



global AI bootcamp

March 4th 2023, Torino - Italy

Hands-on OpenVINO



Clemente Giorio

R&D Senior Software Engineer at **deltatre**



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R&D Tech Lead at **deltatre**



OpenVINO

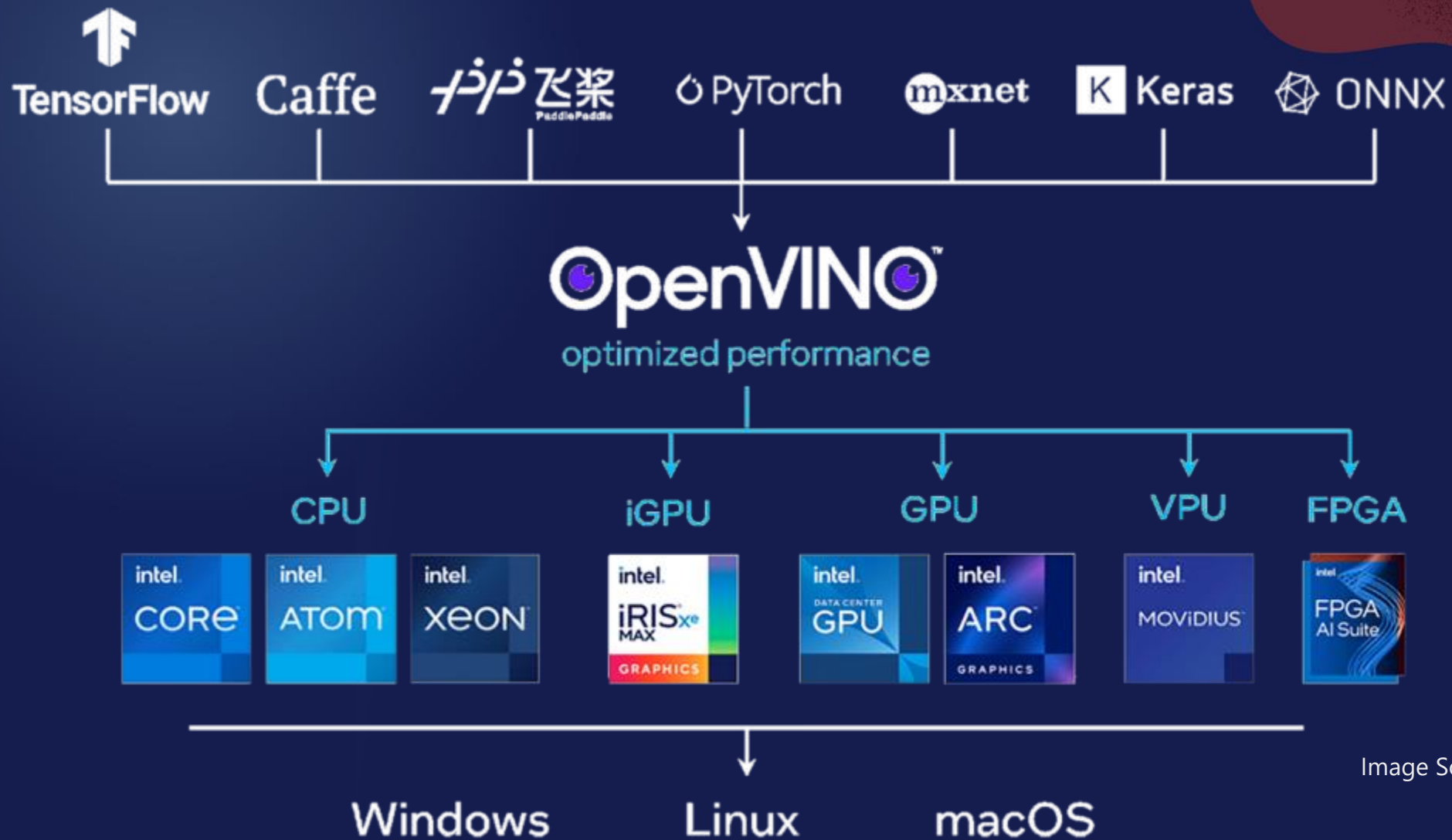


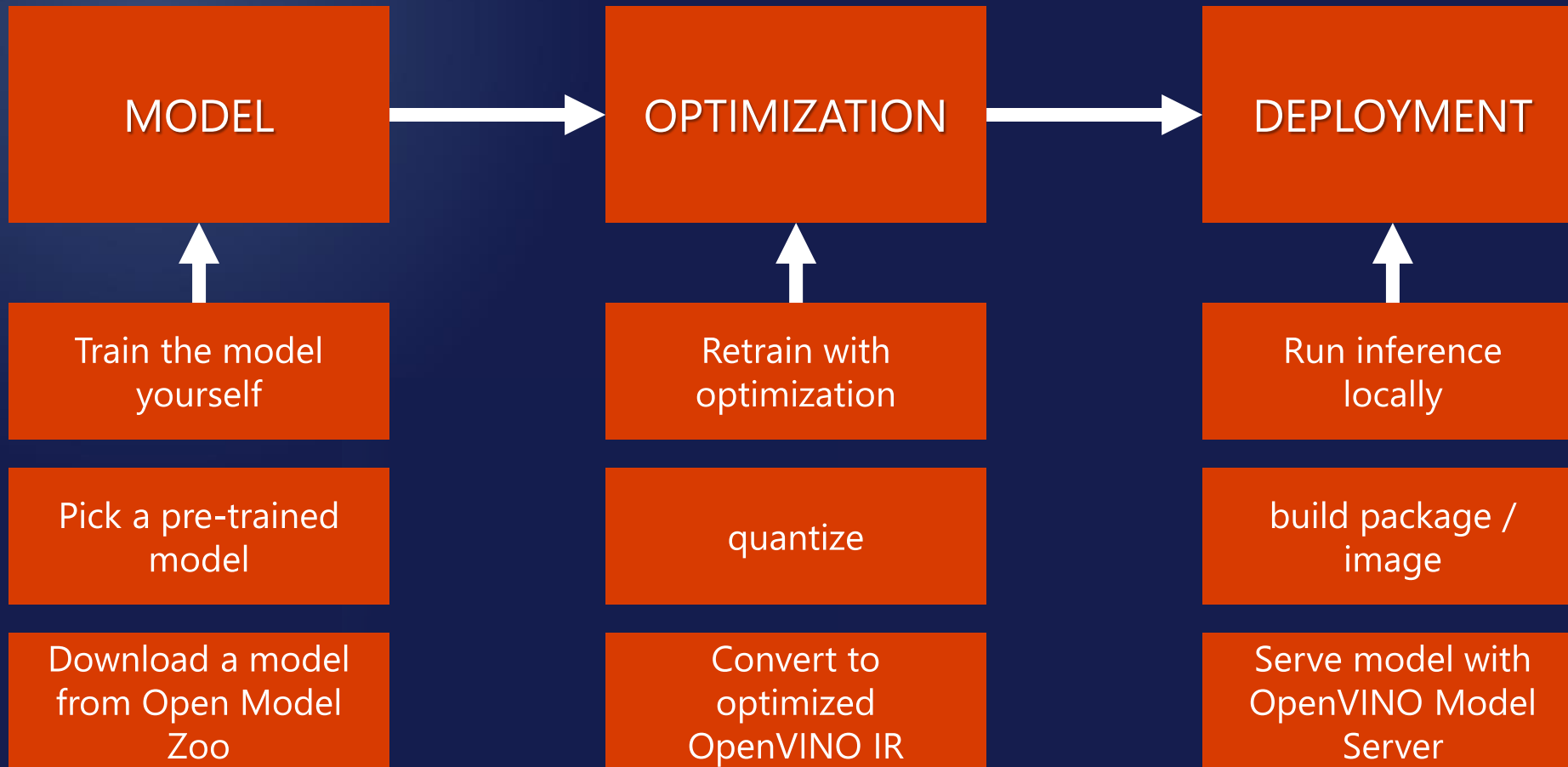
Image Source: Intel.com

From Start to Finish



Image Source: Intel.com

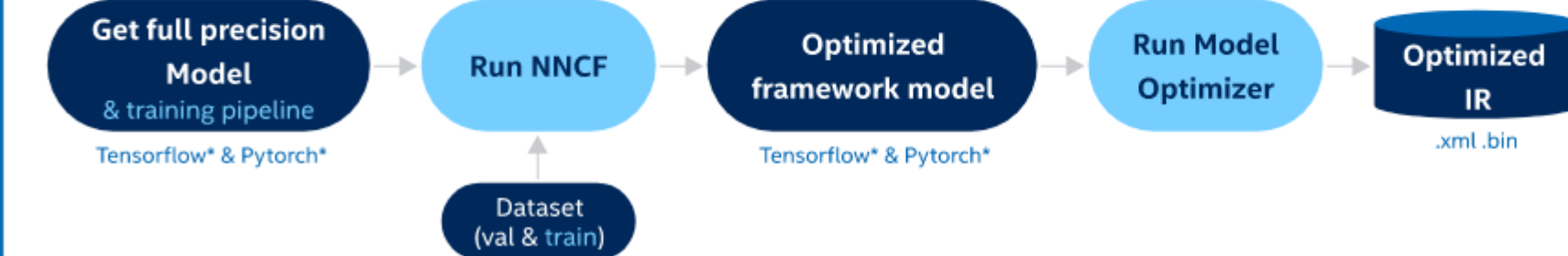
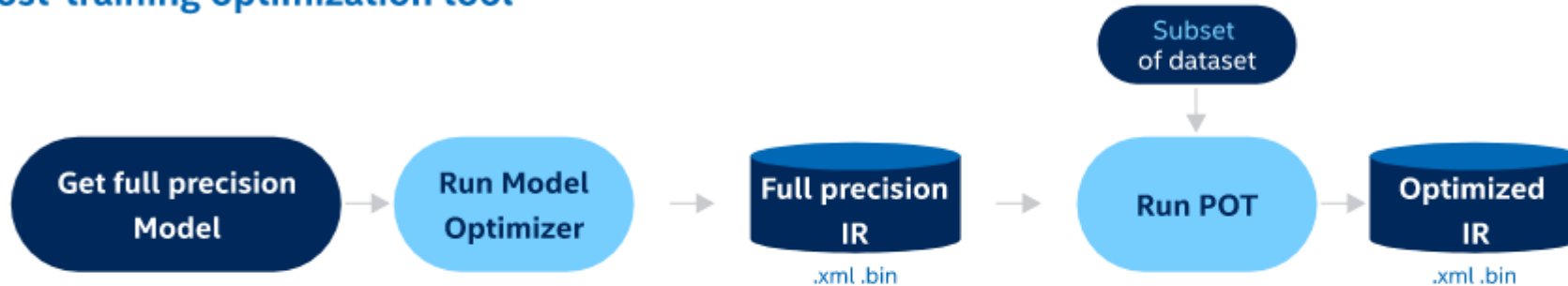
Workflow Overview



