

Revolutionizing the heart of electronic innovation with agentic AI

InstaDeep provides fully automated AI solutions for printed circuit boards, utilizing the Dell AI Factory with NVIDIA, while their partner, SCC France, ensures seamless deployment.

Business needs

InstaDeep, a leader in AI solutions for advanced manufacturing and Industry 4.0, faced the challenge of scaling compute power to support cutting-edge innovations. Their goal was to enable autonomous and efficient design solutions for printed circuit boards (PCBs), a critical component in electronics, while maintaining high performance and scalability to meet industry demands.

Outcomes



Increases compute power 10x, facilitating AI innovation.



Boosts AI model tuning efficiency by up to 40%.



Reduces infrastructure costs by 30%.



Enabled seamless implementation thanks to SCC's expert deployment.



Accelerates R&D cycles with enhanced computational power.

Solutions

Dell AI Factory with NVIDIA

- [Dell PowerEdge XE Series Servers with NVIDIA Tensor Core GPUs](#)
- [NVIDIA Spectrum Networking](#)



Automates PCB placement and routing with reinforcement learning, cutting design time by 10x.

Solving complex industrial challenges with agentic AI

InstaDeep operates at the nexus of technology and practical application, with projects spanning biology, logistics, and advanced AI-based systems.

Among their most remarkable developments is DeepPCB – a fully automated, AI-powered design software tool – which leverages agentic AI to automate the design and development of printed circuit boards (PCBs). PCBs are essential components in all electronic devices, from smartphones to fridges to industrial machinery, enabling the functionality and reliability of modern technology. In AI, many start small and scale over time. With the development of DeepPCB, InstaDeep knew it would need to scale its compute infrastructure to handle the demands of training large-scale AI models and deploying them in real-world scenarios. Without the right infrastructure and expertise, even the brightest AI projects risk being bottlenecked by inefficiencies.

Accelerating automation with advanced AI compute

InstaDeep's proprietary PCB solution leverages reinforcement learning to automate placement and routing, significantly reducing design time for manufacturers by tenfold. By automating work usually done manually and analyzing various parameters and configurations, DeepPCB's "smart agents" autonomously optimize PCB designs, ensuring both high performance and cost efficiency.

InstaDeep's AI Research Engineer Guillaume Toujas-Bernate explains, "DeepPCB is a fully autonomous AI agent-based tool that completely automates the design process for PCB designers."

DeepPCB is built on Kyber, InstaDeep's supercomputing cluster running on Dell PowerEdge XE-series servers uniquely designed for high-speed computation and AI scalability. Powered by NVIDIA H100 GPUs, Kyber achieves ~0.5 exaFLOPs in FP16 performance, ranking among the top 100 global AI clusters¹. Karim Beguir, Co-founder and CEO of InstaDeep explains, "AI is actually driven by three engines: It's driven by data, driven by model innovation and it's driven by compute, but the more time passes and the more compute becomes the main ingredient. For us, this is a game changer and will allow us to build on next generation products and innovations such as tools like DeepPCB".

Enabled by this powerful infrastructure, InstaDeep relied on the Dell AI Factory with NVIDIA to establish the compute and networking capabilities needed for next-level innovation. "The Dell AI Factory with NVIDIA is the fundamental building block that allows InstaDeep to deliver its magic," continues Karim.

AI innovation requires an ecosystem

InstaDeep collaborated with SCC France (SCC) as a strategic partner with Dell to deliver end-to-end AI and IT infrastructure tailored to their specific needs. SCC is a leading provider of IT services and solutions, dedicated to supporting businesses in their digital transformation. By closely understanding InstaDeep's requirements as an innovation-driven organization, SCC ensured seamless integration of high-performance computing (HPC) systems and AI solutions.

"As part of the Dell Technologies partner program, SCC benefits from access to the latest AI and HPC technologies enabling us to build innovative solutions for our customers, strengthening our position as trusted AI and IT solutions provider," explains Gael Menu, Deputy CEO, SCC France. SCC's human-centric approach helped InstaDeep scale its AI capabilities, ultimately enabling faster R&D and improved decision-making.

InstaDeep also sees great benefits in this partnership as SCC helps them innovate and bring world-first products to market by providing essential technology infrastructure and expertise. This support allows InstaDeep to focus on developing advanced AI solutions while SCC ensures these innovations are effectively integrated and optimized for various industries.

InstaDeep has been able to scale its operations and innovate at an unprecedented speed, allowing them to deliver more impactful solutions to their clients. "We have observed up to 40% faster AI model training times with the Dell AI Factory with NVIDIA, 30% cost reduction through optimized resource utilization, and increased operational efficiency enabling AI teams to focus on innovation." Continues Gael.

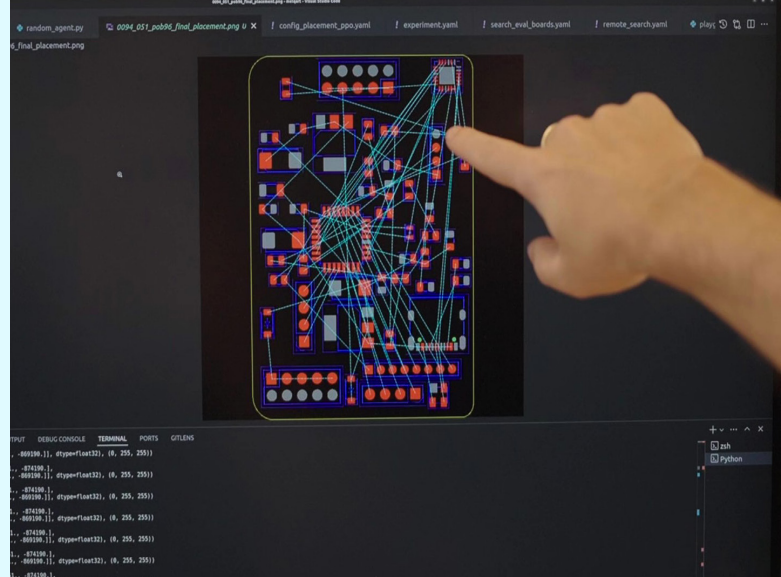


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Deputy CEO, SCC France.



A vision for the future of agentic AI

InstaDeep is preparing for a future defined by “smart agents” operating in increasingly complex environments. By exploring applications in robotics, such as humanoid robotics, they continue to refine their AI tools for existing industries. Karim explains, “When we have the training of AI systems to allow robots—autonomous systems—to do different tasks, this is going to unleash incredible industrial progress.”

AI agents are transforming industries with unprecedented speed and efficiency. The collaboration between InstaDeep, SCC and the Dell AI Factory with NVIDIA is at the forefront of this revolution, driving innovation and setting new standards of performance for industrial progress.

Karim concludes, “This will be the year of smart agents — systems that operate in complex environments and make decisions. With the right infrastructure, the possibilities are endless.”

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Karim Beguir,
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¹ Source: [InstaDeep unveils near-exascale supercomputer 'Kyber,' boosting AI capabilities](#)

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