

# 2024 Akraino Spring Summit

## SCHEDULE AT-A-GLANCE

Day 3 of ONE Summit Wednesday, May 1 15:00-17:00(PDT) at ONE Summit 2024 (On site + virtual)	
2 hour on-site discussion Agenda(Idea) Presentation session Akraino 2024 activities Collaboration with other communities	SAN JOSE MCENERY CONVENTION CENTER Room 113 at first floor

## Day 3 of ONE Summit

### Wednesday, May 1

Zoom Link: <https://zoom.us/j/98538301700?pwd=RXlFdHpZRDlHTzFaVFRnakw2b0F5QT09>

Recording: TBD

Time (UTC-7)	Topics
15:00-15:10	Welcome note <a href="#">Yin Ding</a> TSC Chair <a href="#">Fukano Haruhisa</a> TSC Co-Chair

15:10-  
15:30

Jeff Brower,  
CEO, Signallogic

#### Small Language Model for Device AI Applications

Device AI applications running at the AI Edge on very small form-factor devices (for example pico ITX), and without an online cloud connection, need to perform automatic speech recognition (ASR) under difficult conditions, including background noise, urgent or stressed voice input, and other talkers in the background. For robotics applications, background noise may also include servo motor and other mechanical noise. Under these conditions, efficient open source ASRs such as Kaldi and Whisper tend to produce "sound-alike" errors, for example:



in the early days a king rolled the stake

which contains two (2) sound-alike errors that must be corrected to "in the early days a king ruled the state". Sound-alike errors are particularly problematic for robotics applications in which the robot OS requires precise API commands, for example a robotaxi has stalled and must be instructed to "move forward 20 feet, to the right 10 feet, raise the hood, and turn off the engine". A first responder may use a portable backpack device and give commands "get off the road in that turn-out up ahead and shut it down" or similar. Any sound-alike errors in voice commands make translation to machine-readable APIs problematic.

To address this issue independently of ASR model, Signallogic is developing a Small Language Model (SLM) to correct sound-alike errors, capable of running in a very small form-factor and under 10W, for example using two (2) Atom CPU cores. The SLM must run every 1/2 second and with a backwards/forwards context of 3-4 words. Unlike an LLM, a wide context window, domain knowledge, and extensive web page training are not needed.



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15:30-15:50	<p>Hidetsugu Sugiyama, Chief Technology Strategist - Global TME, Red Hat</p> <div>  <p>AkrinoEdgeSmm...N-PoC2024.pdf</p> </div>
15:50-16:20	<p>Vijay Pal, Predictive Maintenance of Hardware :</p> <p>In the world of smart systems, encompassing 5G, IoT, and data centers uncertainty of hardware failures is very critical. Proactive maintenance of hardware can eliminate these challenges.</p> <p>Our device-agnostic approach, rooted in data analysis and anomaly detection using AI and ML, positions us to fortify the entire smart ecosystem, ensuring reliability and efficiency at scale.</p> <div>  <p>Predictive_Maint...BP_proposal.pptx</p> </div>
16:20-17:00	<p>Discussion about Akraino 2024 activities</p> <p>Collaboration with LF Edge AI Edge and EdgeLake</p>
Closing	

#### Call for proposal

No	Name	Company	e-mail	Presentation title	Abstract	Preferred Time Zone	Comments
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1	Jeff Brower	Signalogic	jbrower at signalogic dot com	Small Language Model for Device AI Applications	<p>Device AI applications running at the AI Edge on very small form-factor devices (for example pico ITX), and without an online cloud connection, need to perform automatic speech recognition (ASR) under difficult conditions, including background noise, urgent or stressed voice input, and other talkers in the background. For robotics applications, background noise may also include servo motor and other mechanical noise. Under these conditions, efficient open source ASRs such as Kaldi and Whisper tend to produce "sound-alike" errors, for example:</p> <p>in the early days a king rolled the stake</p> <p>which contains two (2) sound-alike errors that must be corrected to "in the early days a king ruled the state". Sound-alike errors are particularly problematic for robotics applications in which the robot OS requires precise API commands, for example a robotaxi has stalled and must be instructed to "move forward 20 feet, to the right 10 feet, raise the hood, and turn off the engine". A first responder may use a portable backpack device and give commands "get off the road in that turn-out up ahead and shut it down" or similar. Any sound-alike errors in voice commands make translation to machine-readable APIs problematic.</p> <p>To address this issue independently of ASR implementation, Signalogic is developing a Small Language Model (SLM) to correct sound-alike errors, capable of running in a very small form-factor and under 10W, for example using two (2) Atom CPU cores. The SLM must run every 1/2 second and with a backwards /forwards context of 3-4 words. Unlike an LLM, a wide context window, domain knowledge, and extensive web page training are not needed.</p>	PDT	
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