Model Optimization

Development

Post-training optimization tool



Neural Network Compression Framework

Deployment

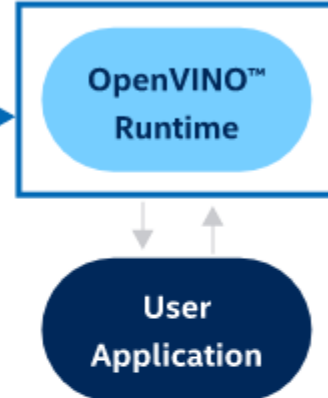


Image Source: Intel.com

Quantizing Models Post-training

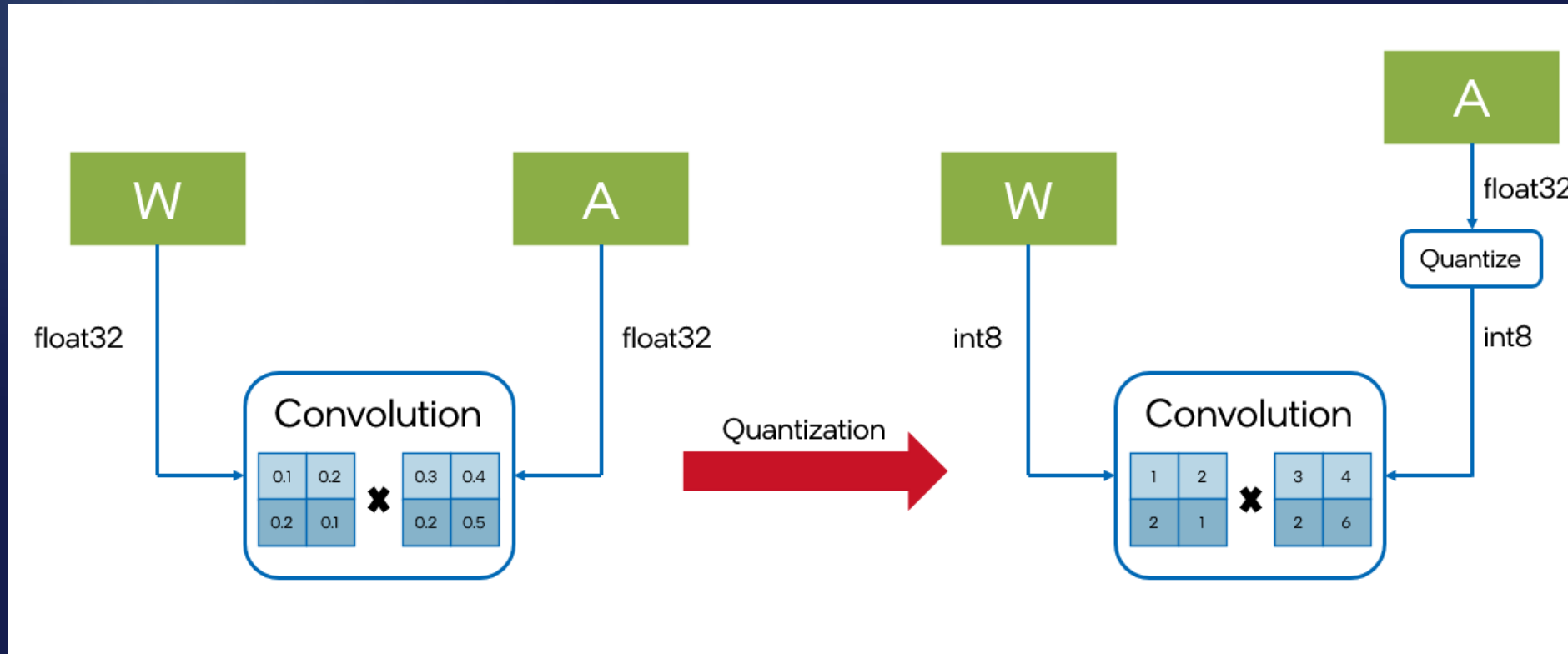


Image Source: Intel.com

Quantization

Have a representative dataset for a model?

YES

Use Post-training Optimization Tool (POT)

Need more accurate results?

YES

- Have val & train datasets?
- Have a training pipeline?
 - Your model is from Tensorflow or Pytorch?

YES

Retrain your model using Neural Network Compression Framework (NNCF)

Pruning and sparsity

- Have val & train datasets?
- Have a training pipeline?
 - Your model is from Tensorflow or Pytorch?

YES

Retrain your model using Neural Network Compression Framework (NNCF)

