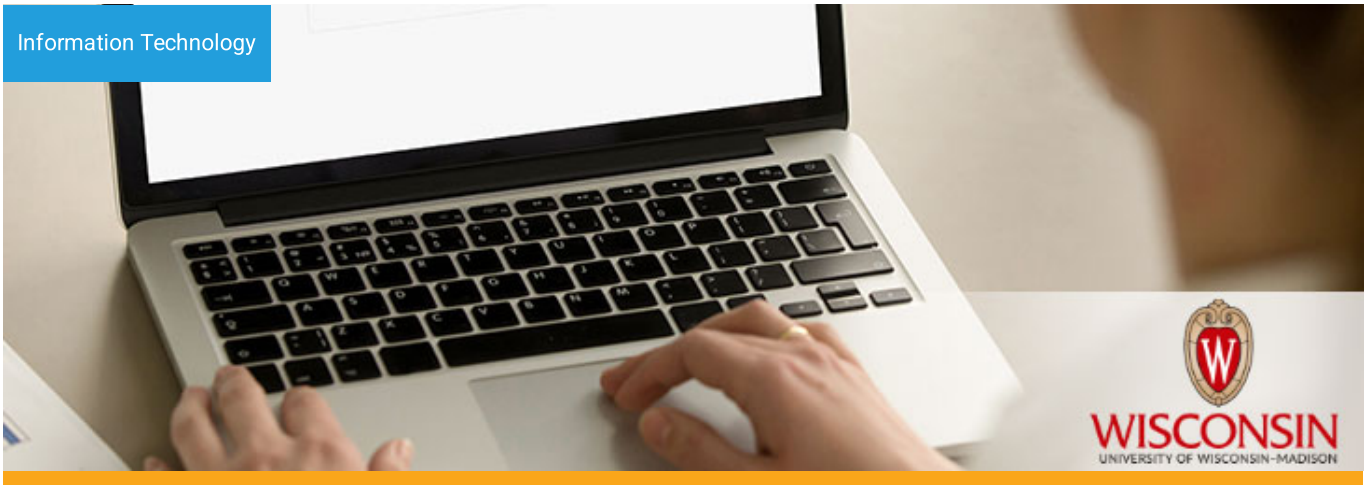
Information Technology



SYSTEMS, METHODS, AND MEDIA FOR GENERATING AND USING SPIKING NEURAL NETWORKS WITH IMPROVED EFFICIENCY

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WARF: P210141US01

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The Invention

UW-Madison researchers have a computer vision method utilizing spiking neural networks that provides accuracy but does not trade-off latency or power consumption. In recent years, improvements in computer vision tasks have focused on improving accuracy. However, improved accuracy for a particular task may not be useful practically if the task cannot be performed quickly, or if the amount of power expended to perform the task is relatively high. This invention is a spike-based streaming perception, an approach that seamlessly integrates latency and accuracy, resulting in a smooth Pareto optimal latency-accuracy tradeoff curve. This approach is based on spiking neural networks (SNNs) and uses a set of optimization techniques. The three optimizations include steady-state optimization, transient optimization, and sparsity optimization. These optimization techniques, when combined, give up to 1-2 orders of magnitude improvement in latency and power consumption.

Applications

Computer vision devices with stringent latency, computational, and power budgets

- Mobile Devices
- Autonomous Vehicles
- Edge AI Devices
- AR/VR Applications

Key Benefits

- Improved scene understanding
- Enhanced high-speed navigation decisions
- Latency reduction, improving immersive experiences

Additional Information

For More Information About the Inventors

- Mohit Gupta

Tech Fields

- Information Technology : Image processing

For current licensing status, please contact Michael Carey at mcarey@warf.org or 608-960-9807