

# tinyML<sup>®</sup> EMEA

*Enabling Ultra-low Power Machine Learning at the Edge*

June 26 - 28, 2023



[www.tinyML.org](http://www.tinyML.org)



Intelligent Agent

*Neuton*

# Neuton **Tiny ML**

Automatic Design of Ultra-tiny ML Models

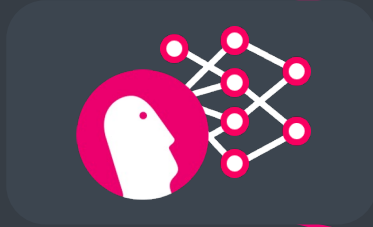
Blair Newman  
CTO @ Neuton.AI



# New Era of Tiny ML

Key Pillars of success

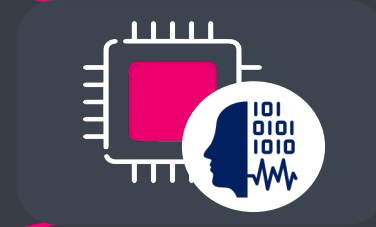
**Software**



**Neuton Neural Network Framework**

Automatic Design of extremely compact and accurate models without additional compression

**Hardware**



**Ultra-low power MCUs and sensors**

Ultra-low power sensors with built-in AI operate at the microwatt level



Patented & Unique  
Neural Network  
Framework



No-code Tiny  
AutoML Platform



Native embedding into  
8-bit/  
16-bit/  
32-bit MCUs






No compression techniques  
(quantization, pruning, etc.)  
No size vs accuracy compromise

Automatically build extremely  
tiny models with minimal size  
and without loss of accuracy

**10 x's** smaller  
in comparison to other products

# Teeth-brushing Tracking Solution with less than **5 kb** in total footprint



-  Recognizing similar areas of the oral cavity
-  Incredibly small total footprint solution
-  Provide user feedback without a phone on resource-limited device

Neurons	Weights	Classes	Accuracy	Inference time
68	521	11	> 97%	< 2 ms

	FLASH (kB)	RAM (kB)
Total solution	4.6	1.5
Model	2	0
DSP	1.5	0.1
Inference engine	1.1	1.4

Estimated on Cortex-M4, 48MHz, compiled with -Os optimization



**DEMO VIDEO**

<https://youtu.be/B0KumxXnKu8>

# Neuton: Enabling Low Powered Devices Forward

Embed Cloud **Intelligence** into tiny pieces of HW



Embed models into tiny pieces of HW, such as smart sensors.

Incorporate several models on one MCU or sensor.

Spend less energy on calculations and boost productivity.

Wake the device up with tiny models.

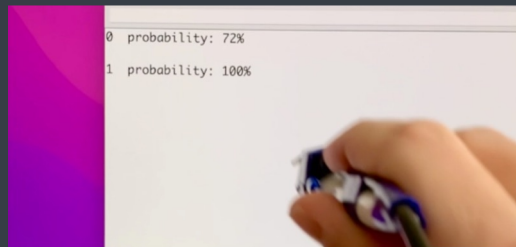
Get more business logic on one MCU.

Run models on MCUs even with 8-bit capacity.

# Solutions by Leveraging Neuton TinyML



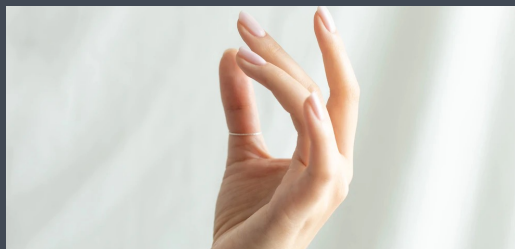
**PREDICTIVE MAINTENANCE**



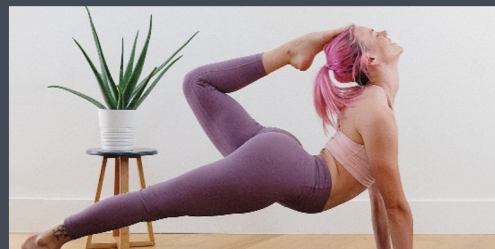
**HUMAN INTERFACES**



**ASSET TRACKING & MONITORING**



**GESTURES RECOGNITION**



**HUMAN ACTIVITY RECOGNITION**



**SMART HOME AND APPLIANCES**

# Neuton Collaboration Value



Accelerated Prototyping



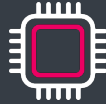
Faster Time to Market



Development Services and  
Consultancy Expertise



Hardware Agnostic



Optimized Models for any  
Hardware



No Royalties or Licensing



End to End Use Case  
Implementation



Unlimited Model Creation



Unlimited User Access



# Meet me at the Silicon Labs booth



## **Blair Newman**

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**Thank you!**

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