

## NEUROKIT2E Markets Newsletter

### Embedded AI is reshaping healthcare robotics, bringing smarter and more human-centered assistance to care environments.

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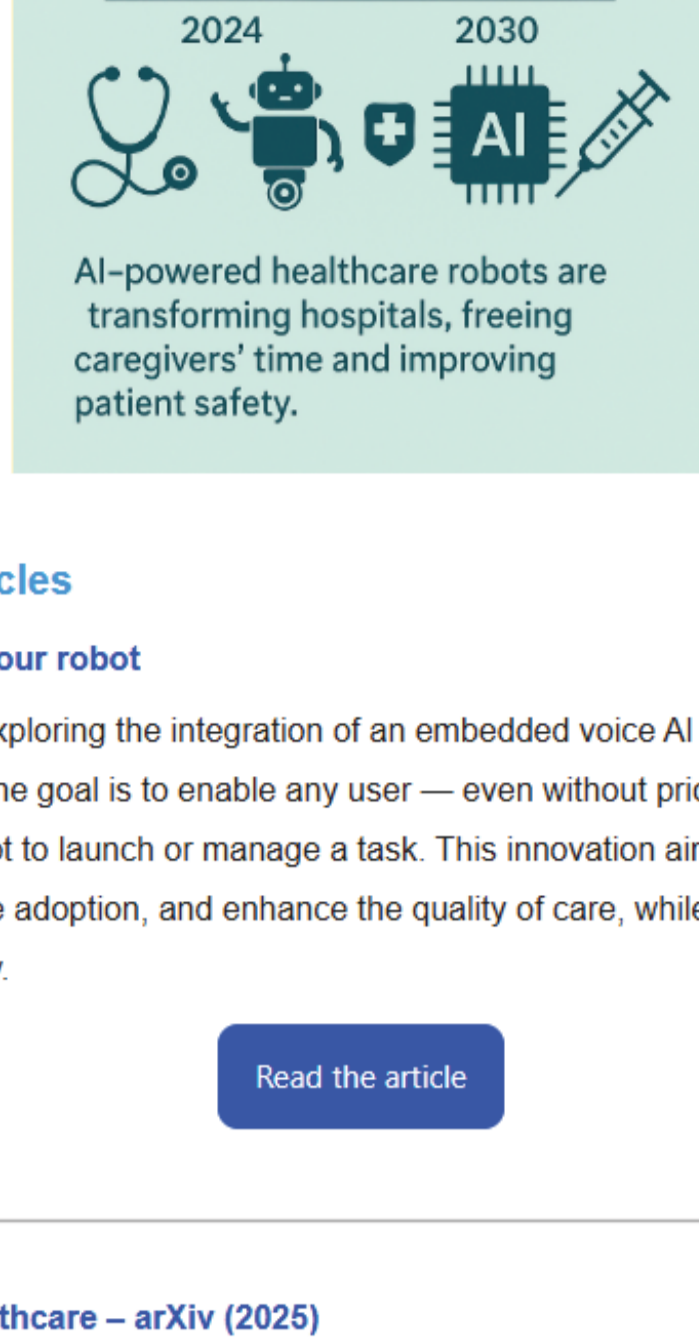
## 1. Editorial – Embedded AI: Shaping the Future of Care

Embedded artificial intelligence is redefining healthcare robotics by bringing decision-making and perception directly inside the robot. In care environments, every second counts — which is why **low latency, autonomy, and reliability** are essential.

The Kompaï robots have been designed with this philosophy from the start. Their onboard software enables real-time navigation, speech interaction, and adaptive behavior without relying on distant servers.

Through years of deployment in hospitals and nursing homes, Kompaï has shown how embedded AI can make a measurable difference: logistics robots **save 20–40% of caregivers' time**, while assistive versions learn to communicate naturally with patients, enhancing comfort and trust.

By supporting professionals and proximity, these robots become **true partners in care**, empowering professionals, empowering patients, and illustrating how technology can serve humanity — not replace it.



