# GPU-based Parallel Implementation of Swarm Intelligence Algorithms

*Ying Tan*

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GPU-based Parallel Implementation of Swarm Intelligence Algorithms combines and covers two emerging areas attracting increased attention and applications: graphics processing units (GPUs) for general-purpose computing (GPGPU) and swarm intelligence. This book not only presents GPGPU in adequate detail, but also includes guidance on the appropriate implementation of swarm intelligence algorithms on the GPU platform.

GPU-based implementations of several typical swarm intelligence algorithms such as PSO, FWA, GA, DE, and ACO are presented and having described the implementation details including parallel models, implementation considerations as well as performance metrics are discussed. Finally, several typical applications of GPU-based swarm intelligence algorithms are presented. This valuable reference book provides a unique perspective not possible by studying either GPGPU or swarm intelligence alone.

This book gives a complete and whole picture for interested readers and new comers who will find many implementation algorithms in the book suitable for immediate use in their projects. Additionally, some algorithms can also be used as a starting point for further research.

- Presents a concise but sufficient introduction to general-purpose GPU computing which can help the layman become familiar with this emerging computing technique
- Describes implementation details, such as parallel models and performance metrics, so readers can easily utilize the techniques to accelerate their algorithmic programs
- Appeals to readers from the domain of high performance computing (HPC) who will find the relatively young research domain of swarm intelligence very interesting
- Includes many real-world applications, which can be of great help in deciding whether or not swarm intelligence algorithms or GPGPU is appropriate for the task at hand

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