Maximized accuracy and performance result

Neural Network Compression Method

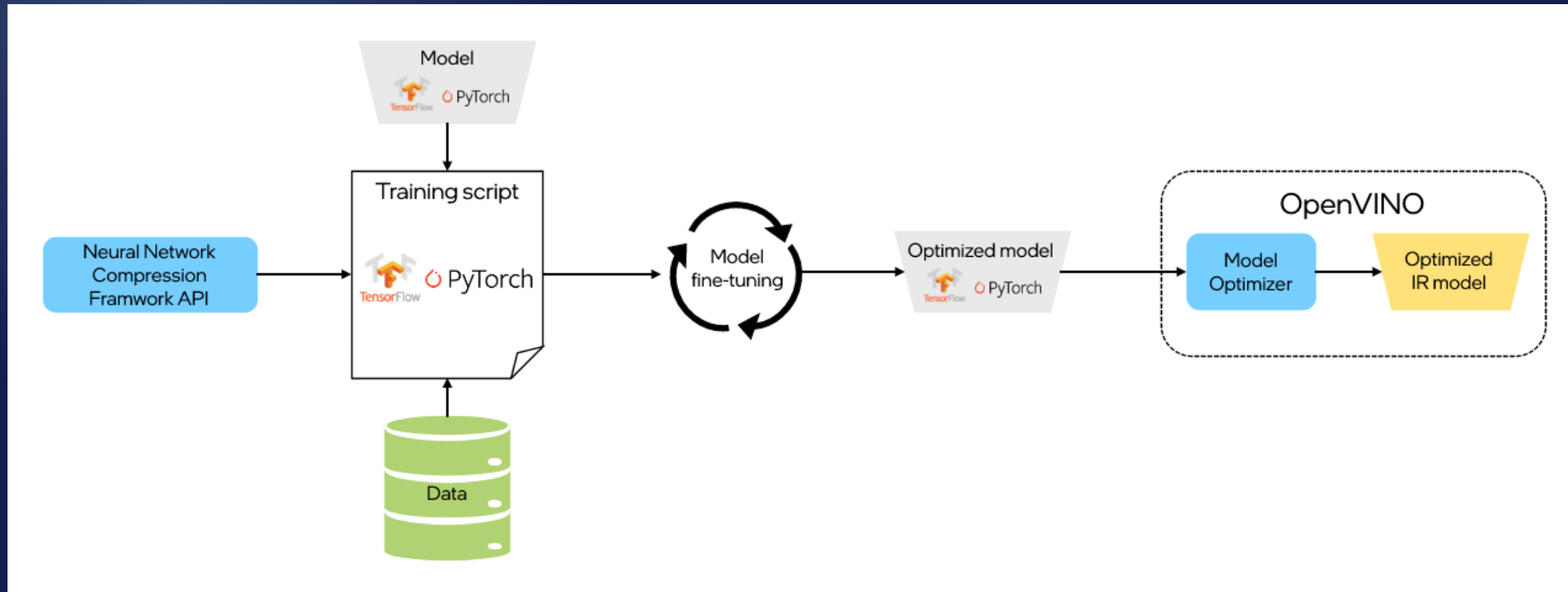


Image Source: Intel.com

Running and Deploying Inference

**Local Inferencing
&
Model Serving**

**Improved
Application Portability**

**Minimal
External Dependencies**

**Enhanced App
Start-Up Time**

Environment

Development Tools

Your best option to develop and optimize deep learning models.

Runtime

You already have a model and want to run inference on it.

Operating System

Windows

macOS

Linux

Version

2022.3 (Recommended)

Latest LTS release

2022.1

Includes NCS2/HDDL support

2021.4.2 LTS

Previous LTS release

[Previous Releases](#)

Distribution

PIP

GitHub
Source

Gitee
Source

[Learn More about Distribution Options](#)

[Try in the Intel® DevCloud](#)

Frameworks

Caffe

Kaldi

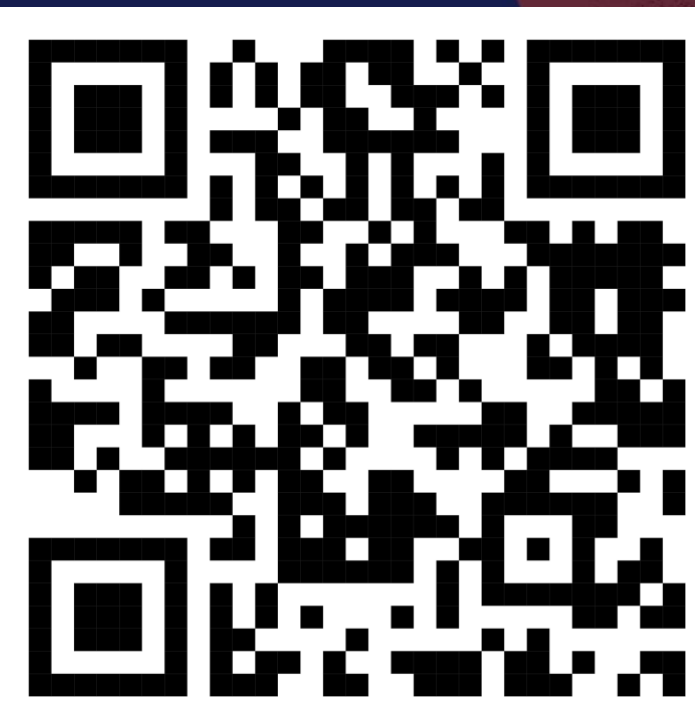
Apache MXNet

Open Neural Network
Exchange (ONNX)

PyTorch

TensorFlow 1.x

TensorFlow 2.x



<http://bit.ly/41H1wLw>

Environment

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Previous LTS release

[Previous Releases](#)

Languages

Python

Included by default, and cannot be canceled.

