Serverless Deep Neural Network(DNN) with Azure Functions and ML.Net

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@praveenraghuvan

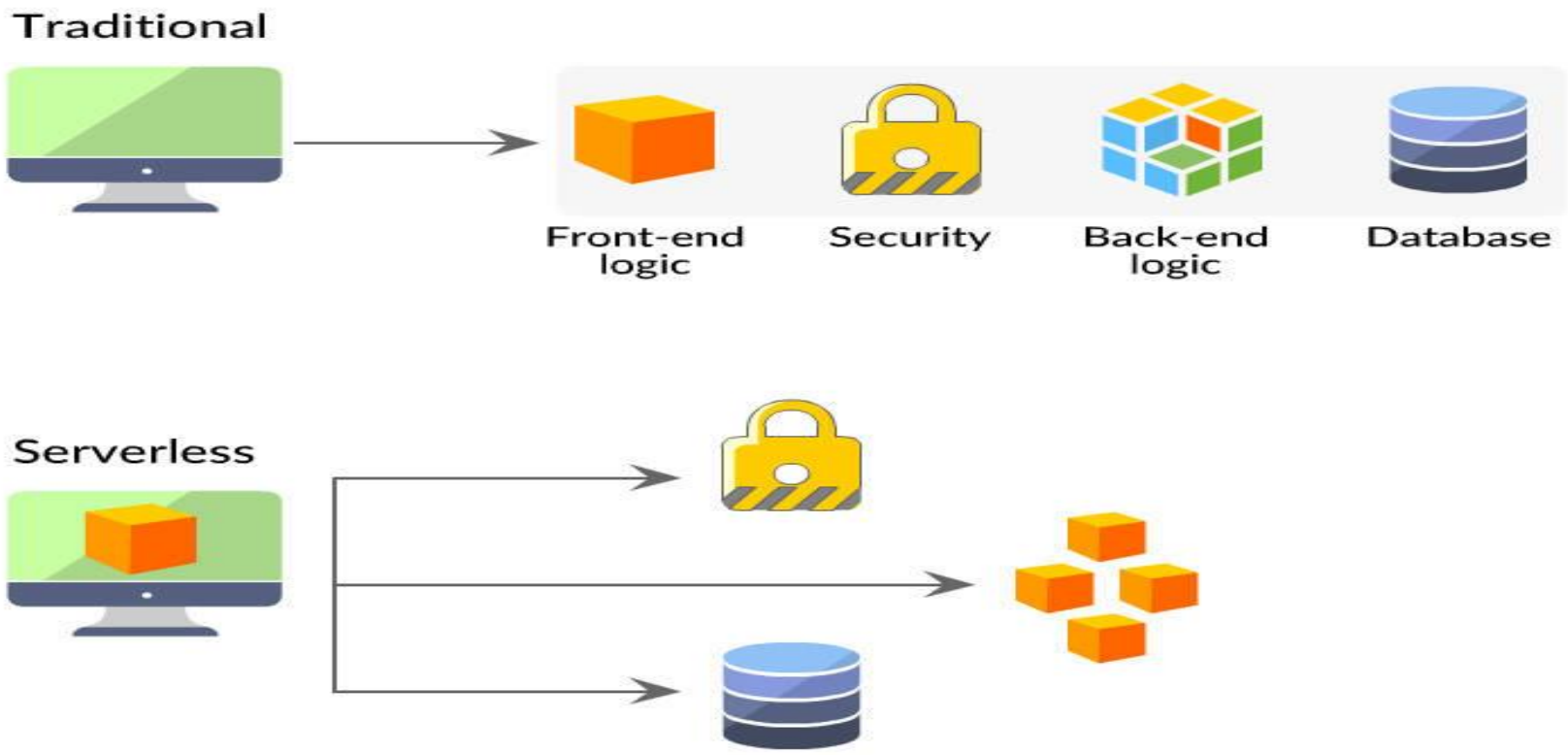
Introduction

- Cloud Architect @ Harman, A Samsung Company
- Domain: Professional Audio, Video & Control
- Area of Expertise: Cloud, Distributed computing
- Area of Interest: AI/ML and IoT
- Location: Bangalore, India
- Member:

