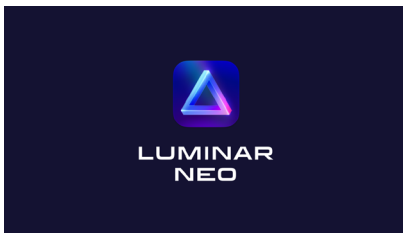# Solution Brief

AI-Powered Image Editing
Visual Computing

intel. + SKYLUM

Luminar Neo Ramps Up More AI-Driven Photo Effects Faster

AI enhances user experiences and delivers richer photo editing capabilities, building on the new functionality of Intel® Core™ Ultra processors and the OpenVINO™ toolkit.

LUMINAR NEO

"At Skylum, we are experts in AI-assisted photo editing, with our most prominent product being the award-winning software Luminar Neo. It's well known that tasks in this area constantly demand more resources. Intel's initiatives in the AI space, both on the CPU and GPU side, as well as the company's decision to add NPUs to all its new processors, allow us to improve the user experience for our creators significantly."[1]

– Dmytro Mykhalchuk,
VP of Product & Engineering,
Skylum

Skylum embeds trend-setting AI in Luminar Neo

The learning curve for many photo-edited applications is steep and onerous. To counter this challenge, Skylum harnesses AI technology, assisting creators in achieving stunning effects easily and intuitively. Intel backs this endeavor by delivering technology platforms and tools that streamline use of machine learning algorithms for complex tasks and support AI inferencing on local hardware. To connect independent software vendors and independent hardware vendors with the tools, resources and latest technologies to implement AI, Intel has created the Intel® AI PC Acceleration Program.

With Luminar Neo, Skylum continues to extend the award-winning image-editing capabilities with AI-driven effects and expands the range of professionally-designed presets and filters. New features added to the latest release include Supersharp[AI] to correct poorly focused images, Noiseless[AI] to retain details while eliminating noisy artifacts and Focus Stacking to merge multiple images with different depths of field.

OpenVINO enables AI PC hardware acceleration for Luminar Neo

As part of the ongoing collaboration with Intel, Skylum capitalized on the Intel Distribution of the OpenVINO™ toolkit for optimizing computationally-intensive AI tasks and reducing the application's memory footprint. By employing acceleration and parallelism for complex operations, OpenVINO toolkit exploits the hardware architecture and unique features of Intel Core™ Ultra processor technology and unlocks new AI capabilities in the 2023.1 release.

AI is well supported by the new Intel Core Ultra processors, as the processor includes Intel's first integrated neural processing unit (NPU) to perform local inferencing. Creatives interested in equipping themselves with a thin, light, energy-efficient laptop can find several models from major computer manufacturers powered by the Intel Core Ultra processor, an ideal platform for delivering exceptional user experiences when running Luminar Neo.

Maximizing the power of AI

Assisted by the new tools and techniques being developed and supported at a hardware level by Intel and others, the capabilities of AI technology have become more accessible and easier to use. Emphasizing the importance of AI in Luminar Neo, CEO Ivan Kutanin commented, "Our team at Skylum is proud to shepherd in a new era of AI photo editing that leverages our best-in-class technology to inspire and enable our community to bring their creative ideas to life. As we continue to expand our suite of tools, we're excited to incorporate generative AI

OpenVINO™

into our software. The new AI features provide photographers with the latest technology to produce visual storytelling beyond their imagination, but not as a substitute to replace their real-life experiences for such an essential art form."[2]

Skylum is actively working with Intel to discover new ways to take full advantage of local inferencing as provided by the NPU in the Intel Core Ultra processor. The faster processing of GPU and CPU tasks that is delivered by the Core Ultra promises a more responsive user experience and quicker turnarounds for even extremely complex operations.

Toolkit components geared for performance

The 2023.1 release of the Intel Distribution of the OpenVINO toolkit includes advanced support for the Intel Core Ultra processor and 14th Generation Intel Core processor family.

The latest toolkit release supports key features of both processor families, with expanded generative AI support. OpenVINO improves runtime performance of large language models. Useful capabilities also include Intel Deep Learning Boost (Intel DL Boost), consisting of a set of AI instructions that includes the Vector Neural Network Instructions (VNNI). VNNI streamlines deep-learning computations, reducing multiple instructions into a single command that accelerates performance. VNNI also supports INT8 deep-learning inference. Intel DL Boost increases performance in applications built with a number of frameworks, including TensorFlow, PyTorch, ONNX, and Intel Caffe.
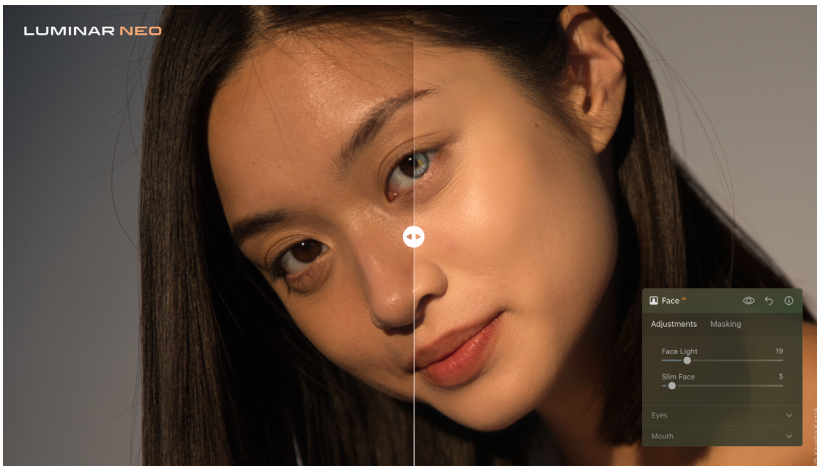

