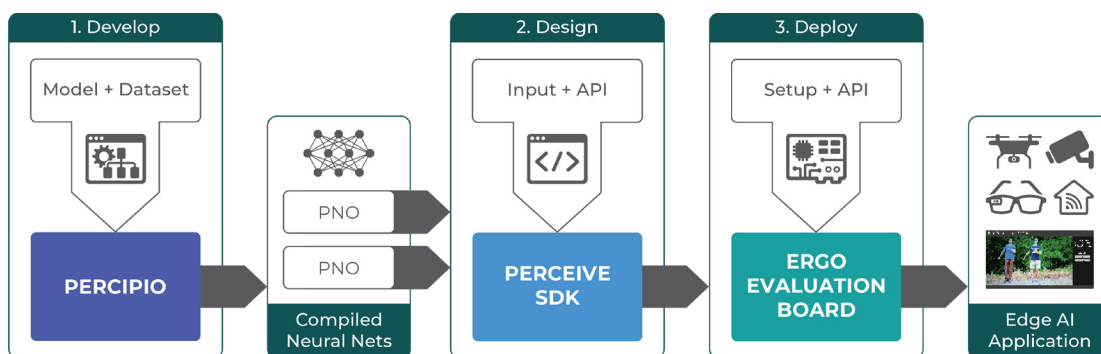
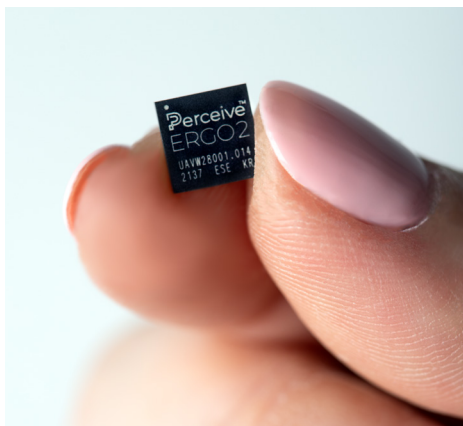


## Perceive Developer Workflow

Perceive Ergo® AI processors enable product developers to integrate large, advanced neural networks into edge devices, run multiple neural networks at once, and leverage multimodal inputs to provide a richer user experience. To support you in building products that take full advantage of these advanced capabilities, Perceive provides a comprehensive set of development tools. The Percipio Development Platform, the Perceive SDK, the Perceive Model Zoo, and Ergo Evaluation Boards are available to help prepare neural network models for Ergo and to build applications for Ergo-based devices.

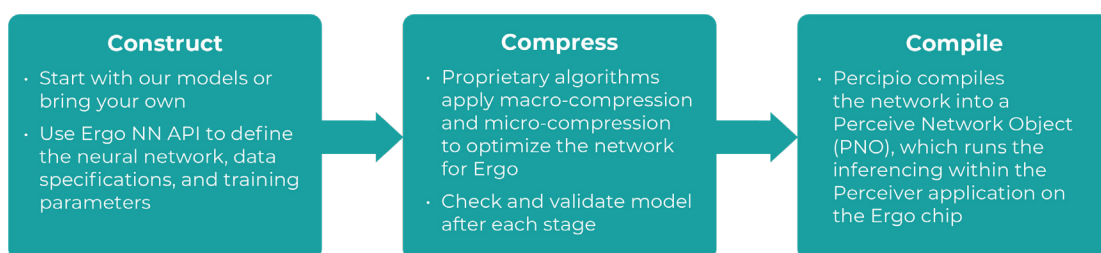


## Percipio Development Platform

Built on PyTorch and PyTorch Lightning, the Percipio development platform is used to produce highly efficient, real-time neural network models for an Ergo processor. Percipio's proprietary, loss-aware compression algorithms enable large models – including CNNs, RNNs, LSTM, GRU, and Transformers – to be compressed, trained, and compiled for deployment on Ergo. With the option to run in the cloud, on-premises, or on a workstation (see system requirements below), Percipio includes:

- ▶ PyTorch-like APIs for ingesting models into Percipio during development and training
- ▶ Metrics and logging facilities to aid in model development and compression
- ▶ Command line interface for simple access to the model development and training platform
- ▶ A model zoo of popular models for visual, audio, and language processing

