SHI

AI PCs

Revolutionizing the Work Environment

Index

PART 1

Introduction to AI PCs: Revolutionizing Work Practices

The recent integration of Artificial Intelligence (AI) into laptops, desktop workstations, and other devices represents a major paradigm shift that is already altering the way work is done and measured. A new generation of AI PCs equipped with powerful, AI-ready processors now make it possible for organizations to incorporate local AI applications into their operations.

AI PCs harness the power of machine learning, natural language processing, and computer vision, among other AI technologies, to provide a more intuitive and interactive computing experience. These advancements enable applications running on AI PCs to understand and predict user needs, automate routine tasks, and facilitate complex problem-solving processes. The implications of these capabilities extend across various sectors, including healthcare, education, finance, and creative industries, promising to redefine the way work is conducted.

Without the specialized components found in AI PCs, running AI applications can be a daunting task. Traditional computing hardware, lacking the optimized architecture for AI, often struggles with the demands of AI software, leading to significantly slower performance or, in some cases, the inability to run these applications at all. This discrepancy highlights the indispensable role of AI PCs in the modern technological landscape, where AI and machine learning are increasingly integral to a wide array of applications, from data analytics and image processing to autonomous systems and beyond.

PART 2

Maximizing the Potential of AI in the Workplace

AI PCs, with their specialized components designed to excel in running AI-accelerated software, open up new frontiers across various fields by facilitating complex computations and data processing at unprecedented speeds. These PCs are not just about raw power; they are about enabling smarter, more efficient workflows and innovations.

Key Use Cases for AI PCs

1 Intelligent Assistants

Intelligent assistants (such as Microsoft Copilot) go beyond simple voice or text commands, evolving into proactive helpers capable of managing tasks with a level of understanding and anticipation previously unattainable. These assistants leverage AI to learn from user interactions, preferences, and behaviors, offering personalized support. They can automate routine tasks, provide context-aware information, and even anticipate needs, thereby enhancing productivity and user experience. For professionals, this means an assistant that not only schedules meetings but understands the nuances of your schedule preferences and the importance of different appointments.

2 Content Creation Tools

With the advent of AI-accelerated software, tasks like video editing, 3D modeling, and graphic design become significantly faster and more intuitive. AI algorithms can automate time-consuming aspects of the creative process, such as image editing, color correction, and even generating complex 3D environments from simple sketches. This automation allows creators to focus more on the creative aspect rather than the technicalities, fostering innovation and reducing production times.

3 Advanced Data Analytics

Powerful AI PCs can process and analyze vast datasets far more efficiently than traditional systems, uncovering insights and patterns that were previously too complex or time-consuming to detect. In industries such as finance, healthcare, and retail, AI-driven analytics can predict market trends, enhance patient care through predictive analytics, and personalize customer experiences by analyzing shopping behaviors. The speed and efficiency of AI PCs in processing data not only accelerate decision-making but also enable real-time analytics, opening up new possibilities for dynamic, data-driven strategies.

4 AI-driven Threat Detection

With cyber threats becoming more sophisticated and increasingly incorporating AI technology, traditional security measures often fall short. PCs equipped with AI-driven threat detection systems can analyze network traffic and user behavior in real-time, helping to identify anomalies that could indicate a cyberattack.

PART 3

Cloud AI vs Local AI Solutions

The first wave of commercial AI applications were cloud-based, offered as subscription services, utilizing remote server resources. While these solutions offer scalability and rapid deployment, they also raise questions related to data security, latency, and scalability costs. Localized AI solutions running on an individual user's device and connected to secure private infrastructure offer more data control and can be optimized to specific hardware for better performance.

Why Consider Local AI Solutions?

