Goal-Oriented Approximation Language (GOAL) Computing for Parallel GPU Architectures

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GOAL: Programmer-Guided Framework for Runtime Approximation

- Technique to trade accuracy for performance and energy
  - Overcome utilization issues in parallel architectures
- Decisions based on algorithm, model data, and machine
  - Dynamically locate candidates for approximation (no training data)
  - Direct approximation at runtime on ranking candidates
  - Provide programmer with directives to control amount of approximation: AWT- Approximate workload threshold

Example: Kmeans clustering