C++

Distribution

OpenVINO Archives

PIP

GitHub

Source

Gitee

Source

Docker

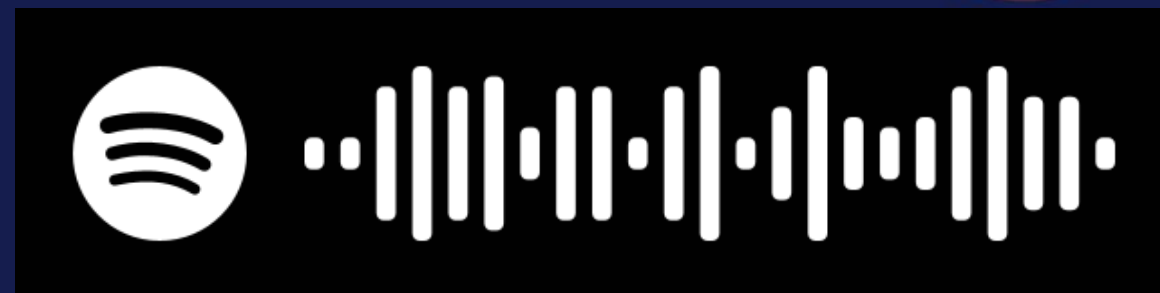
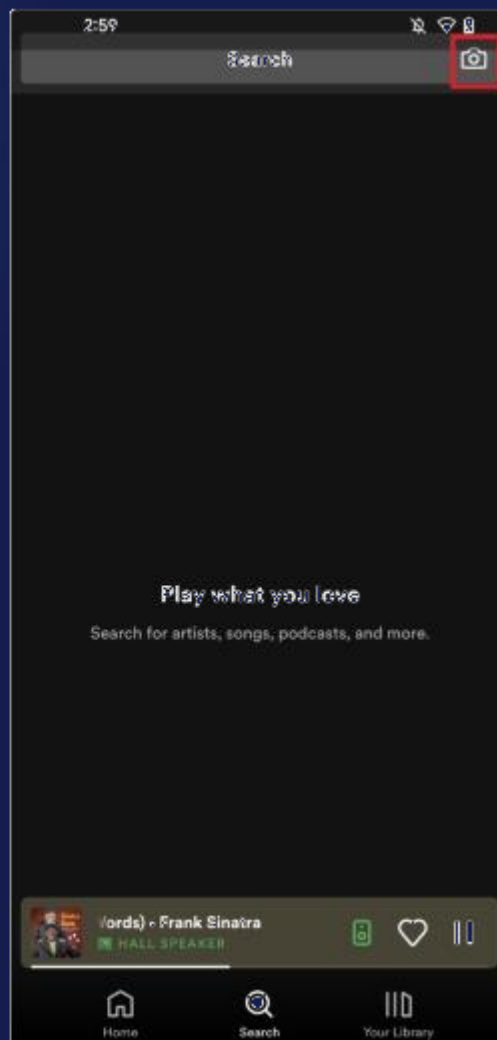
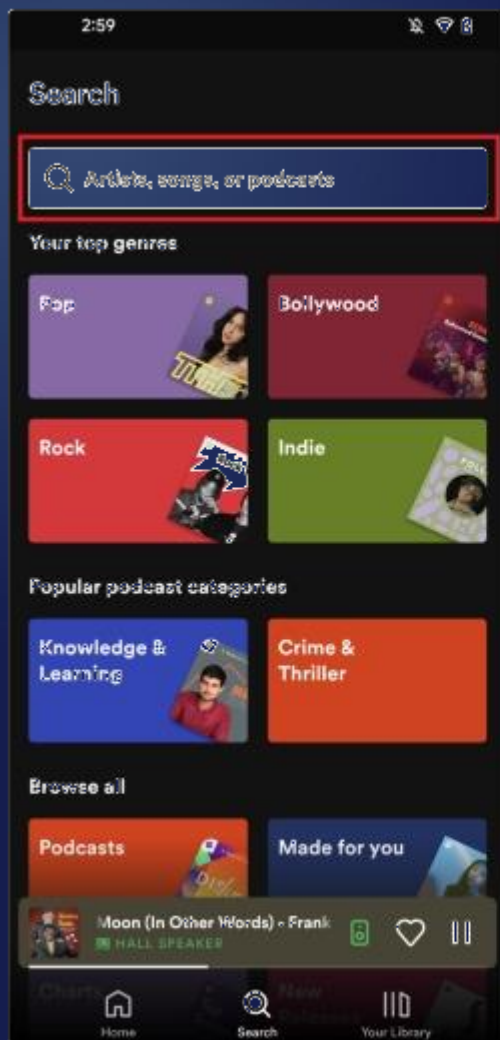
[Learn More about Distribution Options](#)

[Try in the Intel® DevCloud](#)



<http://bit.ly/41H1wLw>

Sviluppo software con i Dev Container





OpenVINO™ Toolkit

323 followers <https://docs.openvino.ai/>

[Overview](#) [Repositories 36](#) [Projects](#) [Packages](#) [People](#)

Pinned

[openvino](#) Public

OpenVINO™ Toolkit repository

C++ 4.1k 1.6k

[openvino_notebooks](#) Public

Jupyter notebook tutorials for OpenVINO™

Jupyter Notebook 914 385

[open_model_zoo](#) Public

Pre-trained Deep Learning models and demos
(high quality and extremely fast)