The limitations associated with cloud-based AI solutions have spurred interest in developing a new generation of AI applications that run on local devices. This shift towards AI PCs, which perform processing tasks at or near the source of data generation, heralds a transformative approach to AI application deployment. By harnessing the power of local processing, these applications can overcome many of the challenges posed by cloud dependency, unlocking new potentials in terms of performance, privacy, and innovation.[1]

Enhanced Privacy and Data Security

By processing data on-device or through private cloud assets, sensitive information does not need to be transmitted to the public cloud, reducing the risk of data breaches and unauthorized access. This is particularly crucial for industries dealing with confidential data, such as healthcare, where patient privacy is paramount. Local processing ensures that data remains within the confines of the device, providing a more secure environment for AI applications.[2]

Reduced Latency and Improved Performance

Applications running locally on AI PCs benefit from significantly reduced latency since data no longer needs to travel over a network to a cloud server for processing. This enables real-time data analysis and decision-making, essential for applications requiring immediate response, such as autonomous driving systems, emergency response technologies, and interactive entertainment. By minimizing delays, local AI applications can offer a more responsive and efficient user experience.[3]

Cost Savings and Efficiency

Without the need for continuous data transmission to the cloud, organizations can save on bandwidth and data storage costs. By leveraging the processing power of local devices, businesses can reduce their reliance on cloud services, leading to a more scalable and cost-effective deployment of AI applications.

Fostering Innovation

Developers can create bespoke AI solutions tailored to the specific needs and constraints of local devices, from smartphones and tablets to IoT devices and industrial machinery. This flexibility encourages the development of novel applications that can operate independently of cloud infrastructure, promoting a more diverse and competitive AI ecosystem.

Empowering Smaller Entities

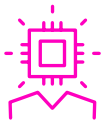
Smaller entities can compete more effectively, fostering a vibrant landscape of innovation and development in AI technologies with decreased barriers to entry associated with cloud computing costs and infrastructure.

Real-time Learning and Adaptation

Unlike cloud-based systems, where data must be transmitted to a remote server for analysis, local AI can instantly analyze data as it is generated. This immediacy allows for a more dynamic and responsive personalization, whether it's for customizing user interfaces, tailoring content recommendations, or adjusting device settings to suit individual needs.[4]

Enhanced Privacy and Trust

AI applications enhance user trust by ensuring that sensitive data used for personalization does not leave the device. This approach mitigates privacy concerns associated with cloud-based personalization, where data is often stored and processed on external servers. By keeping data local, users are more likely to trust and engage with AI applications, knowing their information is handled securely and privately.[5]



Contextual and Situational Awareness

Local AI applications can leverage sensors and data available on the device to gain contextual and situational awareness, further refining personalization efforts. For example, a smartphone can use location data, ambient noise levels, and time of day to adapt its behavior in ways that are most relevant to the user's current situation. This level of contextual personalization is challenging to achieve with cloud-based AI, where there might be a disconnect between real-time data and the processing capabilities of remote servers.

Energy Efficiency and Performance

By processing data on-device, these applications can optimize their operations to consume less power, extending battery life and ensuring smoother, uninterrupted user experiences. This is particularly important for wearable devices and mobile applications, where power efficiency is a critical concern.

Empowering Developers with Personalization Tools

With access to powerful on-device AI tools and libraries, developers can design apps that offer unprecedented levels of personalization, from adaptive learning platforms that adjust to each student's learning pace to fitness apps that create customized workout plans based on real-time performance data.[6]

1 https://opusresearch.net/wordpress/2024/02/15/generative-ai-goes-local

2 https://www.linkedin.com/pulse/maximizing-data-security-how-running-ai-models-locally-shane-brunson

3 https://siliconangle.com/2023/11/02/solving-the-latency-issue-ai-at-the-network-edge-supercloud4

4 https://news.mit.edu/2023/technique-enables-ai-edge-devices-keep-learning-over-time

5 https://www.csrwire.com/press_releases/789221-preserving-privacy-and-security-generative-ai-world

6 https://www.forbes.com/sites/forbestechcouncil/2024/01/16/what-app-developers-should-know-about-on-device-generative-ai

PART 4

Local AI Applications in Action: Microsoft Copilot

The integration of Microsoft's Copilot into Windows 11 and Microsoft 365 is one of the first major use cases of AI technology that will impact the workplace on a large scale. This innovative application taps into the power of AI PCs to transform the way work is done by automating routine tasks, enhancing creativity, and improving decision-making processes.

