

In conversation with...

Ravi Kokku, Co-Founder and CTO, Merlyn Mind



MERLYN MIND™



Kisaco
Research

Can you introduce Merlyn Mind and tell us about the inspiration for the company?

Recent trends and advances in AI technologies indicate that intelligent digital assistants will become an increasingly inseparable part of every person's daily life at home and work. Purpose-built assistants in many industries and enterprises using contextual AI, multimodal interfaces, and deep workflow awareness will empower people to simplify their activities, free up time, and reduce cognitive load. At Merlyn Mind, we are building Merlyn, the first digital assistant for education. Merlyn makes technology and applications in classrooms be controlled by a combination of voice, touch, and remote controls, and provides contextual shortcuts and micro-automations. It saves time for teachers and reduces the friction of using technology while they teach in the classroom so that teachers can focus more on their students rather than on managing the technology in the classrooms.

Merlyn Mind is inspired by the confluence of a deep-rooted mission of our founding team to help simplify complex human processes such as teaching in a classroom, and the significant advancements in AI technologies that led to the advent of digital assistants in the last decade. With the advancements in speech recognition, natural language processing and understanding, and knowledge representation and retrieval, we believe that digital assistants will increasingly provide assistance to humans in different domains, giving back time to humans to perform cognitively more involved tasks, that humans are inherently better at.

What makes Merlyn an edge AI product?

To enable frictionless coordination of technology in classrooms, we deploy Merlyn assistant on a custom-designed EdgeAI hardware device with a powerful CPU, GPU and NPU, and a high-performance microphone array and speaker system. Classrooms are unique environments with specific environmental challenges such as relatively higher babble noise, and with unique privacy and security requirements. In order to comply with the privacy and security requirements and deliver the best user experience in classroom environments, we needed to move some AI processing to the edge. Specifically, we run wake-word recognition, a version of speech recognition and contextual natural language processing locally on the device to provide both data privacy and high responsiveness to user requests.

During the time you've been working on Merlyn Mind (in stealth) you've also been speaking at the Edge AI summit. What has your experience been like of the events and why have you come back again?

Irrespective of the domains in which the technologies are being developed, the advancements in AI, and more specifically the advancements in edge processing of the AI workloads, have common goals at a fundamental level, including increased task accuracy, reduced latency, reduced bandwidth usage, increased privacy and security, etc. The Edge AI summit over the years has brought together experts from many domains that shared problems, challenges and experiences that help similar efforts in other domains. In line with the goal of the summit, we benefited from the knowledge shared from use cases to hardware and software innovations, and we likewise hope that our experience in building a digital assistant for teachers will provide broader insights of value to the fellow attendees.

Can you guide us through the R&D process and the technological challenges you faced at Merlyn Mind when making this edge AI product?

Classrooms are inherently more challenging environments for speech interfaces, and hence a large part of our R&D effort involved in customizing the microphone processing, wakeword recognition, speech recognition and intent recognition to minimize the errors in processing user commands. At each step of the solution development, we had to make choices on where to execute the component for maximum efficiency and maximum data privacy and security. While augmenting human processes such as teaching, it is more important for the commands to be detected and executed right the first time as much as possible. Otherwise, the digital assistants increase friction instead of helping the humans in their processes, and humans eventually stop using the assistants.

What would be your number one piece of advice to other technologists working on deploying AI at the edge?

Rather than considering this as an advice, please consider this as an approach that worked for us, and could work for the reader. Before you design and deploy something on the edge, try hard and sincerely to make a case "against" doing it at the edge. If you still cannot succeed, you have a deep understanding of "why" you have a compelling edge AI solution. If you succeed in making a case against the edge, you learned something, and your use case was never meant to be an edge AI solution.

How does the future look for developing edge AI appliances?

From a privacy and security angle, we believe that edge AI appliances will only increase in number in the next few decades as solutions augmenting human processes (such as digital assistants) find applications in various non-consumer environments such as enterprise and industrial settings, legal, government and law enforcement organizations, etc. From a performance angle including reduced latency and reduced network bandwidth usage, it appears that a combination of edge and cloud processing of AI components may remain the best choice for high-capacity network environments, whereas edge processing would be of high value in challenging (i.e. low bandwidth, high latency, high packet loss) and disconnected network environments.

Which sessions are you most looking forward to happening at the event?

Personally, I am interested in all the talks at the summit, since there is always something to learn from everyone. Even in the case of exact overlap of the work and knowledge, it can be reinforcing to see someone else share the same knowledge understanding. I look forward to enjoy the entire event.



Ravi Kokku

Co-Founder and CTO
Merlyn Mind Inc.

**REGISTER TO HEAR RAVI SPEAK AT
THIS YEAR'S SUMMIT**