## Percipio Workflow



## Percipio System Requirements



### x86\_64 architecture

- ▶ At least 8 CPU cores and at least 2GHz clock speed
- ▶ Recommended: Intel(R) Xeon(R) W-2145 CPU @ 3.70GHz or faster
- ▶ At least 124 GB of system memory
- ▶ At least 500 GB of local disk storage



### GPU configurations

- ▶ NVIDIA GPU(s)
- ▶ Recommended architectures: Ampere with 32 GB per GPU



### Operating System

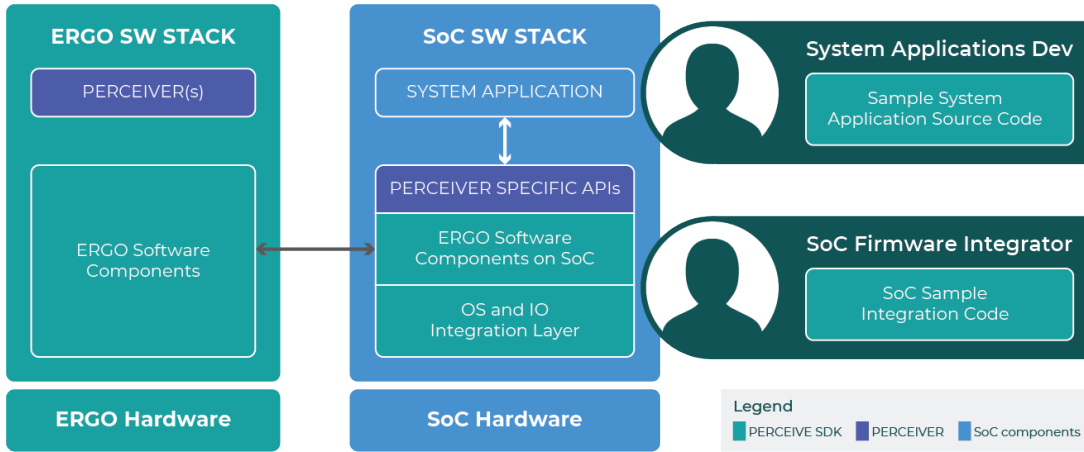
- ▶ Ubuntu 18.04, 20.04



### Required Software

- ▶ NVIDIA CUDA Version: 11.3 or later, and NVIDIA Driver Version: 470 or later
- ▶ Docker Engine Version: 20.10.10 or later
- ▶ nvidia-docker Version: 2.6.0 or later
- ▶ Git
- ▶ Conda/Miniconda
- ▶ Python 3.7.11 or later

## Perceive Software Development Kit (SDK)



### Ergo SDK

APIs to build firmware (embedded applications called Perceivers) for Ergo that take sensor data, use the PNO to run inferences, and pass inferences to the system applications on the host

### System SDK

APIs to take inferences from Perceiver applications on the chip and apply them within host devices features and applications

The Perceive SDK provides developers with everything needed to integrate an Ergo processor into a host device and build applications for it. The Perceive SDK includes:

- ▶ Precompiled libraries for Ergo
- ▶ APIs for software integration
- ▶ APIs for system application development
- ▶ Sample application source code

## Perceive Model Zoo

Designed to provide developers with a head start, the Perceive Model Zoo is a collection of off-the-shelf models with Percipio recipes that are already ported to Ergo NN and optimized to run on Ergo chips. It covers a wide variety of state-of-the-art computer vision, audio and natural language processing networks.

We encourage you to start with one of these networks, complete the training and compression process, and generate the PNO to familiarize yourself with the process. Then, customize the model to your specific application.

The model zoo is updated regularly – please contact us if you require an updated list. Using our models is not required – Percipio also enables you to bring your own model and optimize it for Ergo. We'd be happy to discuss your needs and help you assess the compatibility of your model.

## Ergo Evaluation Board

Perceive offers evaluation boards for both Ergo and Ergo 2. Ergo Evaluation Boards are small boards that contain an Ergo or Ergo 2 device and interfaces for various sensors such as MIPI cameras and audio microphones. The boards' form factor is designed to plug into a Raspberry Pi-type computer. An Ergo evaluation board can help test and refine applications as you build your final product.