Figure 1. A before and after image using the Face[AI] tool

Enabling the AI features in Luminar Neo

As an integral part of the Luminar Neo software, the OpenVINO toolkit enables the system to concurrently execute elaborate deep learning algorithms. For example, the Skin[AI] feature uses three disparate models: Facial Landmarks, Skin Detection and Defects Detection. The data obtained from running these three models concurrently is then used as the basis for the image-editing decisions by the Luminar Neo Skin correction tool.

Previously, Skylum had used TensorFlow to calculate Deep Learning networks. The switch to using OpenVINO helped the development team achieve results faster, making it possible to process larger amounts of information captured from a photo image.

With Luminar Neo, Skylum took a fresh approach to photo editing and expanded the scope of AI-driven effects to provide unprecedented simplicity to many complex editing tasks.

Luminar Neo includes these AI-enabled tools (and more):

- **Supersharp[AI]** – Stabilize your composition with AI and correct misfocused shots.

- **Noiseless[AI]** – Smart noise reduction keeps the details.

- **Focus Stacking** – Merge up to 100 different depths of field.

- **Neon and Glow** – Create imaginative lighting effects around objects, using a variety of powerful controls.

- **Magic Light[AI]** – Manipulate light sources with AI with more creative freedom.

- **Upscale[AI]** – Upscale a photo up to 6X and enhance its resolution.

- **Enhance[AI]** – Achieve overall photo enhancements with balanced AI precision.

Explore product features in more detail.

"AI going forward must deliver more access, scalability, visibility, transparency and trust to the whole ecosystem."[3]
– Pat Gelsinger, CEO, Intel

AI Heightens User Experiences

The industry is increasingly using AI to perform user-centric operations, often combining a series of complex tasks for access by a single keystroke or command. The architecture of Intel Core Ultra processors provides an efficient path for these types of tasks through the NPU. Without disrupting CPU operations or relying on the GPU, AI-driven effects can be shunted to the NPU by the Intel Thread Director and performed rapidly and efficiently. Thread Director divides tasks in a logical way — based on workloads and type of task — among the CPU, GPU and NPU.

The fast-moving pace of AI as a significant component of modern hardware and software is revolutionizing the industry. Intel and Skylum plan to keep abreast of these advances and work together to integrate them into breakthrough products. This energy is a primary driver behind the goals of the Intel AI PC Acceleration Program, inviting ISVs and IHVs to catch the wave.

Resources

Skylum Luminar Neo

Skylum Luminar Neo extends the groundbreaking AI-driven capabilities of the prior Luminar image editors. Designed for one-click editing simplicity, Luminar Neo is tuned for better performance on both Mac and Windows systems and incorporates some entirely new capabilities for enhancing editing using AI decision-making.

Learn more ›

Intel Distribution of OpenVINO toolkit

This toolkit gives developers easy-to-access libraries, frameworks and pre-trained AI models to speed up AI vision developments for faster time to market.

Learn more ›

Generative AI introduction

AI-assisted photo editing features are redefining the nature of photography. Skylum has introduced several new generative AI tools available through subscriptions, passes and other methods. More details can be found through the following link.

Learn more ›

About Skylum

Skylum is a global imaging technology company focused on helping creatives achieve impressive results with innovative AI technologies and a flexible workflow. The company's flagship product, Luminar Neo, empowers photographers of all levels to bring their boldest ideas to life. Skylum has won the Red Dot Award, Apple's Best of Year, and Best Imaging Software awards by TIPA and EISA, as well as several other industry recognitions.

skylum.com

"As photography keeps evolving, AI should be seen as an opportunity and not a threat. Think about what makes a photo special — the creative ideas behind it, the personal touch, the experience of taking that image. AI cannot replace any of those things, but it can serve as a powerful assistive tool to expand the realm of photography, making it easier for everyone."[4]
– Ivan Kutanin, CEO of Skylum.

1. *The AI PC Powered by Intel is Here.* Intel. October 2023. https://www.intel.com/content/www/us/en/products/docs/processors/core/intelligent-pc-overview.html
2. *Luminar Neo Releases Generative AI Technology in its Award-winning Photo-Editing Software.* Skylum Newsroom. October 2023. https://skylum.com/newsroom/luminar-neo-releases-generative-ai-technology-in-its-awardwinning-photo-editing-software
3. *Intel Innovation 2023: Empowering Developers to Bring AI Everywhere.* Intel Newsroom. September 2023. https://www.intel.com/content/www/us/en/newsroom/news/2023-intel-innovation-day-1-all-news.html
4. *Shaping the Future of Photography.* Skylum Newsroom. August 2023. https://skylum.com/newsroom/shaping-the-future-of-photography-the-next-evolution-of-luminar-neo