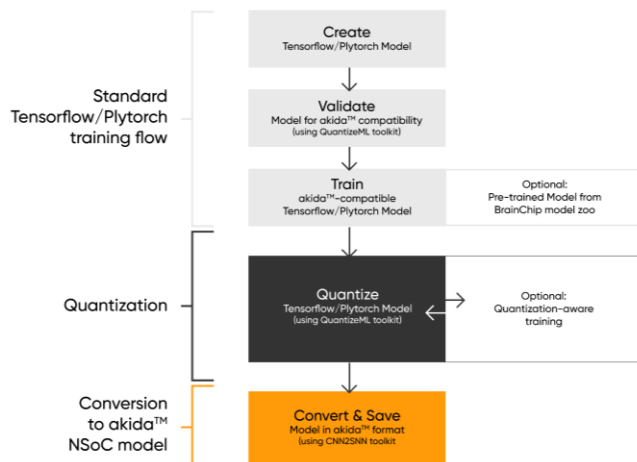**brainchip™**

MetaTF is a complete Akida machine learning framework enabling the seamless creation, training, and testing of neural networks on the Akida Processor platform. With MetaTF's support for models created with TensorFlow/Keras and Pytorch, users avoid the need to learn a new ML framework while rapidly developing and deploying AI Applications for the Edge.

MetaTF supplies tools to convert a model with floating point weights and activations to a model with low bit-width weights and activations while maintaining model performance. These tools also convert quantized models trained using traditional deep learning methods to event-domain models for execution with low-latency and low-power on the Akida 1, Akida 2 and the Akida Pico processors.

MetaTF provides the platform-agnostic Akida Runtime with a Hardware Abstraction Layer (HAL) for execution of models on Akida hardware. The Akida runtime also contains a software simulator for model evaluation without Akida hardware.
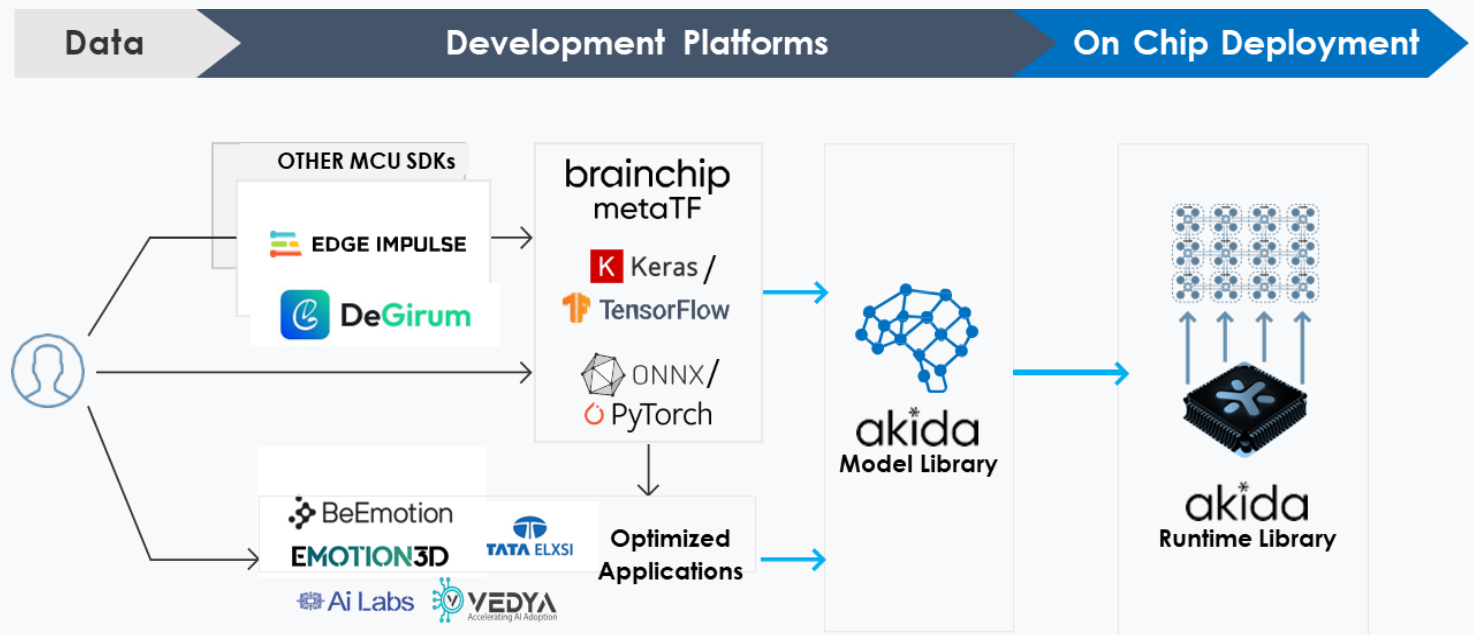
The ***CNN2SNN & QuantizeML python packages*** provide tools to quantize Tensorflow/Pytorch models and convert models to the event domain for inference on the **Akida Neuromorphic Processor Platform**.

The steps to generate an Akida compatible model include:

- **Create** a model with conventional ML libraries such as Tensorflow and Pytorch using standard tool flows.
- **Validate** Akida compatibility of Tensorflow/ONNX model using QuantizeML toolkit
- **Train** a Tensorflow model using standard tool flows knowing model is Akida compatible
- **Quantize** a trained Tensorflow model using QuantizeML toolkit
- **Optional Quantization-aware training** using standard Tensorflow tool flows
- **Convert and Save** a model in Akida format using CNN2SNN toolkit

Model Workflow

The **MetaTF** model workflow is the foundation supporting multiple **AI Application Development and Deployment** scenarios for users with different levels of AI Expertise and network model customization needs. Brainchip supports a range of AI application development platforms all of which ultimately deploy on the **Akida Neuromorphic Processor Platform**.

Options for AI Application Development and Deployment on Akida Platform

- **No-code Tools** for Limited AI Expertise with Edge impulse, DeGirum
- **Native MetaTF** for Custom AI Expertise
- **Turnkey AI Application Providers for** No AI Expertise with Authorized Partners