Agenda

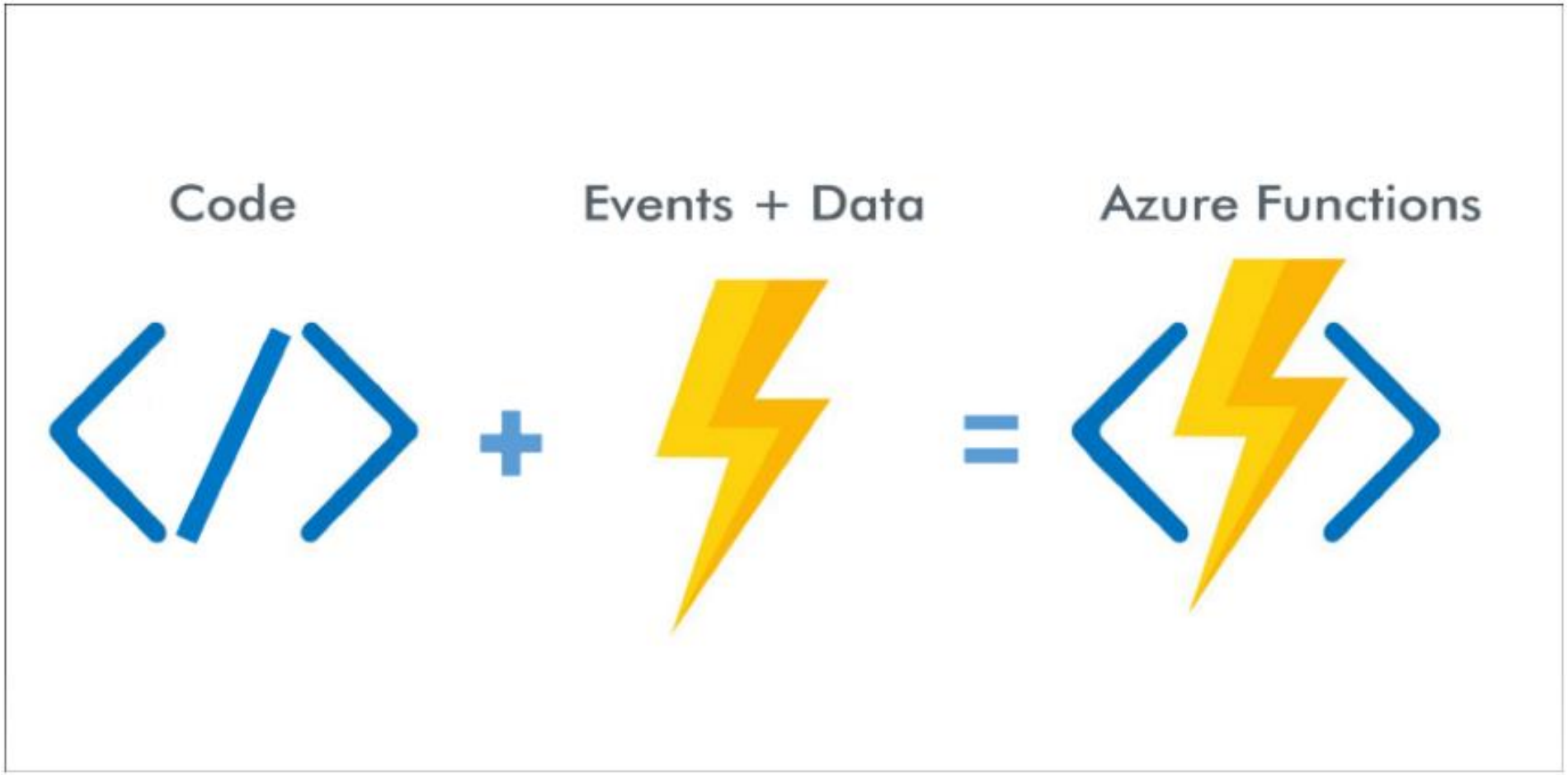
- Serverless
- Azure Functions
- Deep Neural Networks(DNN)
- Image Classification
- ML.Net
- Demo

