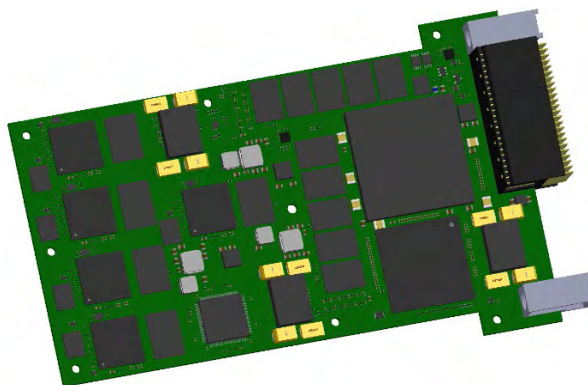


# Implementing Neural Network Algorithms on Neuromorphic Processors



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**Topic Number:** N202-099

**SYSCOM:** Naval Air Systems  
Command (NAVAIR)

**Program Sponsor:** Multiple Programs

## Other Potential Programs:

U.S. Navy and U.S. Marine Corps units  
dealing with SIGINT, ELINT, sensors and  
data streams.

**Current TRL:** 5

**Projected TRL:** 6 / Q2 2024

## Keywords:

Neuromorphic, SIGINT, ELINT, SOSA,  
VPX, machine learning

## THE CHALLENGE

Modern military operations are increasingly reliant on complex machine learning algorithms to process sensor data in real time. GPU-based processors and accelerators have helped tackle these problems, but their use comes at a cost in the field: power and speed. These systems consume exceptional amounts of power to perform standard machine learning computations and, in some cases, require seconds to derive a result. For critical time-sensitive applications, every watt and microsecond matters. For the U.S. Navy to continue bringing next-generation capabilities to the modern battlefield, a new processing paradigm is required.

## THE INNOVATION

Bascom Hunter is developing signal processing technology using neuromorphic processors that marries novel advances in brain-inspired processing to perform Signals Intelligence (SIGINT) missions. Sensor Open Systems Architecture (SOSA)-aligned and Hybrid Open Systems Technology (HOST)-compatible, this innovation has been packaged into a 3U Virtual Path Cross-Connect (VPX) form factor, outperforms current-day Graphics Processing Unit (GPU) systems with state-of-the-art algorithms, and requires significantly reduced computational power to run it.

## THE NAVY BENEFIT

The U.S. Navy can incorporate the technology developed into both modern and legacy weapons systems (via HOST and SOSA alignment), expect to outperform modern GPU systems running cutting edge algorithms; and require exceptionally low power usage. Moreover, this technology is scalable and, as mission needs evolve, super-charging applications of interest to the Navy and the Department of Defense.

## THE FUTURE

Bascom Hunter is currently iterating on and developing the technology and applying it against a subset of the Electronic Intelligence (ELINT) mission-set. The next steps for this technology are performing operational field testing, attaining relevant Modular Open Systems Approach (MOSA) and cybersecurity certifications, and seeking partners to help translate this technology to other missions and mission partners across the Department of Defense/Intelligence Community.

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