



SiMa.ai Recognized for

2021

Technology Innovation Leadership

North American

Edge Machine Learning Industry

Excellence in Best Practices

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. SiMa.ai excels in many of the criteria in the edge machine learning (ML) space.

AWARD CRITERIA	
<i>Technology Leverage</i>	<i>Business Impact</i>
Commitment to Innovation	Financial Performance
Commitment to Creativity	Customer Acquisition
Stage Gate Efficiency	Operational Efficiency
Commercialization Success	Growth Potential
Application Diversity	Human Capital

Commitment to Innovation and Creativity

Advancements in emerging internet of things (IoT) applications, such as semi-autonomous or autonomous vehicles, autonomous mobile robots (AMR), and unmanned aerial vehicles (UAV), drive demand for real-

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time data analytics at the edge for time-sensitive needs, marking the dawn of a new era in ML: edge intelligence. Edge ML provides localized intelligence to end devices, limiting the need to shuffle data from sensors to the cloud, thereby reducing latency and improving overall operational efficiency. Edge ML can be used to carry out simple artificial intelligence (AI) functions at the edge, such as image detection and

classification, gesture recognition, acoustic detection, and motion analysis.

Conventional edge ML platforms, however, consume high power which restricts the operational efficiency of smart devices. Traditional smart devices are also hardware-centric, often making the devices incapable of handling varying AI workloads and limiting their computational capability. As such, there is high demand for a novel solution that consumes less power and can manage different ML workloads.

Founded in November 2018, the US-based SiMa.ai is a technology company focusing on green high-performance ML. In October 2019, the company introduced the MLSoC™ platform to enhance edge devices with ML capabilities. In contrast to competing companies, SiMa.ai uses a software-hardware co-design approach emphasizing software capabilities to develop edge ML solutions that consume minimal power and are capable of handling varying ML workloads. The MLSoC offers state-of-the-art performance with its ratio of 10 tera operations per second per watt (TOPS/W), providing green high performance ML solutions to customers. The company is also developing their MLSoC Software Development Kit (SDK) based on the open-source ML framework, Tensor Virtual Machine (TVM), which has a unique ability to allow developers to integrate and deploy neural network models from any framework using any model via any programming language. Other competing solutions that do not use TVM require customers to spend time and money to port their existing network model onto an ML accelerator, often spending many months for the port and subsequent optimizations to get the model to run effectively on the hardware. SiMa.ai's MLSoC was the first ML platform to achieve the 1,000 frames per second per watt (FPS/W) for ResNet-50 for edge applications. SiMa.ai's vision to optimize performance per watt ratio to help reduce the earth's carbon footprint positions its MLSoC platform as a promising and sustainable candidate for edge ML applications.

SiMa.ai's breakthrough MLSoC is protected by multiple patents, giving it an edge over competing solutions. The company's vision of minimizing power consumed by traditional ML accelerators to help reduce the earth's carbon footprint is the key driver for its creativity and innovation. In January 2021, the company announced the establishment of a new design center in India to support its growing engineering, systems applications and operations teams. In June 2021, the company announced its collaboration with the University of Tübingen in Germany to optimize green ML acceleration. Frost & Sullivan commends SiMa.ai's groundbreaking edge ML solution and its commitment to collaborative research and development (R&D) to close the gap between edge ML solutions and consumer demand.

Application Diversity and Customer Acquisition

With the MLSoC, SiMa.ai aims to enable the optimization of key ML applications including computer vision, advanced robotics, autonomous vehicles, and aerospace and defense. Traditionally, edge ML devices for computer vision applications consume 50W–1,000W of power. In contrast, SiMa.ai's MLSoC consumes about only 5W–50W of power. Computer vision applications that SiMa.ai focuses on include target detection and tracking, facial recognition, Big Data analytics, security, scene scanning, thermal imaging, and image segmentation.

In robotics and aerospace and defense, emerging key ML applications include collaborative robots, drones, device inspection, grabbers, grippers, industrial and medical robots, unmanned aerial and autonomous systems, and predictive maintenance. The MLSoC uses less than 20W of power and a design with a low-end processor using the MLSoC as an ML offload accelerator consumes less than 100W of power in autonomous vehicle applications while competing solutions could require up to 3KW of power. With the MLSoC, customers in the automotive segment can use low-power high performance edge ML solutions in areas such as sensor fusion, multicamera image processing, advanced driver assistance systems, and L4 – L5 autonomous vehicles.

