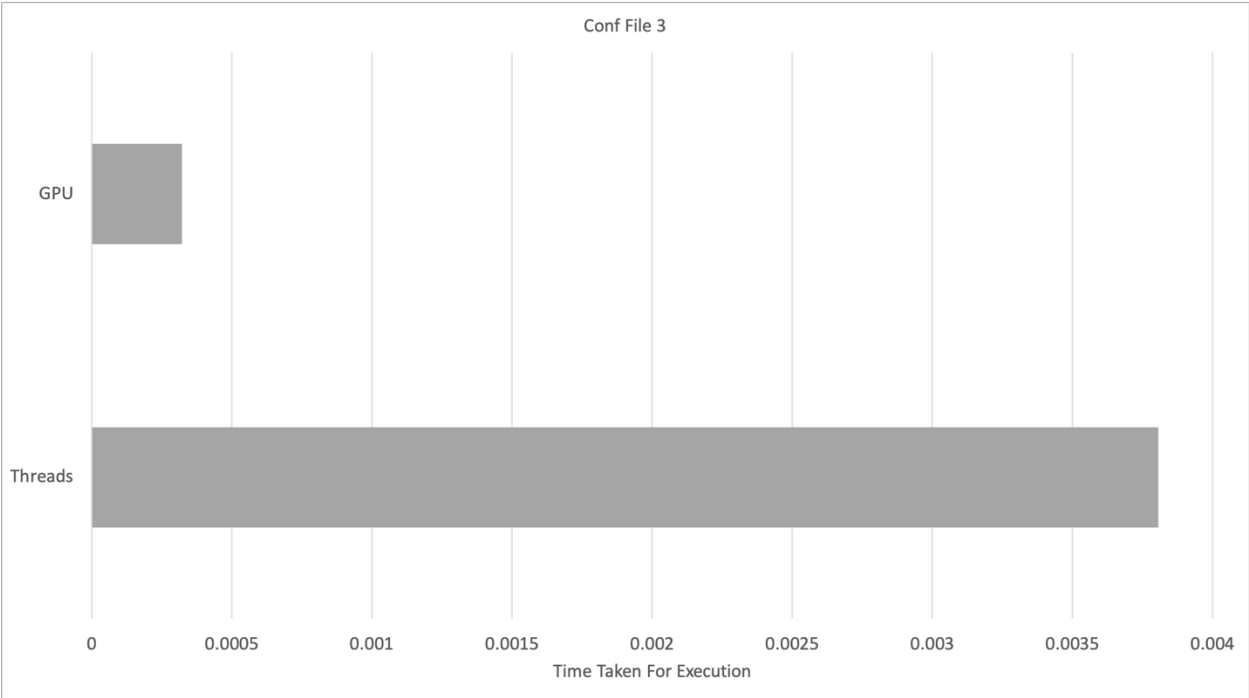
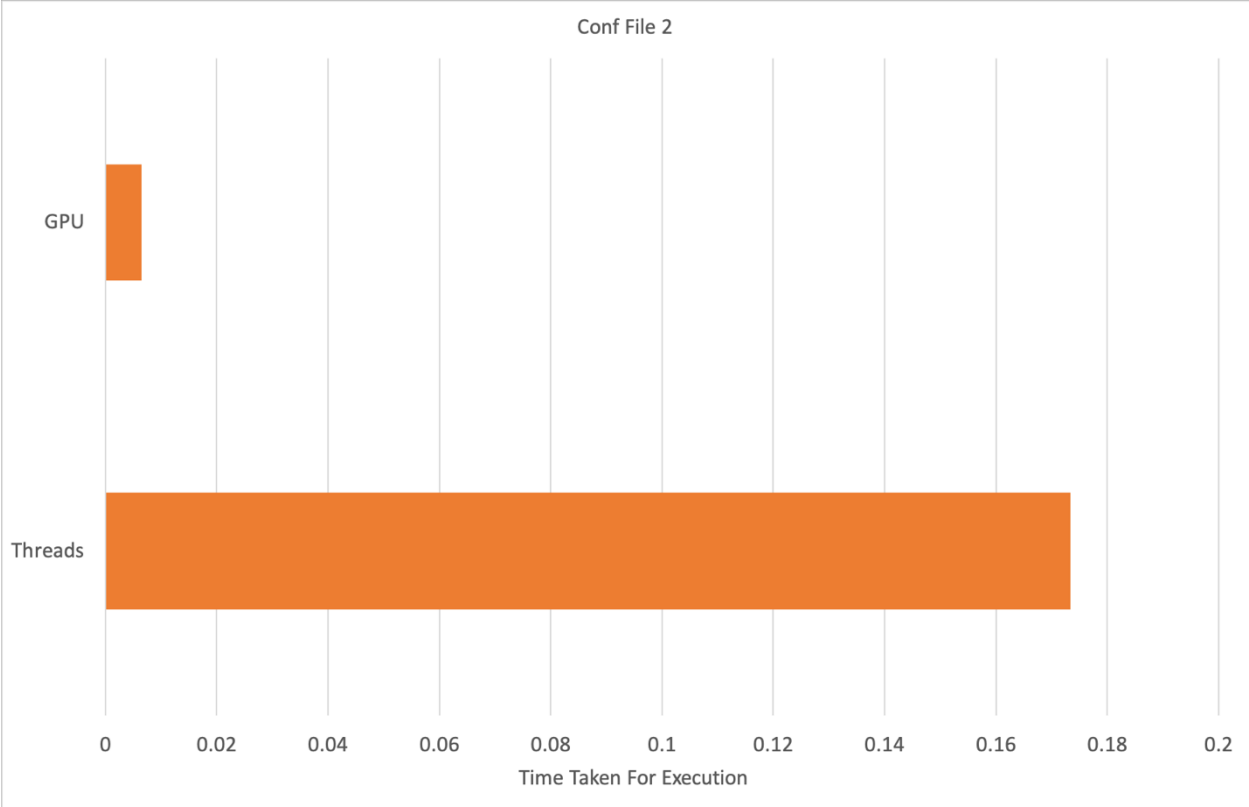
Trend Report SE3 vs P2 (Threads vs GPU Execution times for 2D 3D Heat Diffusion) -> **AKSHAYA NAGARAJAN (GTID: 903319262)**

