Constrained Environments and Many-Core Devices

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Constrained Environments

- Environment features
- Issues
- Hardware resources

Typical Features of Constrained Environments

- Small microcontroller-based systems
- Very limited memory
- Battery powered, possibly energy harvesting
- Network access

Issues

- Algorithm performance
  - Code size
  - Memory requirements
  - Throughput
- Power usage

Development Boards

- Various word sizes: 8, 16, and 32-bit
- Program memory: 16-128KB
- RAM: 2-4KB
- Various chipsets for power analysis

Many-Core Devices

- Environment features
- Issues
- Hardware resources

Typical Features of Many-Core Environment

- Many cores or execution units
  - Intel Many Integrated Core (MIC) - ~40+ cores
  - Nvidia Tesla GPU – 448 cores
- Shared memory resources

Issues

- Use as algorithm coprocessor?
- New Modes?

Questions and Comments?

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