FPGAs Have the Wrong Abstraction
Adrian Sampson
Cornell
What is an FPGA?
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**A circuit emulator.**
To prototype or replace an ASIC.

**A general accelerator.**
To offload computation from a CPU.

- Signal processing
- VLSI validation
- Networking
- Radio
- Embedded devices
- Microcontrollers
- Machine learning
- Graph analytics
- Signal processing
- Genomics
- Search
- Scientific computing
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cost

lots

not much

thousands–millions

units
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GPU : graphics :: FPGA : circuit simulation
GPU: massive, mostly regular data parallelism :: FPGA: potentially irregular, fine-grained parallelism with static structure
GPU : SIMT ISA :: FPGA : __________
GPU : SIMT ISA :: FPGA : VEHLOG
GPU : GPGPU :: FPGA : _________