

# JETSON-PI

DUDEKULA USENI - AHILAN R  
r171099@rguktrkv.ac.in - ralatcuk@gmail.com  
FWC22098-FWC22090 - IITH Future Wireless Communication (FWC)

February 23, 2023

## 1 Abstract

Time series autocorrelation

We would like to experiment and see Can raspberry pi and/or nano do time series autocorrelation for large data sets. Data set usually will contain about  $40e6$  to  $1.5e8$  points and will be sampled uniformly

## 2 Perfomance Comparision Tables Of PI And JETSON

METHOD-1 PYTHON IMPLEMENTATION		
SAMPLES	PI	JETSON
50K	36 minutes	9 minutes
100K	2.69 hrs	52.67 minutes
200K	limit time exceed	limit time exceed

METHOD-2 STATSMODEL		
SAMPLES	PI	JETSON
50K	1.58 sec	9.69 sec
100K	2.06 sec	28.90 sec
200K	2.29 sec	1.88 minutes
1M	3.57 sec	51.58 minutes
10M	26.03 sec	limit time exceed
20M	Killed	killed

METHOD-3 NUMPY.CORRELATE		
SAMPLES	PI	JETSON
50K	4.701 sec	6.80 sec
100K	11.37 sec	27.18 sec
200K	1.89 minutes	1.89 minutes
1M	1.90 minutes	52.96 minutes
10M	limit time exceed	limit time exceed
20M	Killed	killed

METHOD-4 FOURIER TRANSFORM		
SAMPLES	PI	JETSON
50K	0.08 sec	1.49 sec
100K	0.16 sec	2.70 sec
200K	0.39 sec	5.27 sec
1M	0.51 sec	24.98 sec
10M	44.20 sec	52.19 sec
20M	Killed	killed

## 3 conclusion

Overall, RaspberryPi is faster to execute the autocorrelation than Jetson Nano. However, both have limitaions depending on the number of samples taken and the method of implementation. For example, when 20 million samples were taken both output produced "killed".

## 4 Software

Download the following code

```
https://github.com/dudekulauseni123/FWC0982022
```