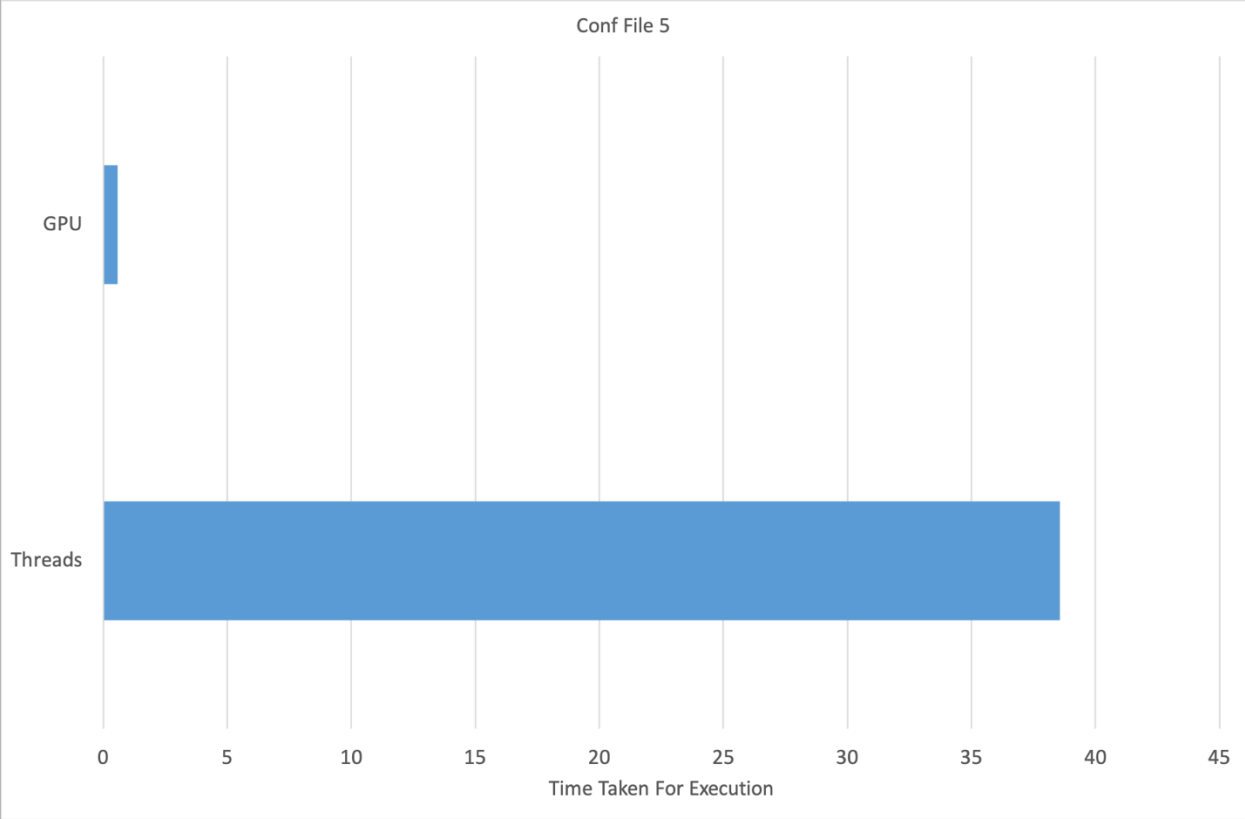
