

# Accelerate Deep Learning Development with Explainable AI

Slash months off development time while improving model performance and gaining unparalleled insights

Developing and operationalizing enterprise AI is a complex and expensive undertaking, characterized by vast amounts of data, manual processes, and high computing costs.

Plus, the complexity of AI makes it difficult to understand how a neural network makes predictions, which leads to time-consuming design and debugging—often by trial and error.

## Get the results you need, sooner

DarwinAI's software platform, GenSynth, equips your teams with a unique toolset to accelerate the deep learning development cycle.

Based on an AI-assisted approach to deep learning development, GenSynth automatically generates a custom neural network for any dataset or use case, while reaching your operational requirements faster.

Whether you are building AI for the cloud or the edge, GenSynth can meet the most demanding requirements for your use cases.

## Eliminate guesswork, improve efficiency

Unlike AutoML tools, GenSynth eliminates the guesswork throughout the development lifecycle by leveraging AI-assisted automation to surfacing actionable insights about your neural network and data—that's why GenSynth shortens project timelines by many months while delivering superior performance.

## Explainable AI Accelerates AI

GenSynth leverages patented, explainable AI (XAI) capabilities to illuminate critical factors that drive each prediction.

GenSynth enables you to

- **Accelerate training** by finding the best training policy based on your data
- **Automatically generate new neural networks** that fit your parameters for accuracy, inference speed, and memory footprint
- **Efficiently audit and understand model performance**, including error scenarios, training data quality, and areas for improvements

**Reach operational requirements for each of your AI use cases faster—with less guesswork and more trust.**

## Faster Development. Better Results.

Leading enterprises across industries trust GenSynth to accelerate and improve their AI development workflows.



Audi cut 90% off the time needed to optimize their autonomous driving AI, while saving \$600,000 on compute costs—nearly 50% of their anticipated spend.



IBM developed a state-of-the-art deep learning model in just 3 weeks—while achieving 90%+ accuracy and 2.3x better compute efficiency than other approaches.



In only 3 weeks, Honeywell developed a drone navigation AI with industry-leading inference speed (37 FPS), while reducing hardware requirements.

# The GenSynth Platform: Deep Learning at Enterprise Scale

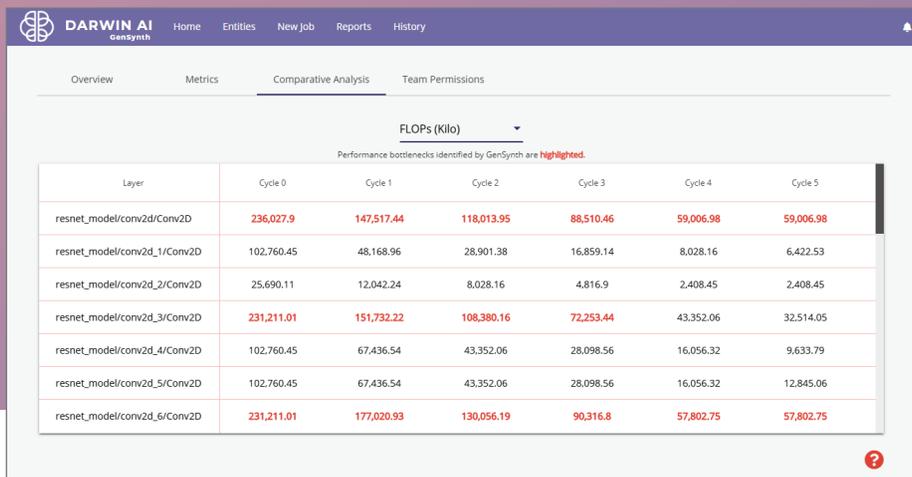
Deep learning projects often suffer from lengthy cycles and high costs due to the manual and iterative nature of key processes—typically, **more than 50% of development time is spent pursuing accuracy and operational targets** by tuning the architecture, retraining models, and validating performance and correctness.

## The GenSynth platform accelerates development and reduces costs by:

- Automatically generating new models that are custom fit to your training data, replacing lengthy manual processes for exploration and iteration
- Quickly training models to higher accuracy, meeting or exceeding your most demanding operational requirements
- Minimizing deployment footprints based upon your key performance parameters
- Revealing insights about the model and data, helping your developers make truly informed decisions about architecture and design trade-offs

## GenSynth seamlessly fits into your existing development stack, supporting:

- Popular deployment and development frameworks, including TensorFlow and Keras
- Any trained or untrained convolutional neural network (CNN) or multilayer perceptron (MLP) architecture
- Any data, including image, video, audio, text, tabular, and time-series
- Any target hardware for deployment, whether in the cloud or on the edge
- Hardware acceleration platforms (e.g., Nvidia TensorRT, Intel, OpenVino, nGraph, Xilinx Vitis, etc.)



The screenshot shows the Darwin AI GenSynth web interface. The main content area displays a table titled 'FLOPs (Kilo)' under the 'Comparative Analysis' tab. The table shows performance bottlenecks identified by GenSynth, which are highlighted in red. The table has columns for Layer, Cycle 0, Cycle 1, Cycle 2, Cycle 3, Cycle 4, and Cycle 5. The first row, 'resnet\_model/conv2d/Conv2D', shows significantly higher FLOPs compared to other layers, with values ranging from 236,027.9 to 59,006.98.

Layer	Cycle 0	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5
resnet_model/conv2d/Conv2D	236,027.9	147,517.44	118,013.95	88,510.46	59,006.98	59,006.98
resnet_model/conv2d_1/Conv2D	102,760.45	48,168.96	28,901.38	16,859.14	8,028.16	6,422.53
resnet_model/conv2d_2/Conv2D	25,690.11	12,042.24	8,028.16	4,816.9	2,408.45	2,408.45
resnet_model/conv2d_3/Conv2D	231,211.01	151,732.22	108,380.16	72,253.44	43,352.06	32,514.05
resnet_model/conv2d_4/Conv2D	102,760.45	67,436.54	43,352.06	28,098.56	16,056.32	9,633.79
resnet_model/conv2d_5/Conv2D	102,760.45	67,436.54	43,352.06	28,098.56	16,056.32	12,845.06
resnet_model/conv2d_6/Conv2D	231,211.01	177,020.93	130,056.19	90,316.8	57,802.75	57,802.75

By automatically generating and iterating production-ready models—and highlighting performance bottlenecks and trade-offs—GenSynth enhances and replaces manual steps, substantially shortening model development timelines

## Ready to accelerate your AI development?

Contact us at [info@darwinai.com](mailto:info@darwinai.com) to learn more about how GenSynth can help your enterprise get faster and better results with your deep learning projects.



darwinai.com | [info@darwinai.com](mailto:info@darwinai.com) | +1 519 886 6600  
600 Weber Street North, Waterloo, Ontario, Canada, N2V 1K4

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