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### Research Area: Computational Science and Engineering

There is an emerging interest to utilize the potential of *General-Purpose Computation on Graphics Processing Units (GPGPUs)* in high-performance scientific computing, as opposed to comparable central processing units (CPUs). This platform shall be utilized in the implementation of a social dynamics modeling application. The work involves modeling social dynamics of large populations (on the order of a million individuals), capturing behavior at the individual level, and using the emerging computing platform of GPGPUs for execution of the models. The tasks involved in this research project will include: (a) understanding the programming paradigms of GPGPU platforms, which are different from traditional computing paradigms, (b) formulating a GPGPU-based algorithm for a basic social behavioral model, (c) realizing the algorithm implementation on GPGPU using OpenGL or other suitable framework, (d) setting up a GPGPU machine, and (e) executing the algorithm implementation on the machine to study execution performance as well as interesting emerging social behaviors.

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