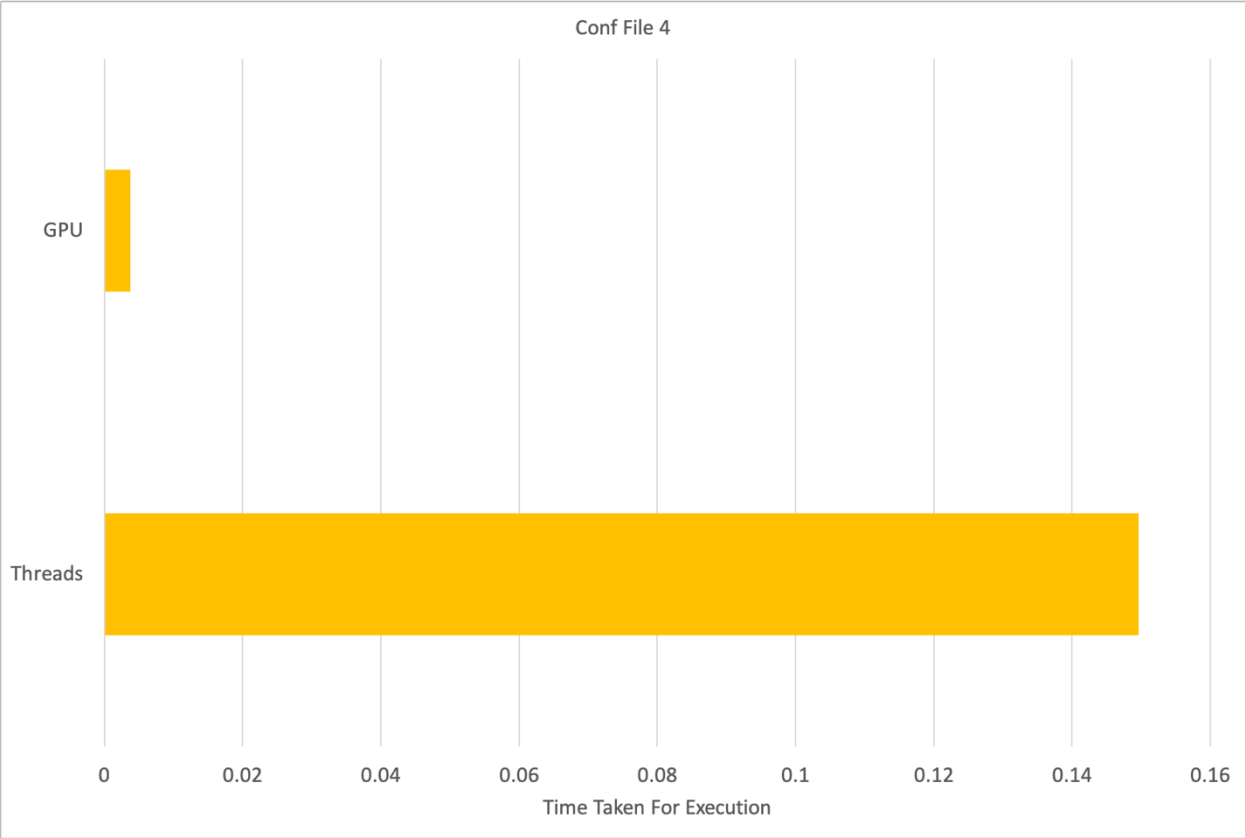