## 2. Use Case Articles

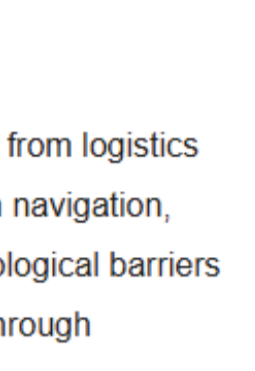
### Learning to talk to your robot

KOMPAL robotics is exploring the integration of an embedded voice AI to simplify medical deliveries in clinics. The goal is to enable any user — even without prior training — to interact naturally with the robot to launch or manage a task. This innovation aims to streamline logistics, boost on-site adoption, and enhance the quality of care, while ensuring data privacy and system autonomy.

[Read the article](#)

### Embodied AI in Healthcare – arXiv (2025)

A broad review of *embodied AI* applications in healthcare robotics, where perception, cognition, and movement are combined within the same system. The study describes use cases such as patient monitoring, hospital navigation, and adaptive assistance for home care. Embedded AI enables robots to operate safely and autonomously in complex medical environments while preserving privacy.



[Read the article](#)

### Robotics Applications in the Hospital Domain – MDPI (2024)

This literature review explores how robots are currently used in hospitals — from logistics and disinfection to social assistance. It highlights the role of embedded AI in navigation, obstacle avoidance, and patient interaction. The authors outline both technological barriers (safety, interoperability) and opportunities for improving hospital efficiency through automation.

[Read the article](#)

### AI/ML in Robotic Rehabilitation – Journal of NeuroEngineering and Rehabilitation (2025)

A systematic review on machine learning and embedded AI in rehabilitation robotics. The paper categorizes applications into movement prediction, real-time adaptation, and error detection during therapy. It also stresses the need for explainable AI to ensure safety and trust between patients, clinicians, and robots.

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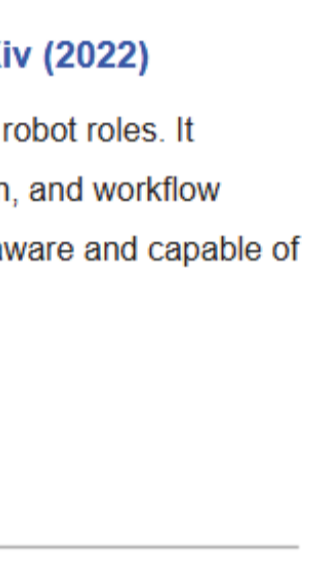
### AI-Driven Rehabilitation Robotics – Cureus (2024)

This narrative review presents the growing impact of AI-driven robots on patient recovery. Using embedded learning systems, these robots adjust exercises dynamically, provide personalized feedback, and collect real-time data for clinicians. The result: faster rehabilitation and improved patient engagement.

[Read the article](#)

### AI Robots in Critical Care – JMIR (2024)

Robots powered by embedded AI are increasingly used in intensive care to assist healthcare staff in monitoring and repetitive tasks. This paper explores their role in patient supervision, medicine delivery, and high-risk procedures. By reducing clinician workload and improving accuracy, embedded AI enhances patient safety and hospital resilience.



[Read the article](#)

### Influence of AI: Robotics in Healthcare – ResearchGate (2024)

A comprehensive overview of AI integration across healthcare robotics: diagnostic support, surgery, rehabilitation, and elderly assistance. The authors emphasize how embedded AI brings autonomy, perception, and learning directly to medical devices, making them more responsive to individual patient needs.

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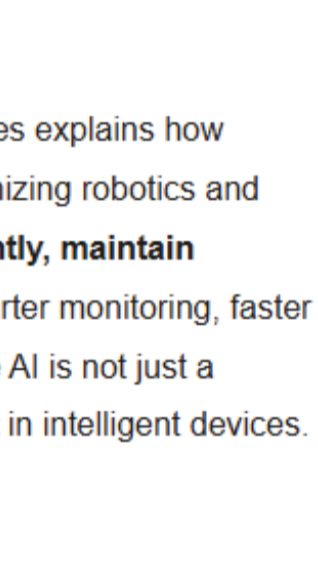
### Robots in Healthcare as Envisioned by Professionals – arXiv (2022)

This qualitative study gathers healthcare professionals' views on future robot roles. It identifies three key expectations: physical support, emotional interaction, and workflow assistance. Embedded AI is seen as essential to make robots context-aware and capable of empathetic, safe collaboration.

