Multiprocessor Optimisation of Real World SKA Modelling Problem

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Introduction

The SKA project was started in order to create the worlds largest array of radio telescopes. This will be done by having 197 radio telescopes situated in South Africa and Australia working together and covering an area close to one square kilometre. The array is set to have a resolution of over 50 times that of the Hubble Space Telescope while still covering massive areas of the sky [1]. But this leads to a problem in the sense that all these detections generate massive amounts of noisy data, but this can be fixed by using mathematical modelling and signal processing to extract the necessary data and also using an optimised algorithm to extract the data and generate results in the fastest time possible. This can also be sped up by using hardware suited to this task, namely GPU's and high performance CPU clusters.

1 GPU

References

[1] The ska project. Accessed on: 21/02/2016.

[2] John D. Owens, David Luebke, Naga Govindaraju, Mark Harris, Jens Krger, Aaron E. Lefohn, and Tim Purcell. A survey of general-purpose computation on graphics hardware, 2007.