Python 3.5k 1.3k

[model_server](#) Public

A scalable inference server for models optimized
with OpenVINO™

C++ 559 157

[nncf](#) Public

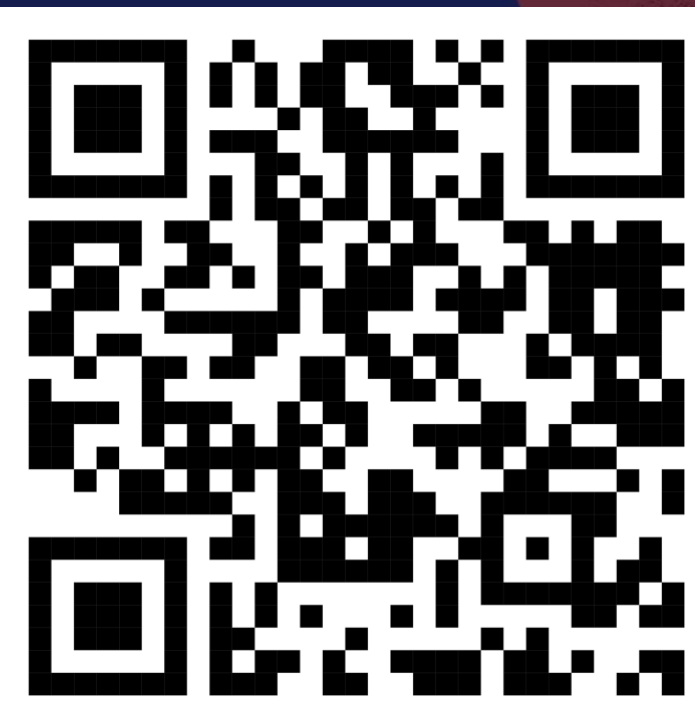
Neural Network Compression Framework for
enhanced OpenVINO™ inference

