



# Real-Time Artificial Intelligence on the Edge enables instant identification and privacy

## EXECUTIVE SUMMARY

Neurala's AI solutions are designed from the ground up to work at the edge, delivering more engaging and interactive applications for consumers. The Neurala Brain is embedded in the device, leading the smart device industry in deploying Artificial Intelligence (AI) that can learn new information taught by the user in real-time as the user interacts with the device.

## MAKING SMART DEVICES PERSONAL

Smart Devices have become ubiquitous. People carry smartphones and watches at all times. Tablets, smart TVs, and personal assistants are common in many homes.

As people use these devices, they have grown tired with one-size-fits-all technology. The only way for smart products to continue to differentiate themselves from competitors is to personalize the way they interact with their users. A product that can be personalized to a user's preferences is far more powerful, engaging, interactive, and smart than a product that can only be used for one particular task.


## KEY ISSUES

If AI creates smarter devices, why isn't it more largely used? There are still a variety of challenges to applying AI in smart devices.

Personalized experiences require some knowledge of the user, but people are understandably concerned about how that information is stored, transmitted, used, and protected. This growing concern has caused many companies to shy away from a large scale implementation of useful AI technology, but Neurala AI allows all user information to be stored locally. Nothing is transmitted to the cloud, reducing the need for complex, expensive privacy and data security solutions.


Another concern is time to market. Many AI solutions take months to develop, train, and optimize, not even include the months of implementation it may take to deploy. Consequently, training intelligent devices' sensors to respond to different environments using lightweight, low cost hardware without relying on Wi-Fi connection can be challenging or impossible.

**243** PHOTOS ENHANCED




INFERENCE TIME **60** MILLISECONDS

16 FPS




**PERSONALIZED AI**

- 🔌 ON-DEVICE
- 🔒 FULL PRIVACY



NO WIFI NEEDED

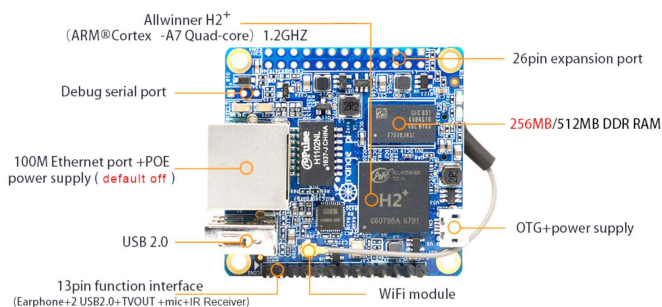


NO DATA STORAGE

## SOLUTION

Neurala set out to develop and design AI solutions that could recognize and respond to users and other objects quickly, without internet or access to the cloud. The user is able to train the device to recognize custom objects and new people on the device itself. This technology is hardware-agnostic and enables deployment in AI in multiple hardware devices, including low-cost processors. Furthermore, it enables the user to quickly adapt the device for their personalized use.

### System specifications



#### Neurala Brains4Bots™ 1.0

- CPU: CPUH3 Quad-core Cortex-A7 H.265/HEVC 4K
- Memory (SDRAM)1GB DDR3 (shared with GPU)
- GPU: Mali400MP2 GPU @600MHz
- Onboard Storage: TF card (Max. 32GB) / MMC card slot8GB EMMC Flash

### Neurala's Brains4Bots™ SDK Recognizer Performance

	Neurala's Brains4Bots™ SDK on Orange Pi Zero	Neurala's Brains4Bots™ SDK on GTX1080	TensorFlow on Qualcomm Snapdragon (Kyro CPU)
Board Price (per unit)	\$6	\$550-625	\$25
Inference Time (s)	2.2	.00225	1.97
Image Resolution	224x224	224x224	N/A