Abstract

Among several techniques available for solving Computational Electromagnetics (CEM) problems, the Finite Difference Time Domain (FDTD) method is one of the best suited approaches when a parallelized hardware platform is used. In this paper we investigate the feasibility of implementing the FDTD method using the NVIDIA® GT 520, a low cost Graphical Processing Unit (GPU), for solving the differential form of Maxwell's equation in time domain. Initially a generalized benchmarking problem of bandwidth test and another benchmarking problem of matrix left division is discussed for understanding the correlation between the problem size and the performance on the CPU and the GPU respectively. This is further followed by the discussion of the FDTD method, again implemented on both, the CPU and the GT520 GPU. For both of the above comparisons, the CPU used is Intel® E5300, a low cost dual core CPU.

References

Index Terms

Computer Science
Architecture

Keywords

CUDA  Maxwell's Equation Numerical Solution  GPGPU Computing