Cover letter: manuscript submission to Parallel Computing

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To Whom it May Concern:

We wish to submit a new manuscript entitled "Optimizing performance per watt on GPUs in High Performance Computing: temperature, frequency and voltage effects" for consideration by Parallel Computing.

We confirm that this work is original and has not been published elsewhere nor is it currently under consideration for publication elsewhere.

In this paper, we report on how the supply voltage, clock frequency and die temperature of graphics processing units (GPUs) affects power efficiency. This is significant as power efficiency is of great concern for high performance computing (HPC), and for next-generation radio telescopes such as the Square Kilometre Array (SKA). The paper should be of interest to readers in the areas of GPU computing and radio astronomy.

In the work presented, we find that the power efficiency of an NVIDIA K20 GPU can be increased by as much as 48% over default settings for a compute bound code by tuning GPU voltage, clock frequency, and die temperature. We used a radio-astronomy specific code, xGPU, but our results are applicable to other compute-bound GPU codes. As such, we believe our work would be of general interest to a large subset of the Parallel Computing readership, and of particular interest to the GPU computing and radio astronomy audience.

Please address all correspondence concerning this manuscript to me at dprice@cfa.harvard.edu

Thank you for your consideration of this manuscript.

Sincerely,

Danny Price