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### Lio – A Personal Robot Assistant for Care Applications – arXiv (2020)

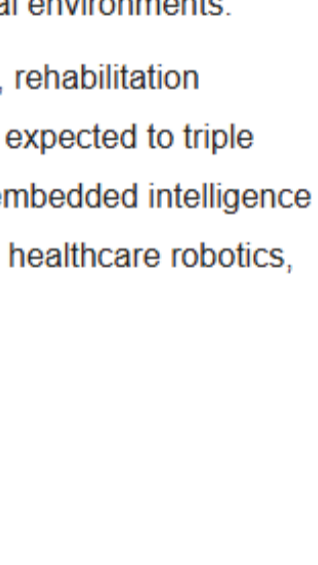
The *Lio* robot demonstrates real-world use of embedded AI in healthcare. It performs navigation, patient interaction, and routine tasks in hospitals and nursing homes. On-board processing ensures data privacy and reliable operation even without cloud connectivity.



[Read the article](#)

### Frailty Care Robot for Elderly Support – arXiv (2021)

This study presents a robot designed for elderly care that combines physical assistance (vital signs measurement, mobility aid) and psychological support (conversation, memory activities). Embedded AI allows adaptive interaction and real-time monitoring, improving comfort and emotional well-being.



[Read the article](#)

### Multi-Robot Infrastructure for AI-Enabled Healthcare – arXiv (2025)

An ambitious project where autonomous robots cooperate in hospitals to deliver medicines and collect samples. Each robot embeds AI for perception, communication, and task sharing. Together, they form a resilient, adaptive infrastructure for next-generation healthcare logistics.

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### Edge AI: Bringing Intelligence to the Edge

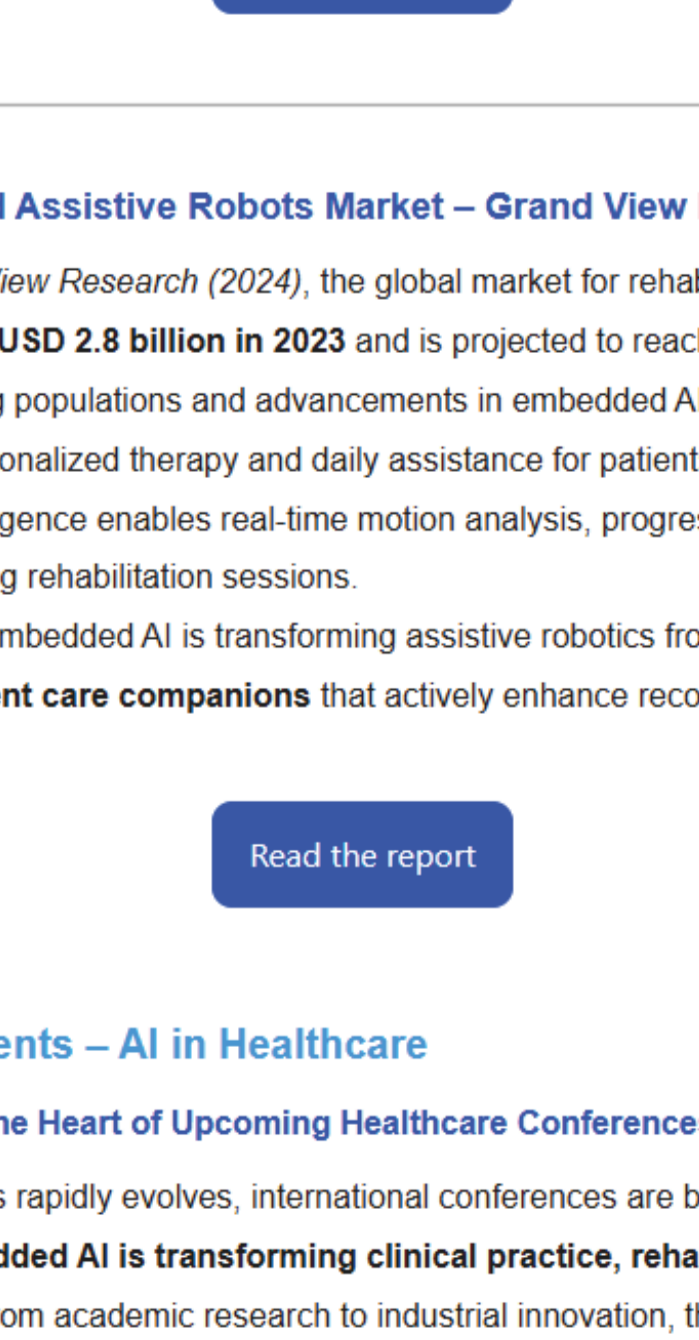
In his article *“Edge AI: Bringing Intelligence to the Edge”*, Hassaan Idrees explains how running AI directly on devices — rather than in the cloud — is revolutionizing robotics and connected systems. By processing data locally, robots can **react instantly, maintain privacy, and stay reliable even offline**. In healthcare, this means smarter monitoring, faster decisions, and safer interactions between humans and machines. Edge AI is not just a technical upgrade — it's a **strategic shift toward autonomy and trust** in intelligent devices.