Improving Productivity and Efficiency with Microsoft Copilot

Microsoft 365 Copilot operates seamlessly within familiar applications such as Word, Excel, PowerPoint, Outlook, and Teams. It assists users with creativity, for instance, by helping to jump-start the drafting process in Word, thereby eliminating the intimidation of a blank page. In Excel, it aids in data analysis by suggesting new formulas and generating models based on user queries, thus facilitating a deeper exploration of data without altering it. PowerPoint presentations can be created or condensed quickly with Copilot's assistance, leveraging natural language commands to reformat text and optimize animations.[7]

In Outlook, Copilot helps manage email more efficiently by summarizing lengthy threads and drafting replies, thereby saving time and enhancing communication effectiveness. Teams meetings become more productive with Copilot's capability to summarize discussions, outline action items in real-time, and ensure all participants are aligned on the next steps. This ensures that meetings are not just about discussion but also about actionable outcomes.

How Users Are Responding

The integration of Microsoft Copilot into workplace tools significantly enhances productivity, creativity, and efficiency. A detailed research study of early Copilot users found that workers saw considerable gains, with 70% feeling more productive and 68% observing an improvement in the quality of their work. The tool not only accelerated task completion by 29% across key activities like searching, writing, and summarizing but also enabled users to catch up on missed meetings nearly 4x faster.[8]

These insights suggest that local AI applications like Copilot can profoundly impact personal and organizational productivity. More importantly, users themselves recognize the value these solutions bring to their workday and want to continue using them. The study of early Copilot users found that 77% of participants didn't want to go back to working without it.

70%

of Microsoft Copilot users feel more productive

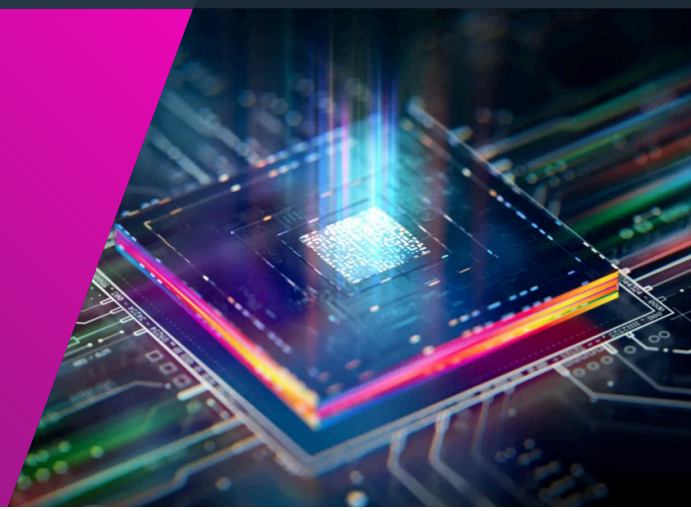
By upgrading to a new generation of AI PCs, organizations can provide their workforce with the tools they need to boost productivity and focus more attention on high value tasks.

7 https://blogs.microsoft.com/blog/2023/03/16/introducing-microsoft-365-copilot-your-copilot-for-work

8 https://www.microsoft.com/en-us/worklab/work-trend-index/copilots-earliest-users-teach-us-about-generative-ai-at-work

PART 5

Local AI Application Hardware Demands

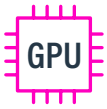


The advent of AI applications in various sectors has significantly altered the landscape of computing hardware requirements. Unlike traditional software, AI applications entail complex algorithms and massive datasets, necessitating a paradigm shift in the design and capabilities of computer systems.

For these applications to function effectively on local devices, advanced hardware beyond the capabilities of a traditional business PC's CPU is required. Dedicated GPUs and NPUs are typically integrated into AI PCs to handle the demanding nature of AI algorithms, as they provide the specialized processing power necessary for efficiency.

