

Introduction:

Sitar (<https://nehakaranjkar.github.io/sitar/>) is an open source cycle-based simulation framework that I have developed in collaboration with Prof Madhav Desai (EE, IIT Bombay). The framework is targeted for fast, parallel simulation of large discrete-time systems (such as micro-architectural models, queueing networks and IoT systems). The simulation kernel has been parallelized using OpenMP to utilize modern multi-core or many-core systems.

We are currently working on improvements to Sitar for simulation of large IoT systems, and towards this, we plan to conduct a series of experiments on evaluating the performance and scalability of simulations performed on a many-core system. We plan to submit the results from this study to HiPC conference in July.

Work involved in this Project:

Understand the Sitar modeling framework, devise benchmark models and implement them in Sitar, devise a set of experiments to evaluate the Scalability and performance. Do performance comparison with alternate frameworks such as SystemC/SimPy.

Student Positions: 2 students

Skills expected:

Good familiarity with C++, Python and Linux (shell or Python scripting), experience in projects involving object-oriented programming, basic familiarity with OpenMP. Knowledge of discrete-event simulation algorithms is desirable.