Python 581 164

[training_extensions](#) Public

Train, Evaluate, Optimize, Deploy Computer
Vision Models via OpenVINO™

Python 1k 423



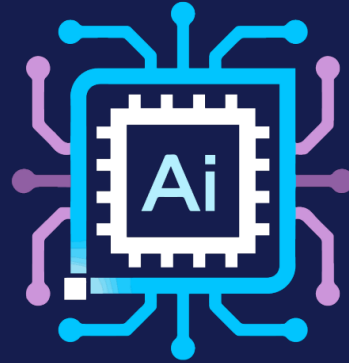
<https://github.com/openvinotoolkit>

What's new in 2022.3 LTS

Broader Model and Hardware Support



Improved API and More Integrations



Expanded Model Coverage

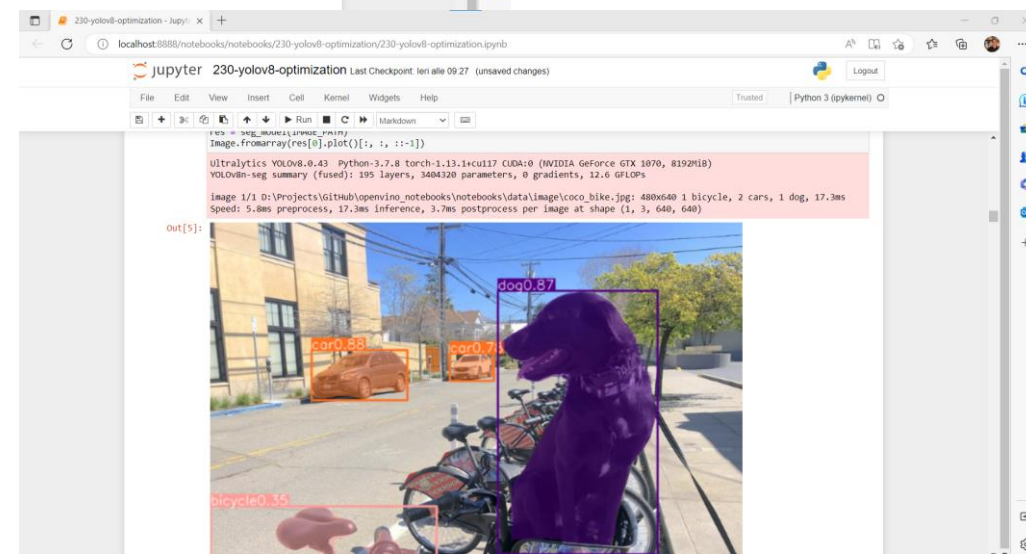
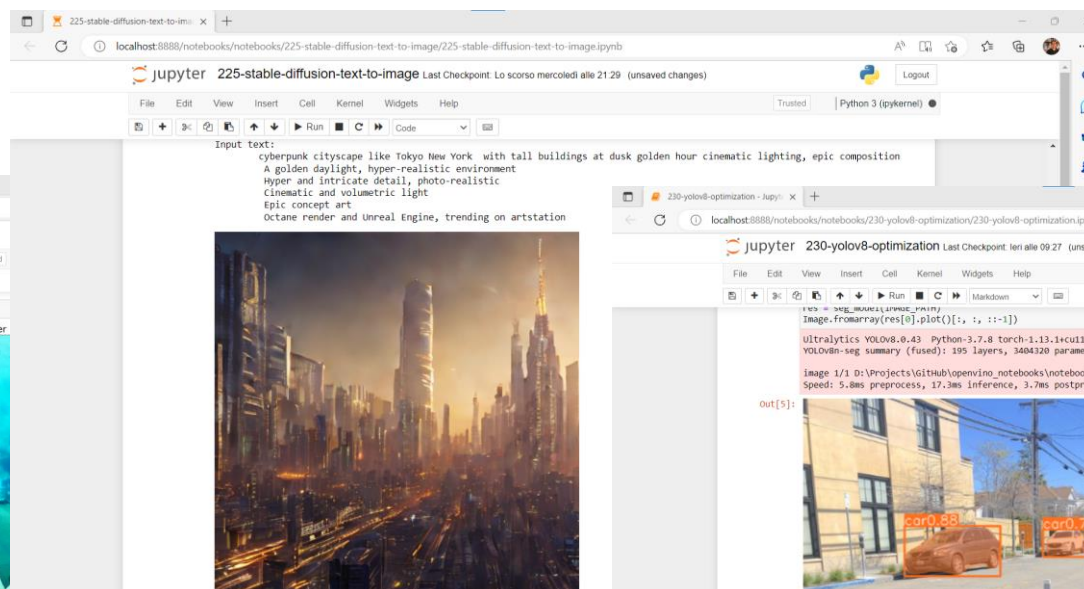
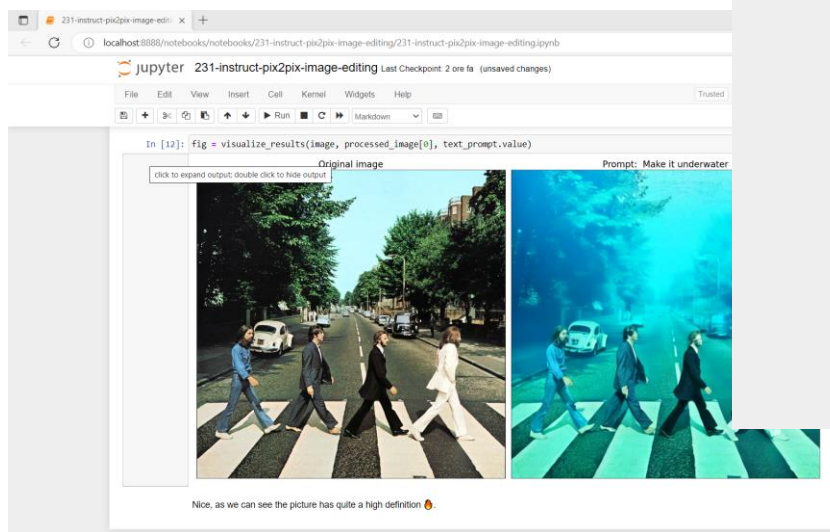




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DEMO



Thank You!

ευχαριστώ Salamat Po متشكراً شكراً Grazie

благодаря ありがとうございます Kiitos Teşekkürler 谢谢

ໂພນຄຸນຄວັບ Obrigado شكریه Terima Kasih Dziękuję

Hvala Köszönöm Tak Dank u wel дякую Tack

Mulțumesc спасибо Danke Cám ơn Gracias

多謝晒 Ďakujem תודה நன்றி Děkuji 감사합니다

Resources & Slides:

[https://github.com/deltatre/deltatre-labs/
community-global-ai-bootcamp-torino-italy-2023](https://github.com/deltatre/deltatre-labs-community-global-ai-bootcamp-torino-italy-2023)



About us



Clemente GIORIO  @tinux80

R&D Senior Software Engineer @ **deltatre**

- Augmented/Mixed/Virtual Reality
- Artificial Intelligence, Machine Learning, Deep Learning
- Internet of Things
- Hybrid Clusters
- Multimodal Tracking



Intel
Software
Innovator



Author

Deltatre
Innovation
Lab



#GlobalAIBootcamp 

About us



Ing. Gianni ROSA GALLINA  @giannirg

R&D Technical Lead @ **deltatre**

- AI, Machine Learning, Deep Learning on multimedia content
- Virtual/Augmented/Mixed Reality
- Immersive video streaming & 3D graphics for sport events
- Cloud solutions, web backends, serverless, video workflows
- Mobile apps dev (Windows / Android / Xamarin)
- End-to-end solutions with Microsoft Azure



Microsoft
Specialist

Programming in C#
Programming in HTML5
with JavaScript & CSS3

Microsoft
CERTIFIED

Solutions Developer

Windows Store Apps Using C#
Web Applications



PLURALSIGHT

Author



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Lab

<https://gianni.rosagallina.com/en/>

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