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Interview with Harald Kröger, SiMa.ai

The right AI for automated driving

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Harald Kröger: »I see myself as an ambassador for AI in Germany: we must not lose our leading position. AI is not a passing hype, nor is it about specific products, it's about how the entire production process can be made more efficient with the help of AI.«

Bringing AI and ML to the edge very easily without specialised knowledge - this approach by start-up Sima.ai has inspired automotive expert Harald Krüger. In this interview, he explains why Sima will have a major say in autonomous driving in the future.

Markt&Technik: You have been President of the Automotive division and Global Leader Sales at SiMa.ai for a year now, a company that has set itself the goal of creating an end-to-end AI environment, from the software to the AI chips optimised for it - a unique approach to date, as SiMa.ai claims. What is so special about it?

Harald Kröger, Member of the Supervisory Board and President Automotive Business at SiMa.ai: We see ourselves as solution architects, we don't just throw an AI chip over the fence to interested parties and they have to see how they can find their way around it and where they can get the appropriate software for their particular use case in order to successfully implement it in reality. Most interested parties have not had much experience in the field of AI in industry to date, as we see time and again. Our development teams are therefore primarily consultants, but we also supply all the necessary software, which we customise to the use cases. Above all, we have also realised the optimised AI chip in silicon - both hardware and software must go hand in hand. The result: with our Palette and Palette Edgematic software, users can easily adapt, test and optimise their AI systems for a wide range of highly specialised applications in edge devices. Models and entire computer vision systems can be created in minutes instead of months. Users can then install and run them on SiMa.ai's development and production boards. ((I took that from you, Mr Kröger didn't say that))

So SiMa.ai is convinced that software and hardware must be harmonised in order to really deliver the performance benefits that would justify the installation of an AI system?

We are convinced of this and it has been objectively confirmed: Recognised, neutral benchmark tests have shown that we have beaten the best AI chip from Nvidia twice by a wide margin. The fact that a start-up company founded just a few years ago was able to achieve this shows that the approach of developing the hardware, i.e. the AI chips, and the software together and optimised for each other was exactly the right way to go. Otherwise we would never have achieved this benchmark breakthrough.Another performance feature is due to the architecture of our AI chip: The MLSoC can process the entire application, i.e. pre- and post-processing including the networks, on the same silicon, which is what makes the execution of real-time edge AI possible in the first place. This leads directly to increases in productivity in a wide range of processes. The fact that we have just been honoured by the GSA with this year's GSA Award in the "Startup to Watch" category also shows that we are on the right track. The good news for all those interested in AI is that we now have everything they need to get started in AI.

Which target markets is SiMa.ai aiming for?

I come from the automotive industry and that's why I'm also involved in SiMa.ai: we want to bring AI into ADAS systems at a performance level that has not yet been achieved. But we are also targeting the industrial sector in general: Because we can bring high-performance AI chips, which are characterised by unprecedentedly low power consumption, to edge devices. We achieve at least a factor of 10 better performance per watt than anything currently available on the market.

Can you give an example of how the high performance of the chips is reflected at system level?

It's always about how high-resolution the sensor technology can be, how complicated the AI model is: with more power, completely new operating points can be reached. This makes it possible, for example, to carry out much more in-depth quality analyses by setting up two cameras at different angles. This delivers huge data streams per second. This high performance was simply not available to customers until now. One of our customers used to stop at 200 to 300 images per second, which was completely inadequate in this case. With our technology, he was able to increase the throughput to 4,000 images per second.

Which companies is SiMa.ai in contact with, the OEMs themselves or the suppliers?

We are developing our software to such an extent that TIER1 suppliers are using it as the basis for their own systems, such as Level 3 autonomous driving or automatic parking. Here too, the low power consumption is the main argument in favour of SiMa.ai. Overall, we are in contact with many companies in the industrial sector, and from very different areas.This allows us to familiarise ourselves with the different domains and adapt our systems to them.This is the cornerstone for scaling.

So customers here would be, for example, manufacturers of vision inspection systems that are used to monitor production quality?

That would be one example; once our customers have given their approval, we will soon be able to report on more specific applications in this sector.

So the first customers are already in sight?

Yes, we are in serious talks with many of them, including the market leaders, with whom we naturally enjoy working. But it is in the nature of things that these companies want to keep their business relationships confidential. So we cannot name names.This applies to both the automotive and industrial markets.

However, the mills grind slowly in the automotive sector...

...but this has changed over the last few years. I can still remember that it used to take much longer.A controller had to be ready on the table before it had a chance to be designed in.It took six years before the car came onto the market. From my observations, all OEMs have changed a lot in this respect; they have become much more flexible.But it's basically true that if you're in the automotive business, you need staying power. But it doesn't happen overnight in the industrial sector either. As I said, we first have to familiarise ourselves with the many domains in order to be able to scale up and then get started in quantities.

Do the investors realise this and are there plans to go public?

We are working according to plan and our investors are quite happy with it, that much I can say.The IPO is probably still a few years away, but I don't want to speculate on that today.

You have a deep insight into the situation in Germany. Are we an AI developing country?

As we all know, we have a large number of hidden champions in Germany - companies that are global market leaders in their specialised fields - in addition to the very large companies thanks to our strong SME sector.It is a clear prerequisite for their continued success that these companies rely on AI.If they don't implement this quickly, they will no longer be on the market in ten years' time.I also see myself as a bit of an ambassador for AI in Germany: we must not lose our leading position!

Is AI being accepted more quickly in the USA?

There, but also in Asia, development is progressing much faster than in Germany. Other countries could gain a head start. That's why my appeal is: AI is not a passing hype, it's not about specific products, it's about how the entire production process can be organised more efficiently with the help of AI. Many processes in companies have reached an end point in terms of traditional automation. The next step is AI: human-like flexibility and the ability to learn, combined with superhuman speed and tirelessness.

Harald Kröger

Harald Kröger can look back on many years of experience in the automotive industry, which he gained in management positions. Before being appointed as a member of the Supervisory Board and Head of Sales at SiMa.ai a year ago, he spent five years at Bosch, most recently as Managing Director responsible for over 100,000 employees and a turnover of over 20 billion dollars. There he drove the development of Bosch's Cross Domain Solution Division and the expansion of the semiconductor business.

Prior to that, he spent 21 years at Mercedes-Benz, where his roles included Head of Quality and Head of Development for batteries, motors and power electronics for all-electric cars and plug-in hybrids. During this time, he was a member of the Tesla Supervisory Board for two years. In August 2022, he was appointed to the Supervisory Board of Rivian. Harald Kröger studied engineering and business administration in parallel at Leibniz Universität Hannover and holds a Master's degree in Electrical Engineering from Stanford University.