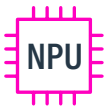
AI Application Requirements

AI applications are inherently processing and memory-intensive, requiring substantial computational resources to function efficiently. These applications leverage sophisticated algorithms, including machine learning and deep learning models, to process and analyze large volumes of data in real-time. The processing intensity stems from the need to execute multiple parallel operations, while the memory intensity arises from the necessity to store and manipulate large datasets and intermediate computations. Traditional PCs, which are optimized for general computing tasks, often fall short in meeting these demands. The new generation of AI PCs, however, incorporate powerful GPUs and groundbreaking NPUs into their chipsets to support AI applications.



Graphics Processing Units

Initially designed to handle the demands of graphics and video rendering, GPUs have emerged as a critical component for AI processing due to their highly parallel structure. They can perform thousands of operations simultaneously, making them significantly more efficient than CPUs for AI workloads that involve massive data sets and complex mathematical computations. This parallel processing capability has made GPUs a cornerstone in training AI models and processing AI tasks.[2]



Neural Processing Units

Specifically designed for accelerating AI tasks, Neural Processing Units are optimized for the high-speed, efficient processing of AI algorithms. NPUs are tailored for deep learning and neural network computations, offering a higher level of efficiency for AI tasks compared to CPUs and GPUs. By integrating NPUs, AI PCs can achieve faster processing times and reduced power consumption for AI-specific applications, enhancing the device's overall performance and efficiency.

Transitioning to 16 GB RAM PCs

Many current PCs come with 8GB of RAM, sufficient for basic tasks but inadequate for AI applications, which may cause memory bottlenecks and reduced performance due to disk swapping during complex tasks like AI model training. Consequently, to support the increasing adoption of AI tools in business, there's a trend towards PCs with 16GB RAM, anticipated to become the standard for business PCs. This increase in memory capacity allows for the handling of more complex AI models and datasets, enhancing multitasking and enabling businesses to effectively use AI for analytics and improving operational efficiency, thus future-proofing systems against evolving AI demands.[9]

9 https://www.techradar.com/computing/windows-pcs/finally-some-good-copilot-news-microsoft-could-be-making-16gb-ram-a-standard-for-ai-pcs

PART 6

Preparing for the AI PC Era with AMD & SHI

AMD has solidified its position as an industry leader in AI processors through a strategic focus on innovation and performance optimization. By integrating powerful neural processing units (NPUs) into its latest processors, AMD is setting new standards for AI capabilities in both mobile and desktop computing environments. These processors are tailored to meet the demanding requirements of AI-accelerated software, offering substantial improvements in AI processing performance and efficiency.

AMD Ryzen™

8040 Series Processors

AMD Ryzen™ 8040 Series processors, with the introduction of the Ryzen AI NPU on select models, mark a leap in AI processing capabilities. These processors can deliver up to 1.6 times more AI processing performance compared to previous AMD models. This enhancement is pivotal in handling larger and more complex AI models efficiently. Additionally, AMD Ryzen™ AI Software made available for developers is expected to facilitate the building and deployment of machine learning models on these new PCs. This software suite, supporting frameworks like PyTorch or TensorFlow, includes a pre-optimized model zoo, enabling rapid deployment of AI models.[10]

8000G Series Processors

AMD Ryzen™ 8000G Series processors are designed with an emphasis on personal AI processing for desktop environments, blending high-performance computing with AI capabilities. The inclusion of a dedicated AI NPU in desktop PC processors for the first time stands as a testament to the company's commitment to making AI more accessible and efficient for consumers. These processors are built on the AMD "Zen 4" architecture, providing a balanced mix of efficiency and performance for a wide range of applications, from gaming to content creation. The AMD Ryzen™ 7 8700G, leading this series, is equipped with eight cores and 16 threads, along with the AMD Radeon™ 780M graphics, indicating a significant push towards facilitating smooth 1080p gaming experiences alongside robust AI processing.[11]

