



Applied Materials Enhances Manufacturing Productivity with a 3x Surge in Inference Throughput on CPU

Results:

3x

Throughput increase while maintaining on-par accuracy

Increased production capacity and improved product quality

Run and efficiently scale on a wide range of Intel CPUs



"By leveraging Deci, we developed a highly efficient image classification model to enhance our quality inspection solution, enabling faster model delivery to production."

- Amir Bar

Head of SW and AI, ODC Division at Applied Materials

Introduction

Computer vision is already transforming manufacturing processes, with numerous applications such as visual inspection, safety monitoring, defect detection, supply chain management, and more. Computer vision-based solutions deliver the intelligence to simplify processes, drive new efficiencies, and empower faster decision-making.

Applied Materials is a leader of materials engineering solutions that produce the chips that power everything from smartphones and laptops to medical equipment and household appliances. As a leader in their space, Applied Materials uses cutting edge computer vision technology to solve the biggest challenges in chip manufacturing and meet the growing demands from the semiconductor industry.

Overview



Visual Inspection in Manufacturing



Image Classification



Intel CPU

The Challenge

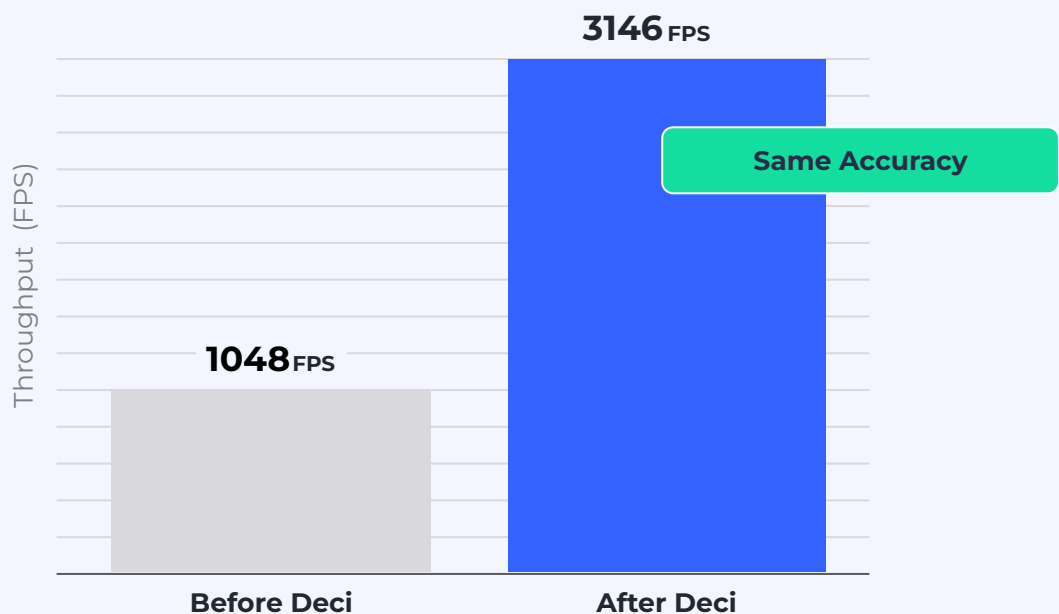
Applied Materials has been leveraging the power of computer vision for visual inspection to improve production line capacity, minimize errors, and ensure high product quality. Being at the forefront of AI innovation, they were looking to enhance processes further and bring repeatability, consistency, and better decision-making. To do this, Applied Materials sought to significantly improve the performance of a critical image classification model by achieving a higher throughput on Intel CPUs while maintaining accuracy.

The Solution

The team at Applied Materials used the Deci platform and AutoNAC, Deci's proprietary Neural Architecture Search engine, to build a custom image classification model with better hardware utilization to meet their requirements and performance targets. After Applied Materials trained the new AutoNAC-generated model in their secured internal environment, it not only maintained the baseline accuracy but also offered increased throughput, helping to significantly improve the whole solution's efficiency. With the performance improvement that Applied Materials achieved using Deci, they enhanced visual inspection processes, increased production capacity.