SiMa.ai offers its MLSoC primarily to clients developing innovative solutions including AI chipsets and boards. The company also adopts a joint innovation approach by engaging in deep technical dialogues with customers, helping them develop customized solutions. The company works with key technology partners to further refine the MLSoC in terms of platform heterogeneity and modularity, which are appealing features that allow customers to scale quickly and enable SiMa.ai to support customers from different verticals. Frost & Sullivan praises SiMa.ai for its customer-centric strategy in delivering low-power high performance edge ML solutions to customers.

Growth Potential and Human Capital

SiMa.ai is led by industry veterans with a proven track record of sustained sequential growth and market share expansion. The company appointed the former chief executive officer of Xilinx, Inc. (now being acquired by AMD), Moshe Gavrielov, to be part of its board of directors in 2019; he became the board's chairman in August 2021. Since its establishment, SiMa.ai has grown rapidly into a team of over 80 employees in addition to SiMa.ai's contractors, advisors, investors, and ecosystem partners. This dedicated and talented workforce includes top technologists, leading software and semiconductor designers, and individuals with vast experience working with major chipmakers. The company's leadership has built a family-centric culture in the organization to fuel continuous innovations and empower employees.

SiMa.ai's disruptive platform has helped the company to gain strategic investments and customers to

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power the solutions of the future. In May 2021, the company raised \$80 million in a Series B funding round led by Fidelity Management & Research Company with participation from Adage Capital Management. The company has raised \$120 million to date, with investors including Amplify Partners, Dell Technologies Capital, Wing Venture Capital, Alter Venture Partners, and +ND Capital. This funding helps SiMa.ai to develop its MLSoC platform, execute effective go-to-market strategies, and expand its team and operations

globally. SiMa.ai's groundbreaking technology and experienced leadership have the potential to disrupt the existing ML semiconductor market. With its MLSoC-enabled solution, SiMa.ai is poised to drive exponential scaling of machine learning at the embedded edge for the sustainable future. Frost & Sullivan finds that SiMa.ai's pioneering technology and visionary leadership has put the company on a fast growth track in the multi-trillion-dollar embedded edge industry.

Conclusion

SiMa.ai has developed a revolutionary edge ML platform that combines industry-leading hardware and software. Compared to conventional platforms that consume high power for ML applications, SiMa.ai's MLSoC requires minimal power to execute green high performance emerging AI applications for advanced robotics, autonomous vehicles, computer vision, and aerospace and defense. This patent-protected platform is a software-centric solution that can perform heterogeneous processing and handle multiple ML models, frameworks, and workloads. With excellent performance per watt ratio in ML applications, its MLSoC positions SiMa.ai as a pioneer in green machine learning. SiMa.ai's growth is further supported by an experienced leadership team with a proven track record of sequential growth and market share expansion. To date, the company has raised \$120 million in funding. With its dedicated focus on developing innovative solutions, SiMa.ai is a promising start-up that can address the needs of the embedded edge market.

With its strong overall performance, SiMa.ai earns Frost & Sullivan's 2021 Technology Innovation Leadership Award in the edge machine learning industry.

What You Need to Know about the Technology Innovation Leadership Recognition

Frost & Sullivan's Technology Innovation Leadership Award recognizes the company that has introduced the best underlying technology for achieving remarkable product and customer success while driving future business value.

Best Practices Award Analysis

For the Technology Innovation Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Technology Leverage

Commitment to Innovation: Continuous emerging technology adoption and creation enables new product development and enhances product performance

Commitment to Creativity: Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

Stage Gate Efficiency: Technology adoption enhances the stage gate process for launching new products and solutions

Commercialization Success: Company displays a proven track record of taking new technologies to market with a high success rate

Application Diversity: Company develops and/or integrates technology that serves multiple applications and multiple environments

Business Impact

Financial Performance: Strong overall financial performance is achieved in terms of revenues, revenue growth, operating margin, and other key financial metrics

Customer Acquisition: Customer-facing processes support efficient and consistent new customer acquisition while enhancing customer retention

Operational Efficiency: Company staff performs assigned tasks productively, quickly, and to a high-quality standard

Growth Potential: Growth is fostered by a strong customer focus that strengthens the brand and reinforces customer loyalty

Human Capital: Commitment to quality and to customers characterize the company culture, which in turn enhances employee morale and retention

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The Growth Pipeline Engine™

Frost & Sullivan’s proprietary model to systematically create on-going growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

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Key Impacts:

- **Growth Pipeline:** Continuous flow of Growth opportunities
- **Growth Strategies:** Proven Best Practices
- **Innovation Culture:** Optimized Customer Experience
- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

