**XMOS and Plumerai partner to accelerate commercialisation of binarized neural networks**

**XMOS and Plumerai bring together their deep learning expertise across chip design and algorithms in a Binarized Neural Network capability, advancing the deployment of intelligence at the edge.**

**Bristol & London UK, 1 April 2020 -** British technology companies XMOS and Plumerai have agreed a new strategic partnership that will support the development of binarized neural network (BNN) capabilities that enable AI to be embedded in a wide range of everyday devices efficiently at low-power and at low-cost.

The partnership will combine Plumerai’s Larq software library for training BNNs and the xcore.ai crossover processor from XMOS which provides native support for inference of BNNs. The combination of the two technologies will deliver a BNN capability that’s 2 to 4x more efficient than existing edge AI solutions.

This solution will enable a new generation of devices to run tasks that make our lives simpler and safer. This could include everything from identifying that a shopping package has been delivered to a safe place to managing traffic flows more efficiently, supporting remote healthcare applications or keeping shelves in stores stocked more efficiently. While BNNs are an emerging technology, the future potential is enormous.

The deep learning revolution is all around us today. But a typical application uses deep learning models with tens of millions of parameters – and despite the move to 16-bit and 8-bit encoding there is still an insatiable demand to increase the speed and efficiency of deep learning and AI systems. That’s where BNNs come in.

BNNs are the most efficient form of deep learning, offering to transform the economics and efficiency of edge intelligence by going all the way down to just a single bit. However, there are significant challenges involved in making BNNs commercially viable – for example, they demand specific attention in chip design for efficient inference and new software algorithms for training.

XMOS and Plumerai have combined their respective expertise in embedded chip design and deep learning algorithms to enable this breakthrough technology and bring AI to the devices all around us.

**Mark Lippett, XMOS CEO says** *“BNNs gained prominence in the news recently with Apple’s purchase of Xnor.ai for a reported $200m. It’s little surprise that Apple is exploring AI capabilities at the edge, with advanced machine learning algorithms that can run efficiently in low-power, offline environments.*

*“Regardless of other moves in the market, our partnership with Plumerai is exciting for AI developers around the world. The combination of Larq and xcore.ai offers the first consolidated path to commercially deploying BNNs, which will be highly disruptive in intelligent embedded systems.”*

**Roeland Nusselder, Plumerai CEO adds** *“We are thrilled to join forces with the experienced team from XMOS to bring BNNs to the edge, and we share their excitement about the emerging era of intelligent connectivity. Binarized deep learning has tremendous potential for enabling a new generation of energy-efficient, AI-powered applications. Our two companies are perfectly positioned to turn this potential into reality.”*

**Ends**

**About XMOS**

XMOS is a deep tech company at the leading edge of the AIoT. Since its inception in 2005, XMOS has had its finger on the pulse recognising and addressing the evolving market need. The company’s processors put intelligence, connectivity and enhanced computation at the core of smart products.

**About Plumerai**

Plumerai is making deep learning tiny and computationally radically more efficient to enable real-time inference on the edge – for automated warehouses, retail, smart cameras, micromobility and many more. The team is based in London, Amsterdam and Warsaw and is backed by world-class investors

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