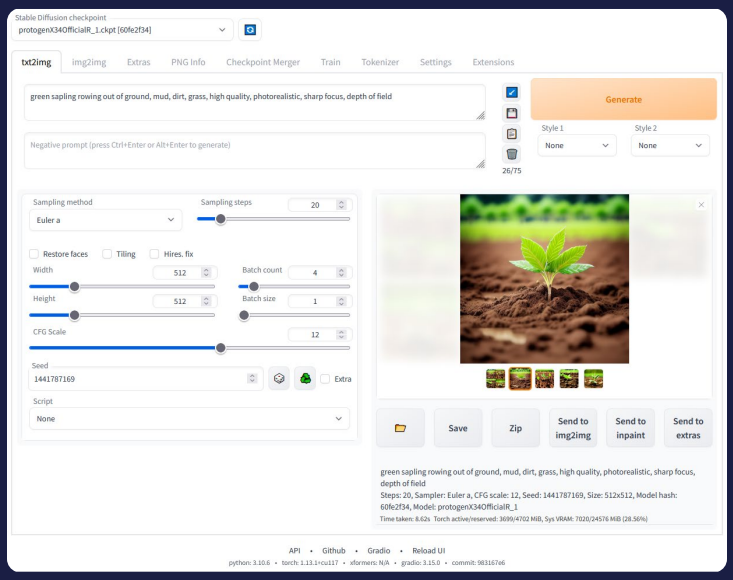
The Future of AI Software: Automatic1111

The future of personal computing is being redefined by the integration of AI directly into software, powered by dedicated AI accelerators called NPUs (Neural Processing Units). As Windows evolves to support a new generation of intelligent features, applications are becoming faster, more context-aware, and more capable of adapting to user needs in real time. Signal65 explores the key AI-enabled capabilities emerging within the Windows ecosystem, highlighting how NPUs are unlocking new levels of performance and efficiency across everyday tasks, enterprise workflows, and entirely new user experiences.

What is Automatic1111?

Automatic1111 isn't an AI app per se, but is instead a user interface for AI image generator Stable Diffusion. By default, Stable Diffusion is accessible only via command line, which for ordinary end-users is often challenging to interact with, and can be extremely inconvenient and cumbersome even for command line veterans. Automatic1111 is the gateway to using Stable Diffusion not only via a simple UI, but also through local hardware, such as Qualcomm's Hexagon NPU.



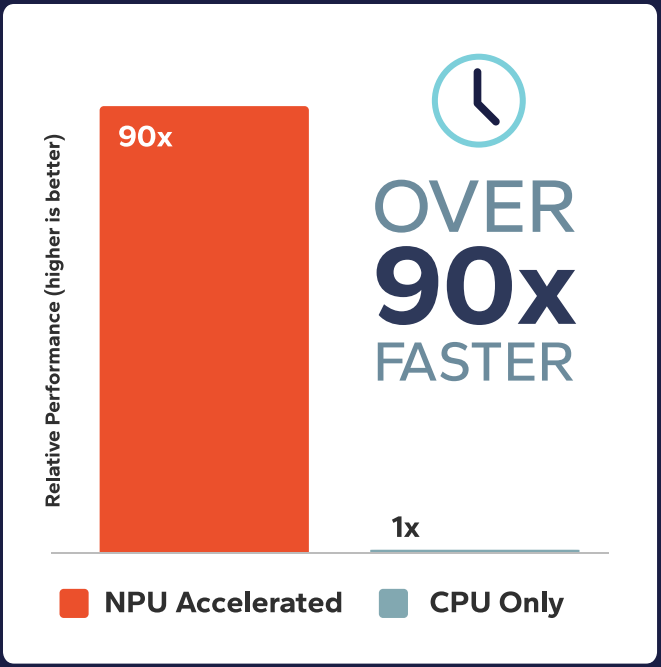
Support for the Snapdragon X Elite and the Hexagon NPU was first introduced in July 2024 via an extension that uses Qualcomm AI Runtime (QAIRT). Users are able to tap into Stable Diffusion 1.5 and 2.1 for image generation via text prompt, and can also set custom parameters if desired.

> Majority of the AUTOMATIC1111's features are not supported by this extension as of now and the extension is in active development. New feature support will be added incrementally. We actively welcome feedback and contributions from the community.