[Read the article](#)

## 3. Market Insights – Embedded AI Transforming the Healthcare Robotics Landscape

The rise of embedded AI is reshaping the entire healthcare robotics ecosystem — from surgical precision to hospital logistics and patient rehabilitation. By processing data locally, robots can act instantly, safely, and autonomously within complex clinical environments.

Market analyses reveal an unprecedented expansion: surgical systems, rehabilitation devices, mobile platforms, logistics robots, and AI-enabled services are expected to triple their market value by 2030. This growth confirms a major transition — embedded intelligence is not just an add-on; it's becoming the beating heart of next-generation healthcare robotics, driving performance, efficiency, and human-machine collaboration.



### Medical Robotic Systems Market – Grand View Research (2023)

In 2023, the global medical robotic systems market was valued at **USD 25.56 billion**, with a projection to reach **USD 76.45 billion by 2030**. [Grand View Research](#)

🔑 **Key takeaway:** The scale of this growth underscores the massive opportunity for robotics integrating embedded AI in healthcare contexts.

[Read the report](#)

### Healthcare Mobile Robots Market – Grand View Research (2023)

The global healthcare mobile robots market was estimated at **USD 3,848 million in 2023**, and is forecast to grow to **USD 10,875 million by 2030**. [Grand View Research](#) 🔑 **Key takeaway:** Mobile robots are taking off in hospitals, especially for transport, disinfection, and internal logistics, opening space for embedded-AI innovations.

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### AI in Healthcare Market – Markets & Markets / Grand View Research

In 2024, the **AI in healthcare** market is estimated at **USD 26.57 billion**, with expectations to reach **USD 187.69 billion by 2030**. [Grand View Research](#) 🔑 **Key takeaway:** The growing investment in AI indicates strong tailwinds for embedded-AI robotics solutions in diagnostics, monitoring, and decision support.

[Read the report](#)

### Rehabilitation and Assistive Robots Market – Grand View Research (2024)

According to *Grand View Research (2024)*, the global market for rehabilitation and assistive robots was valued at **USD 2.8 billion in 2023** and is projected to reach **USD 6.9 billion by 2030**. Driven by aging populations and advancements in embedded AI, these robots now deliver adaptive, personalized therapy and daily assistance for patients in hospitals and at home. Onboard intelligence enables real-time motion analysis, progress tracking, and improved safety during rehabilitation sessions.

🔑 **Key takeaway:** Embedded AI is transforming assistive robotics from mechanical support systems into **intelligent care companions** that actively enhance recovery and independence.

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## 4. Upcoming Events – AI in Healthcare

### AI and Robotics at the Heart of Upcoming Healthcare Conferences

As healthcare robotics rapidly evolves, international conferences are becoming key platforms to explore how **embedded AI is transforming clinical practice, rehabilitation, and hospital logistics**. From academic research to industrial innovation, these events highlight the convergence between robotics, data, and intelligent systems.

For Kompaï and other robotics pioneers, they offer an opportunity to exchange insights, showcase real-world use cases, and connect with hospitals and research institutions shaping the next generation of care. The following selection of events reflects this growing synergy between **AI innovation and robotic applications in healthcare**.

### AI Healthcare Conference & Artificial Intelligence Summit 2025

November 25–26, 2025 – Berlin, Germany

A major European summit exploring innovation in AI-driven healthcare, covering topics from diagnostics to personalized treatment.

The program highlights advances in **medical and logistics robots powered by edge AI**, enabling real-time decision-making and autonomy in clinical environments.

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**Want to know more?**

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Kind regards,

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