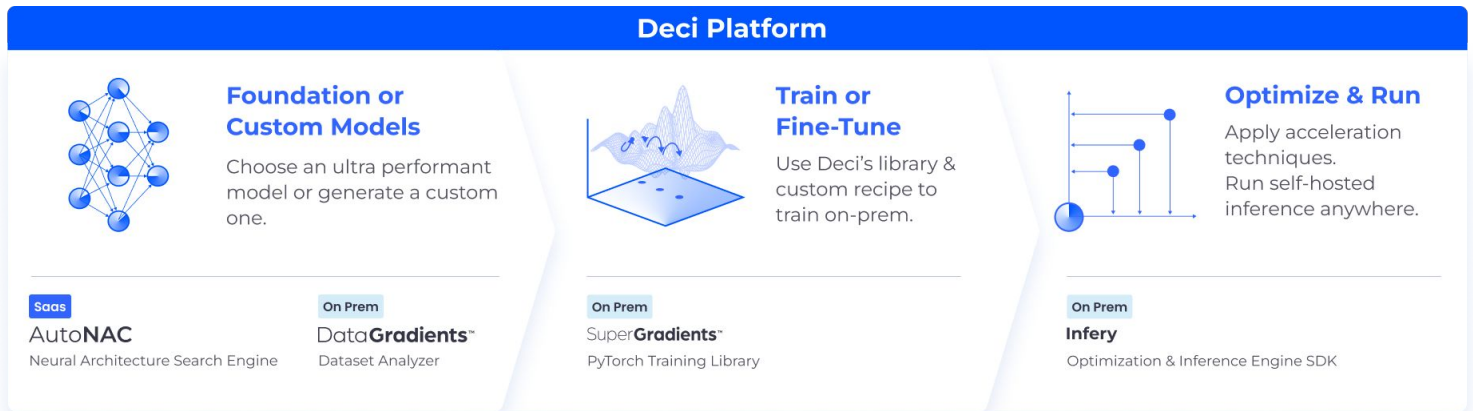
3X Higher Throughput

Image Classification Model, Intel CPU



Deci's Deep Learning Platform

Go from data to production-ready model in days



Training Frameworks Runtime Frameworks

AutoNAC™ - The Most Advanced Neural Architecture Search Technology

Deci is powered by the groundbreaking Automated Neural Architecture Construction (AutoNAC™) technology. This cutting-edge technology underlies all our foundational models, expertly designed to deliver cost-effective fine-tuning and inference performance. YOLO-NAS, globally recognized as the superior foundation model for object detection, YOLO-NAS Pose, DeciCoder-6B, DeciLM-7B, DeciDiffusion 2.0 and our groundbreaking achievements at MLPerf, are just a few illustrative examples of AutoNAC's extraordinary performance and capabilities.



By Using Deci's Platform You Can:

Run Real Time Inference to Detect Defects as They Happen

Improve latency and throughput, and reduce model size by up to 5x (on average) while maintaining or improving the model's accuracy.

Improve Hardware Utilization and Reduce Inference Cost

Make the most of your current hardware or move to one that's more affordable. Enable inference on edge devices or cut up to 80% of your cloud compute costs.

Simplify Development and Shorten Time to Market

Automate model selection and optimization. Eliminate uncertainty, guarantee success, and reach production faster.

About Deci

Deci enables deep learning to live up to its true potential by using AI to build better AI. With Deci's platform, AI developers can easily build, optimize, and deploy highly accurate and efficient models to any environment including cloud, edge, and mobile. Leading enterprises are using Deci to boost their deep learning models' performance, shorten development cycles, enable new use cases on edge devices, and reduce computing costs.

[Book a Demo](#)

For more information, visit deci.ai

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