NPU Utilization & Performance

Getting Automatic1111 up and running on a Snapdragon X Elite laptop requires some manual work to set up, but once installed it's easy to run. The app has to be launched from Powershell with specific commands that are detailed in the tutorial page for the QAIRT extension. With the Snapdragon X Elite, Automatic1111 can perform its most quintessential function: generating images from text. Out of the box, users get to choose between Stable Diffusion 1.5 and 2.1, and get to customize parameters like the prompt, the sampling method, and sampling steps.

Using the settings that Automatic1111 set by default (except for switching from Stable Diffusion 1.5 to 2.1), we were able to generate images in 10 seconds or less on the Acer Swift 14 AI. By contrast, running only the CPU meant we could only generate an image in around 15 minutes, making the NPU over 90 times faster. The performance difference is so vast that using an NPU instead of a CPU for fast and efficient image generation is practically a necessity.



Today, over 20 applications leverage Qualcomm's Hexagon NPU to deliver enhanced performance, enable entirely new features, and improve system efficiency. Collectively, these applications offer over 50 unique AI-powered capabilities spanning diverse use cases, from real-time video conferencing effects and advanced photo editing tools to local LLM implementations that bring sophisticated AI experiences directly to users' hardware without cloud dependencies.

This ecosystem demonstrates how NPU acceleration is transforming software across categories, enabling developers to implement AI features that were previously impractical due to performance or power constraints. As more applications adopt NPU optimization, users benefit from faster processing, longer battery life, and AI capabilities that respond instantly to their needs.

Looking Forward

Given how fast the Hexagon NPU could generate an image, it's clear that there's significant utility in local and integrated AI hardware, not just today but also for a future powered by AI software. Much like how GPUs evolved from specialized graphics processors to general-purpose computing accelerators, NPUs are positioned to become the dedicated platform for AI workloads, delivering superior performance compared to both CPUs and GPUs for machine learning tasks.

Through continued investment in both hardware and software AI capabilities, Qualcomm and Microsoft are establishing NPUs as the foundation for local AI processing, enabling more responsive, efficient, and capable applications across the Windows ecosystem.

Over 50 NPU-powered AI Experiences on Snapdragon X Series Processors

Creator Apps	AI Experience
Adobe Premiere Pro	• Audio Category Tagger to sort different audio clips into categories like ambience or dialog • Scene Edit Detection automatically labels cuts in raw footage for easier editing • Text-Based Editing builds a transcript for a video, and editing the transcript instantly edits the video for rough cuts
Automatic1111	Image generation from text using Stable Diffusion and ability to customize parameters
Blender+ControlNet	3D scene to 2D image generation via tools like Automatic1111
Copilot+	• Image generation and photo editing using AI-powered tools like generative fill • Easy step retracing with Windows Recall • Improved gaming performance and visual quality with Super Resolution • Video conferencing features like real-time translation, auto framing, portrait lighting, and more
DaVinci Resolve	• AI-accelerated Magic Mask tool for objects and people • Better resolution upscaling during rendering
Djay Pro	Separating different instruments and vocals with Neural Mix, and syncing different songs with varying rhythms together with BeatGrid
Gigapixel AI	Crisp upscaling for photos originally taken at low resolution
GIMP+SD	Image generation from text using Stable Diffusion
Luminar Neo	Photo editing with AI-assisted sharpening effects and resolution upscaling
Moises Live	• Instrument and vocal separation for music editing • Enhanced performance compared to running on the CPU
Enterprise Apps	**AI Experience**
Camo Studio	On-the-fly video effects like auto-framing, virtual green screen, and blurred background
Copilot+	• Image generation and photo editing using AI-powered tools like generative fill • Easy step retracing with Windows Recall • Improved gaming performance and visual quality with Super Resolution • Video conferencing features like real-time translation, auto framing, portrait lighting, and more
Dynamo AI	Guardrails for AI provided through organizations to prevent misuse
McAfee	AI-powered detection of deepfaked audio
Zoom	Virtual background replacement and portrait lighting for video conferencing
Productivity Apps	**AI Experience**
AnythingLLM	• Easy setup for small and powerful Microsoft and Meta LLMs with long context windows • Useful LLM features like automation, RAG, and inferencing"
Copilot+	• Image generation and photo editing using AI-powered tools like generative fill • Easy step retracing with Windows Recall • Improved gaming performance and visual quality with Super Resolution • Video conferencing features like real-time translation, auto framing, portrait lighting, and more
Liquid Text	Fast annotation of documents using AI
LMStudio	Run LLMs locally and configure them to your liking

Visit Qualcomm for more info: https://www.qualcomm.com/snapdragon/laptops-and-tablets/npu-powered-ai-experiences

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