Serverless

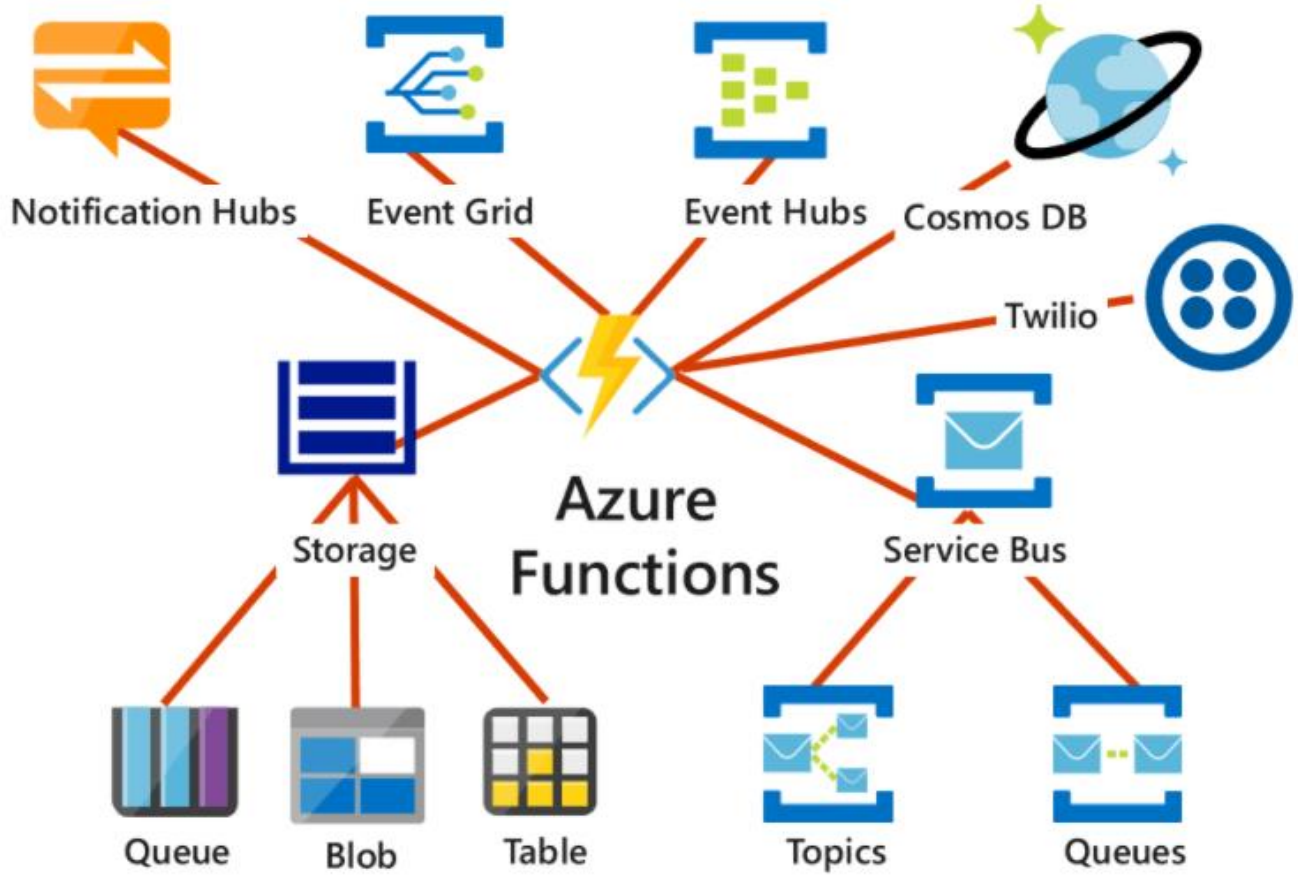


source: https://danielhkim.net/2020/02/27/serverless-cloud-computing/

