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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