NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Computer Science and Engineering
College of Engineering

Improvements to SLAM Architecture on Embedded Systems

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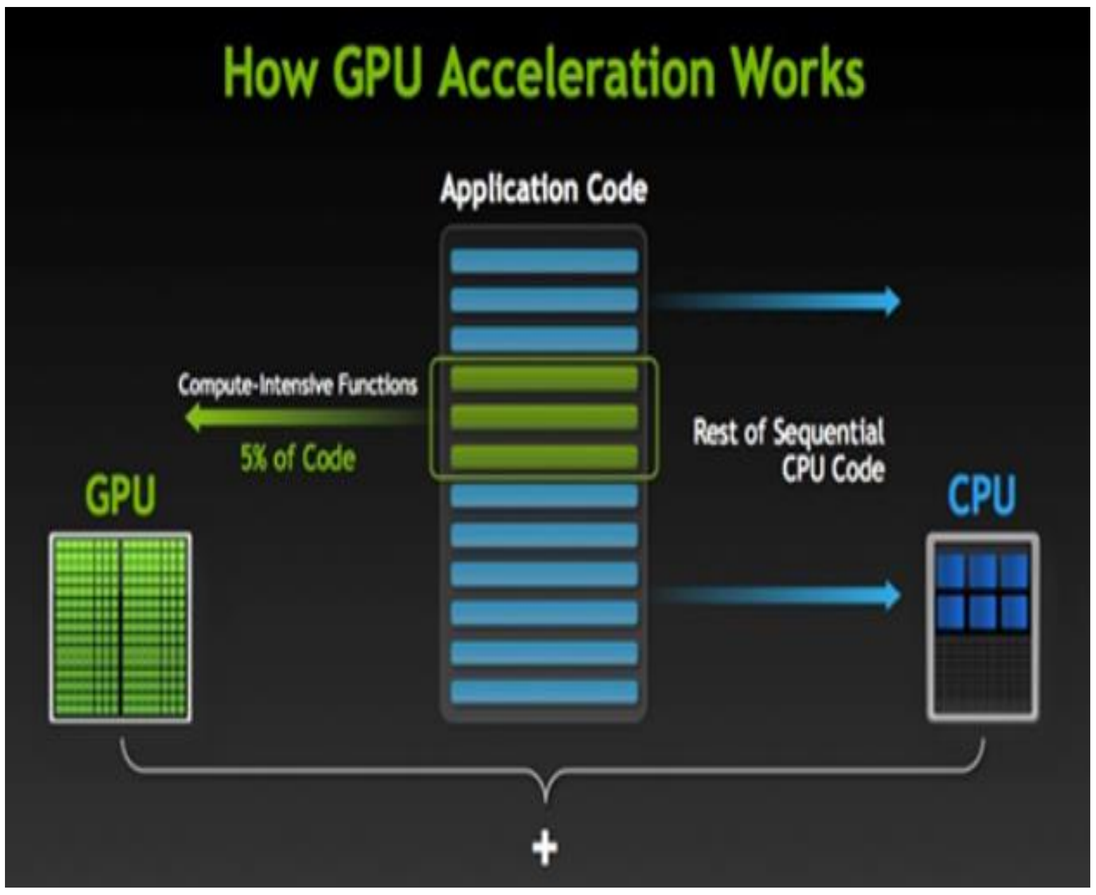
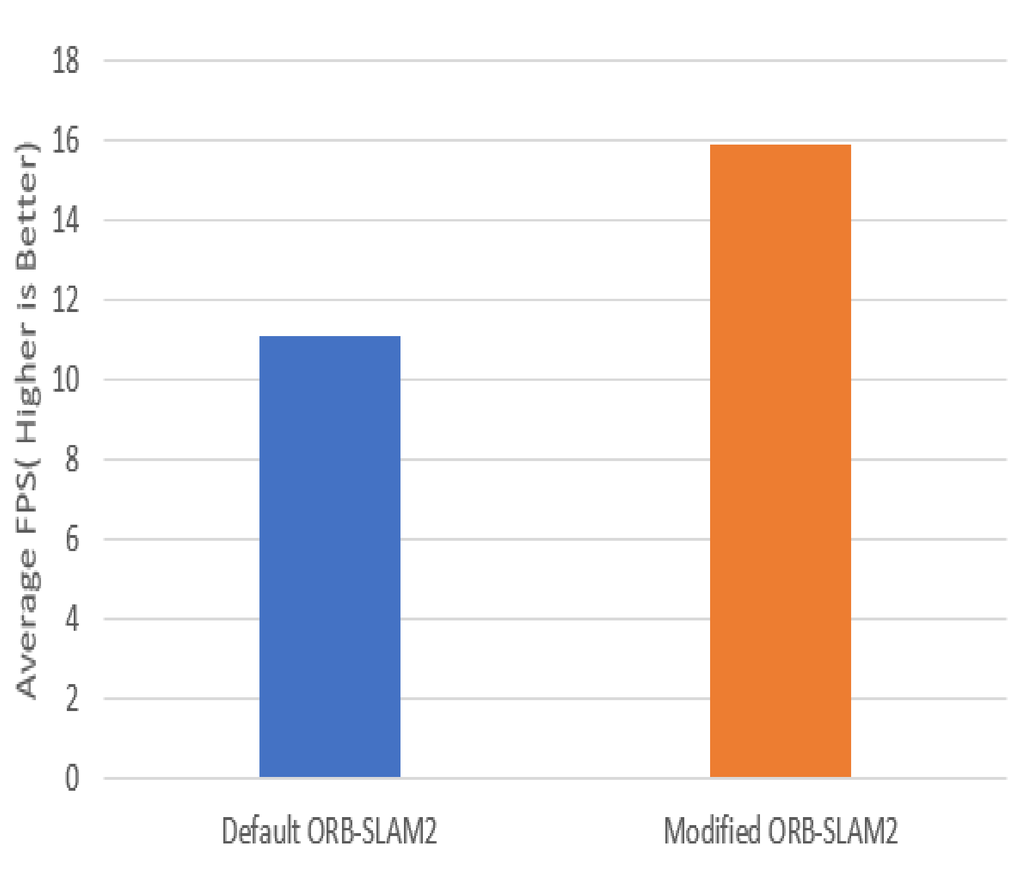
PURPOSE

To improve the performance of the **ORB-SLAM2 algorithm** on Embedded Systems.To make use of GPU resources and optimizations to increase FPS and SLAM performance.

CUDA ACCLERATION

Using the GPU cores available, the CPU and GPU can both be ultilized in parallel. This would enable SLAM to offload traditionally CPU tasks to the GPU and improve performance in generating the surrounding map.





MAP SAVING & BINARIZATION

Default algorithm does not save a map for future reference. Modified approach reads the pointcloud and saves them for future use by the user. Allows for user to perform SLAM in headless mode. Vocabulary file is also binarized to immensely reduce loading time by 80%.