CSSI Element: SI2-SSE: Gunrock: High-Performance GPU Graph Analytics

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Project Goal: Develop the "Gunrock" programmable, high-performance graph analytics library for programmable graphics processors (GPUs) from a working prototype to a robust, sustainable, open-source component of the GPU computing ecosystem

External Collaboration

- **DARPA HIVE**: Used as benchmark for next generation parallel processor design (red team)
- **NVIDIA**: Incorporating into RAPIDS.ai, data science initiative
- **MIT GraphIt**: DSL that outputs Gunrock

Please find and ask me about our experience with open-source, working with DARPA and NVIDIA, balancing research and development .. We want to help!

Stats

- **Downloads / Clones**: 1429
(only 2 week snapshot as of July 2019)
- **Issues**: 89 open, 379 closed
- **Pull Requests**: 3 open, 218 closed
- **Lines of Code:** 229,000
- **Gunrock citations**: 367 across 7 papers

https://gunrock.github.io

Road Map

Three near-term development priorities:

- Single-node multi-GPU support
- Dynamic (mutable) graphs
- Ensure smooth integration with NVIDIA's RAPIDS
- Improving modularity and internals
- Scalability (within node, across nodes, across CPU-GPU boundary)