10 https://www.digitalmediaworld.tv/h-ware/amd-advances-ai-pcs-with-ryzen-8040-series-processors-and-ryzen-ai-software

11 https://www.digitalmediaworld.tv/h-ware/amd-advances-ai-pcs-with-ryzen-8040-series-processors-and-ryzen-ai-software

Don’t Miss the AI Revolution: Upgrade to AI PCs with SHI

Artificial intelligence technology has made tremendous strides in a short period of time, but the next few years will see a true revolution as a new generation of AI-powered applications are adopted in the workplace. As concerns over cost and security drive more organizations away from cloud-based AI services, it will be essential to equip employees with powerful AI PCs capable of running resource-intensive AI applications locally.

Upgrading your existing devices to AI-optimized hardware doesn’t have to be an overwhelming task. SHI makes it easy to identify the devices that align with your AI strategy and get them deployed throughout your organization as seamlessly as possible. We offer a diverse range of devices equipped with the latest AI-optimized AMD chipsets so you can place the transformative power of AI technology in the hands of your team.

Demo AI PC Devices with SHI

Want to get a hands-on experience with the latest AMD powered devices? The SHI demo program allows you to test multiple products so you can identify the best device refresh opportunities for your organization.

SHI demo program highlights

- 30-day trial with up to 5 devices included in demo kit
- Test the biggest brands powered by the latest AMD technology
- FedEx 2-day + return label for added convenience
- Custom images can be added to each device

SHI Device Lifecycle Management

Upgrading and managing your technology doesn't have to leave you facing heavy CapEx commitments or cash shortages. SHI's Device Lifecycle Management services offer flexible options that help you acquire, maintain, and replace your AI-enabled devices at a manageable cost with minimal hassle.

SHI Device Lifecycle Management Services

- Device-as-a-Service
- Leasing and financing
- Device configuration and deployment
- Zero Touch X remote provisioning
- Support and maintenance
- Asset recovery

SHI

Think of SHI as your personal technology concierge, helping you solve what's next with the scale of a global solutions provider, combined with the resources, expertise, and customer service of a local VAR. Whether you're building a modern hybrid workplace, defending against new threats, making the cloud work for you, or optimizing your software portfolio, our friendly teams blend seamless selection, delivery, and financing to simplify hard decisions for business leaders and IT procurement. The result: effective, innovative, and scalable solutions our customers love.

SHI is proud to be the largest Minority/ Woman Owned Business Enterprise (MWBE) in the United States.

AMD

AMD is the high performance and adaptive computing leader, powering the products and services that help solve the world's most important challenges. Our technologies advance the future of the data center, embedded, gaming and PC markets.

Founded in 1969 as a Silicon Valley start-up, the AMD journey began with dozens of employees who were passionate about creating leading-edge semiconductor products. AMD has grown into a global company setting the standard for modern computing, with many important industry firsts and major technological achievements along the way.

Glossary

AI PC: An AI PC refers to a personal computer optimized for artificial intelligence tasks. It typically features hardware and software specifically designed to accelerate AI and machine learning (ML) workloads, such as high-performance CPUs, GPUs, or specialized accelerators like NPUs (Neural Processing Units).

Artificial Intelligence (AI): Artificial Intelligence is the field of computer science focused on creating systems capable of performing tasks that would typically require human intelligence. These tasks include decision-making, language understanding, visual perception, and pattern recognition. AI systems can range from simple rules-based algorithms to complex neural networks mimicking the human brain.

Cloud AI: Cloud AI refers to AI services and computational resources hosted on cloud infrastructure. It provides access to powerful computing resources, including specialized hardware for AI tasks, without the need for local hardware investments. Cloud AI enables scalable, on-demand AI processing capabilities and services, facilitating the development and deployment of AI models and applications.

CPU (Central Processing Unit): The CPU is the primary component of a computer that performs most of the processing inside a PC. It executes instructions from software applications, running processes and tasks. CPUs are general-purpose processors capable of a wide range of tasks, but with limited capabilities for parallel processing compared to GPUs.