All time units are in Seconds

Now individual Comparisons for each Conf File –







The Conf Files used to compute these are as follows –

1. Conf File 1

```
##### 2D CONFIGURATION EXAMPLE #####
#your code should ignore lines starting with '#'
#you can assume arguments will always follow this ordering however whitespace may vary
#2D or 3D
2D
#the value for k
0.25
#number of timestep to run
200
#width (x-axis) and height (y-axis) of grid
1600,1600
#default starting temperature for nodes
5.55

#list of fixed temperature blocks (squares for 2D)
#can be 0, 1 or more

#assume blocks won't overlap
#location_x, location_y, width, height, fixed temperature
5, 5, 1, 1, 200
500, 500, 10, 10, 300
20, 30, 60, 60, 400
400, 12, 30, 30, 600.23
200, 120, 30, 40, 50
1000,300,50,80,222.56
1350,1262,90,34,500.56
```

2. Conf File 2

```
##### 2D CONFIGURATION EXAMPLE #####
#your code should ignore lines starting with '#'
#you can assume arguments will always follow this ordering however whitespace may vary
#2D or 3D
2D
#the value for k
0.25
#number of timestep to run
200
#width (x-axis) and height (y-axis) of grid
800,800
#default starting temperature for nodes
5

#list of fixed temperature blocks (squares for 2D)
```

#can be 0, 1 or more

#assume blocks won't overlap

#location_x, location_y, width, height, fixed temperature

5, 5, 1, 1, 200

500, 500, 10, 10, 300

20, 30, 60, 60, 400

400, 12, 30, 30, 600.23

200, 120, 30, 40, 50

3. Conf File 3

2D CONFIGURATION EXAMPLE

#your code should ignore lines starting with '#'

#you can assume arguments will always follow this ordering however whitespace may vary

#2D or 3D

2D

#the value for k

0.25

#number of timestep to run

30

#width (x-axis) and height (y-axis) of grid

50,50

#default starting temperature for nodes

10.5

#list of fixed temperature blocks (squares for 2D)

#can be 0, 1 or more

#assume blocks won't overlap

#location_x, location_y, width, height, fixed temperature

5, 5, 4, 4, 200.2

20, 30, 6, 6, 400

12, 13, 2, 22, 36.566

4. Conf File 4

3D CONFIGURATION EXAMPLE

#your code should ignore lines starting with '#'

#you can assume arguments will always follow this ordering however whitespace may vary

#2D or 3D

3D

#the value for k

0.25

#number of timestep to run

150

```

#width (x-axis) height (y-axis), depth (z-axis) of grid
100,50,75
#default starting temperature for nodes
22.5
#list of fixed temperature blocks (cubes for 3D)
#can be 0, 1 or more

#assume cubes won't overlap
#location_x, location_y, location_z, width, height, depth, fixed temperature
5, 5, 5, 2, 2, 2, 200
40, 12, 50, 2, 5, 3, 600.23
10, 20, 30, 10, 5, 5, 70.5

```

5. Conf File 5

```

#### 3D CONFIGURATION EXAMPLE ####
#your code should ignore lines starting with '#'
#you can assume arguments will always follow this ordering however whitespace may vary
#2D or 3D
3D
#the value for k
0.25
#number of timestep to run
200

#width (x-axis) height (y-axis), depth (z-axis) of grid
800,500,200
#default starting temperature for nodes
20.5
#list of fixed temperature blocks (cubes for 3D)
#can be 0, 1 or more

#assume cubes won't overlap
#location_x, location_y, location_z, width, height, depth, fixed temperature
5, 5, 5, 2, 2, 2, 200
200, 30, 40, 60, 60, 70, 400
40, 12, 30, 10, 60, 30, 600.23
178, 99, 12, 13, 15, 77, 86.85

```

Conclusion: The Nvidia GPUs clearly outperform the threads in execution of the 2D 3D grids. They are faster and more efficient.