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AI at the EDGE con .NET:

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AI on the EDGE... Why?

SECURITY

LATENCY

DATA RESIDENCY

SPECIFIC SCENARIOS

How to do it (1/3)

1. Choose an AI Framework:

- **ML.NET**: Microsoft's open-source machine learning framework for .NET.
- **ONNX Runtime**: Allows you to run models trained in various frameworks (TensorFlow, PyTorch, etc.) using the ONNX format.
- **TensorFlow.NET**: A .NET binding for TensorFlow.

2. Install Required Packages:

Use NuGet Package Manager or CLI to install packages.

For example, using ML.NET:

```
dotnet add package Microsoft.ML
```

For ONNX Runtime:

```
dotnet add package Microsoft.ML.OnnxRuntime
```

How to do it (2/3)

3. Load and Run the Model:

Here's a simple example using ML.NET:

```
using Microsoft.ML;
using Microsoft.ML.Data;

var context = new MLContext();

// Load trained model
ITransformer model = context.Model.Load("model.zip", out var modelInputSchema);

// Create prediction engine
var predictionEngine = context.Model.CreatePredictionEngine<InputData, OutputData>(model);

// Predict
var input = new InputData { Feature1 = 1.0f, Feature2 = 2.0f };
var prediction = predictionEngine.Predict(input);

Console.WriteLine($"Prediction: {prediction.Result}");
```

How to do it (3/3)

4. Prepare Input and Output Classes:

```
public class InputData
{
    public float Feature1 { get; set; }
    public float Feature2 { get; set; }
}

public class OutputData
{
    [ColumnName("Score")]
    public float Result { get; set; }
}
```

5. Run the Application:

Execute your application using:

```
dotnet run
```

Just Play with AI on your PC

OpenVINO™

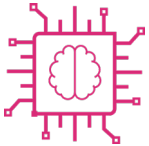
Developer Journey

https://github.com/openvinotoolkit/openvino

Benefits of Building Applications with OpenVINO™

Build and deploy AI applications in simple steps

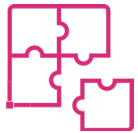
Faster inference speed



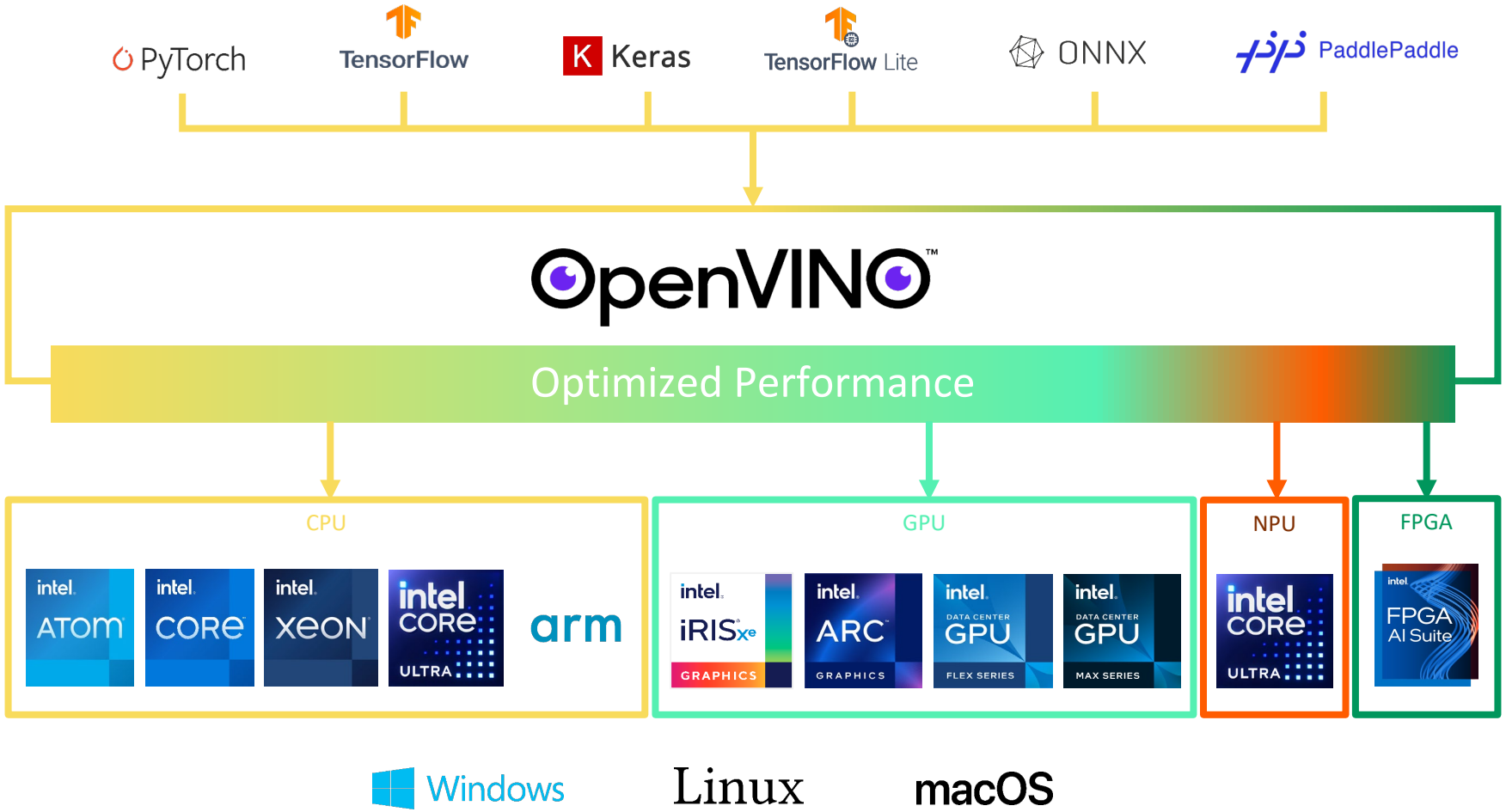
Maximize AI performance across CPU, GPU, NPU

Smaller model and binary size

Reduce memory footprint



Ability to scale to many nodes with serving


PyTorch
TensorFlow
Keras
TensorFlow Lite
ONNX
PaddlePaddle
OpenVINO™
Optimized Performance
CPU
intel ATOM
intel CORE
intel XEON
intel CORE ULTRA
arm
GPU
intel iRISxe GRAPHICS
intel ARC GRAPHICS
intel DATA CENTER GPU FLEX SERIES
intel DATA CENTER GPU MAX SERIES
NPU
intel CORE ULTRA
FPGA
intel FPGA AI Suite
Windows
Linux
macOS

Resources

- VS Code AI Toolkit
- Overview for the AI Toolkit for Visual Studio Code | Microsoft Learn
- Audacity Openvino Plugin (Audio separation etc.)
- Openvino Plugin for Audacity®

- 30+ years in IT (Developer, Architect, Consultant, PM, Trainer)
- Speaker, Community addicted
- IoT Influencer
- Microsoft Certified Trainer

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Thanks!