Generative AI: Generative AI refers to a class of AI algorithms capable of generating new content, such as text, images, videos, or music, that resembles human-created content. These models learn from vast amounts of existing material and can produce original outputs based on learned patterns and structures.

GPU (Graphics Processing Unit): Originally designed for rendering graphics in video games, GPUs have become crucial in AI and ML due to their highly parallel structure, which allows them to perform many calculations simultaneously. This makes them exceptionally efficient for the matrix and vector operations common in deep learning.

Local AI: Local AI involves running AI algorithms and models directly on a user's device (such as a smartphone, PC, or embedded system) rather than on remote cloud servers. This approach can offer advantages in terms of privacy, speed, and availability, as it does not require an internet connection and reduces latency by processing data locally.

Machine Learning (ML): Machine Learning is a subset of AI that involves training algorithms to learn from and make predictions or decisions based on data. Unlike traditional programming, where tasks are explicitly programmed, ML models adjust their parameters based on patterns in data, improving their performance over time.

Microsoft Copilot: Microsoft Copilot is a suite of AI-powered productivity tools designed to assist users in various tasks across Microsoft's software ecosystem, such as drafting emails, generating content in Word, or analyzing data in Excel. It leverages advanced AI models to understand context and intent, providing suggestions and automations to enhance user productivity.

NPU (Neural Processing Unit): An NPU is a specialized hardware accelerator designed specifically for accelerating artificial intelligence and machine learning algorithms. NPUs are optimized for high-throughput, low-latency processing of neural network computations, offering improved efficiency and performance for AI tasks compared to general-purpose CPUs and GPUs.

SHI is your complete IT partner for solving what comes next. We connect your team with the IT solutions and services you need to support your organizational growth and employee experience.

Whether you're building a modern hybrid workplace, defending against an evolving threat landscape, making the cloud work harder for you, or searching for ways to optimize your software portfolio, our friendly 6,000-person team is ready to solve what's next for your organization.

Our in-house data center integration, device configuration, and deployment and license advisory services, plus our top-tier status with vendors and flexible financing make life simpler for IT decision makers. Execute your IT vision with stress-free, scalable solutions you – and your people – will love. SHI is proud to be the largest Minority/Woman Owned Business Enterprise (MWBE) in the United States.

Tailored IT services for maximum value

Maximize your technology investments with our premier IT services. SHI's expert teams help you with strategic technology selection, seamless deployment, and ongoing management, all designed for your unique business needs.

Managed services – Optimize costs and workloads with our cloud-managed services

Training and adoption – Drive technology adoption and propel your organization forward

Integration services – Build and integrate end-to-end IT infrastructure at scale

Customer Innovation Center – Make evidence-based decisions with expert support from SHI Labs

Leasing and financing – Accelerate your digital transformation with flexible financing services

SHI at a glance

WBENC WOMEN'S BUSINESS ENTERPRISE NATIONAL COUNCIL

NMSDC National Minority Supplier Development Council

SILVER 2023 ecovadis Sustainability Rating

THE CHANNEL CO. CRN MSP 500 2024

THE CHANNEL CO. CRN SOLUTION PROVIDER 500 2023

Your personal technology concierge

Relationships are the heartbeat of SHI. When you share your story, our team is listening, not selling. And then we build solutions tailored to your goals. When you're happy, we're happy.

Making connections

Relationships are the heartbeat of SHI. When you share your story, our team is listening, not selling. And then we build solutions tailored to your goals. When you're happy, we're happy.

Beyond the contract

We have contracts and SLAs with our customers, of course. But we also emphasize going the extra mile to deliver exceptional value and ensure true success for your organization.

Sweating the small stuff

We have contracts and SLAs with our customers, of course. But we also emphasize going the extra mile to deliver exceptional value and ensure true success for your organization.

Friendly, knowledgeable, and well-connected — we're ready when you are.