# Improved hard real-time scheduling and transformations for embedded Streaming Applications

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# Improved Hard Real-Time Scheduling and Transformations for Embedded Streaming Applications

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*Mojoj porodici*
*To my family*

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# List of Abbreviations

| | |
|---|---|
| ADF | Affine Dataflow |
| BF | Best-Fit |
| BFD | Best-Fit Decreasing |
| CDP | Constrained-Deadline Periodic |
| CPU | Central Processing Unit |
| CSDF | Cyclo-Static Dataflow |
| DCT | Discrete Cosine Transform |
| DLP | Data-Level Parallelism |
| DM | Deadline Monotonic |
| DPEM | Data Parallel Energy Minimization |
| DSE | Design Space Exploration |
| EDF | Earliest Deadline First |
| EE | Energy Efficient |
| ESL | Electronic System-Level |
| FF | First-Fit |
| FFD | First-Fit Decreasing |
| FFID | First-Fit Increasing Deadlines |
| FIFO | First-In First-Out |

| | |
|---|---|
| FPGA | Field-Programmable Gate Array |
| GPU | Graphics Processing Unit |
| HSDF | Homogeneous SDF |
| ICP | Integer Convex Programming |
| IDP | Implicit-Deadline Periodic |
| ILP | Integer Linear Programming |
| ISA | Instruction-Set Architecture |
| ISPS | Improved Strictly Periodic Scheduling |
| ISS | Instruction Set Simulators |
| ITRS | International Technology Roadmap for Semiconductors |
| KPN | Kahn Process Network |
| LLF | Least Laxity First |
| LP | Linear Programming |
| LTE | Long-Term Evolution |
| MIDCP | Mixed Integer Disciplined Convex Programming |
| MJPEG | Motion JPEG |
| MoC | Model of Computation |
| MPSoC | Multi-Processor System-on-Chip |
| NoC | Network-on-Chip |
| NP | Non-deterministic Polynomial-time |
| PE | Performance Efficient |
| PLP | Pipeline-Level Parallelism |
| PM | Power Management |
| PPN | Polyhedral Process Network |

| | |
|---|---|
| PS | Periodic Scheduling |
| RM | Rate Monotonic |
| RSD | Reed Solomon Decoder |
| RTA | Response Time Analysis |
| RTL | Register-Transfer-Level |
| SDF | Synchronous Data Flow |
| SPS | Strictly Periodic Scheduling |
| STS | Self-timed Scheduling |
| TLP | Task-Level Parallelism |
| VFS | Voltage-Frequency Scaling |
| VLE | Variable Length Encoder |
| WCET | Worst-Case Execution Time |
| WF | Worst-Fit |
| WFD | Worst-Fit Decreasing |