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(57) Abstract :
The present invention discloses a multi-core workload balancing device (10) equipped with a thermal monitoring array (16), predictive scheduler (22), and heat-sensitive switch bank (18) actuated by phase-change elements (26). It dynamically migrates tasks between processor cores (12) based on real-time and forecasted temperature data, preventing overheating. The device further integrates a voltage-frequency scaling unit (20) and heat-dissipation feedback loop (36) to optimize performance and energy efficiency. This system ensures continuous high-performance computation while mitigating thermal stress and extending processor lifespan.

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