# Group 1

## 1.1Multi-core Simulator using GPGPU Platforms, PI: S. Tragoudas, SIUC

Center for Embedded Systems

An NSF Industry/University Cooperative Research Center

# Multi-Core Simulator Using GPGPU Platforms

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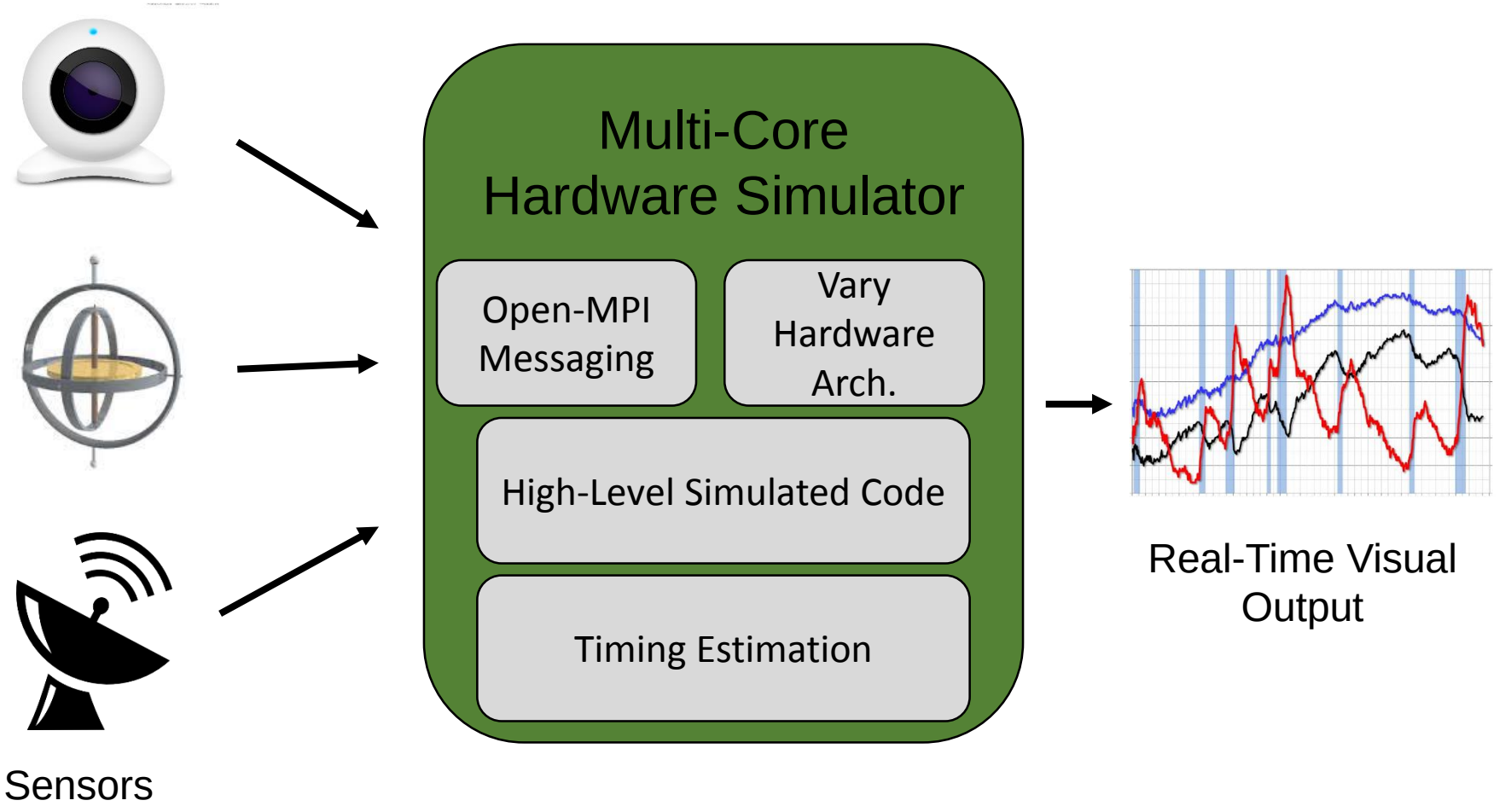
# Current Simulator

## Open MPI Based Multi-Core Simulator



# Project Overview and Description

- Insufficient Computation Power for Real-Time Simulation when:
  - Multiple Streams
  - High Definition Streams

- Migrate Processing of Data to GPGPU Environment
  - Increases available cores
  - SIMD Focus

# Approach

- Leverage existing simulator
- Use GPGPU platform to reduce execution time
  - Run threads as GPGPU threads
  - Selectively off-load processing to GPGPU
- Allows for quick design exploration of multi-core hardware
- Allows for verification of parallel algorithms

# Project Tasks/ Deliverables

| | Description | Date |
|---|---|---|
| 1 | Select GPGPU Platform | 9/30/2014 |
| 2 | Migrate Multi-Core Tool to GPGPU | 2/28/2015 |
| 3 | Performance Analysis Using Image Processing Algorithms | 4/30/2015 |
| 4 | Transfer Multi-Core Tool and Documentation | 7/31/2015 |

# Executive Summary

- High Level Summary
  - Hardware Simulator
    - Configurable core arrays
    - Measures performance characteristics of inputted software algorithms
- Migration to GPGPU
  - Increase simulator throughput
  - Greater support for real-time simulation