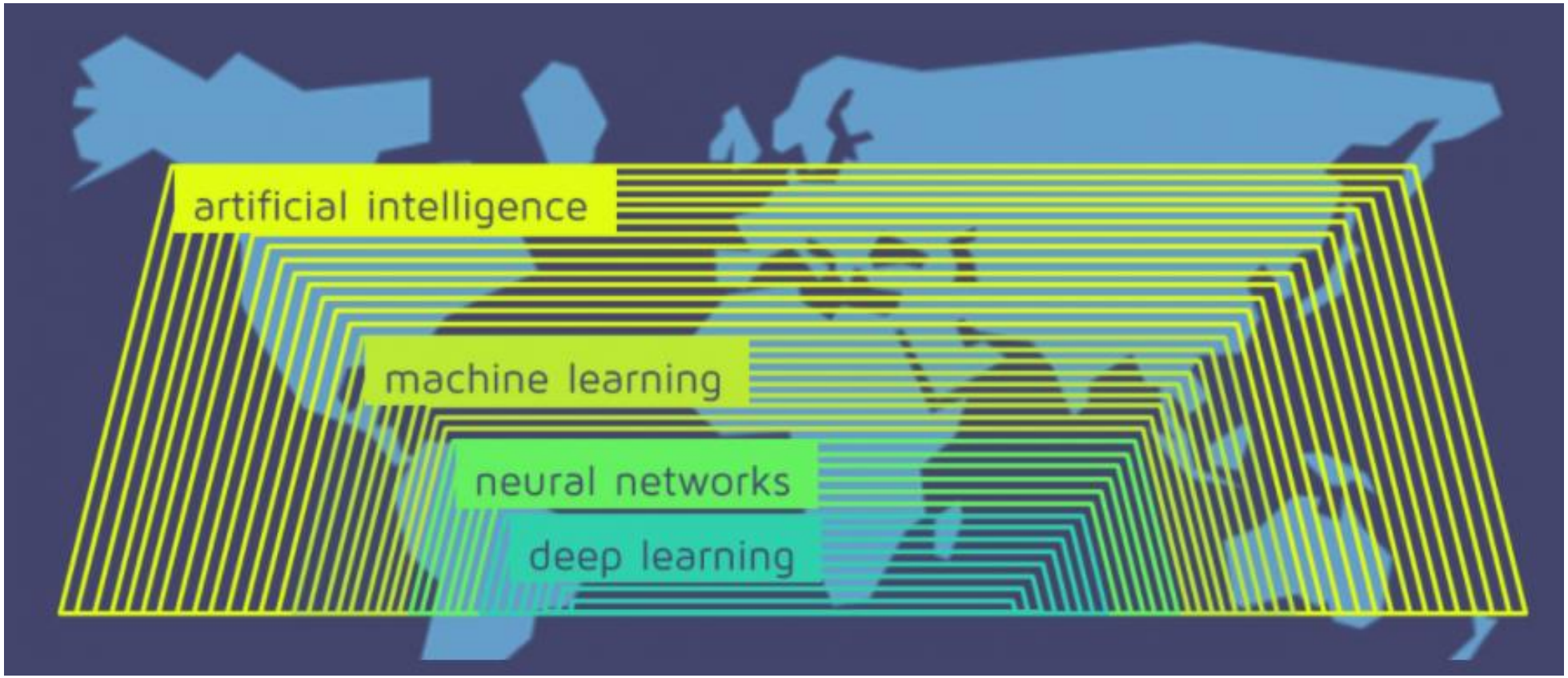
Azure Functions



Azure Functions

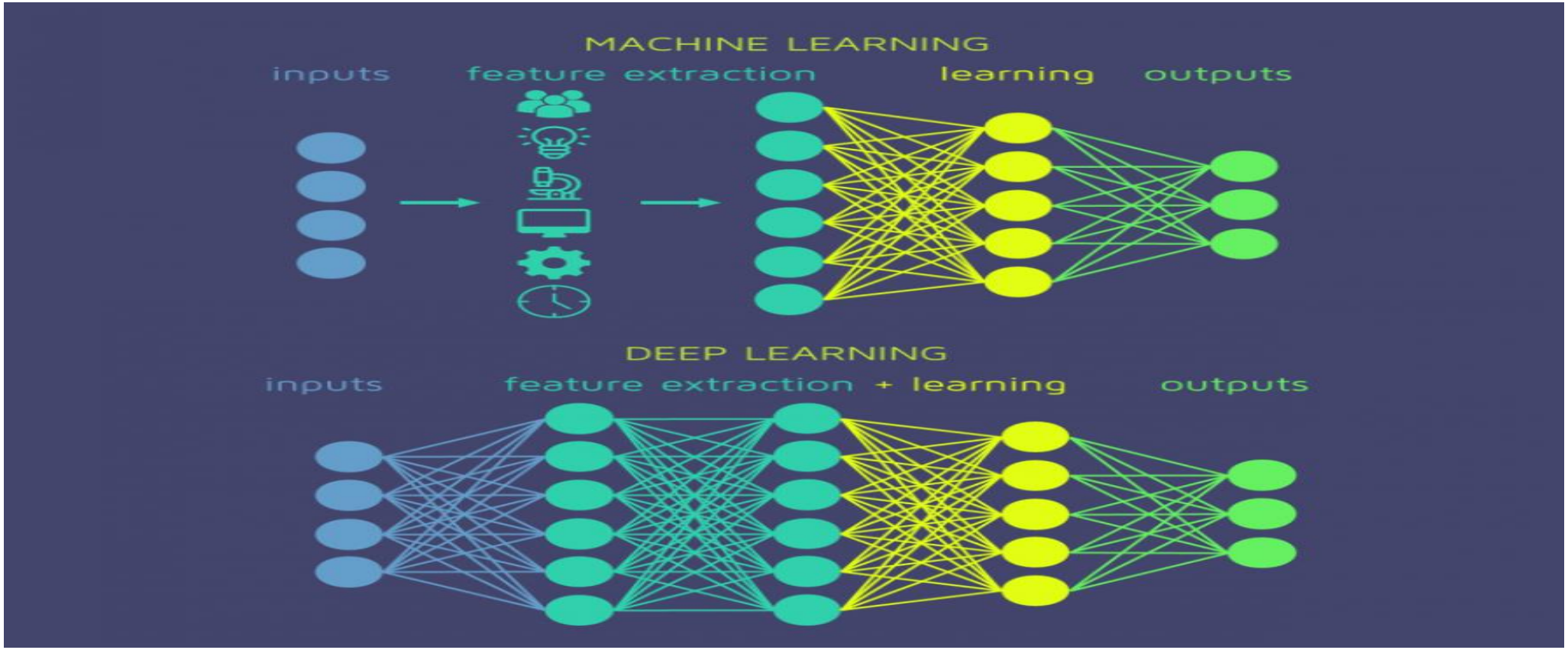


Deep Neural Network



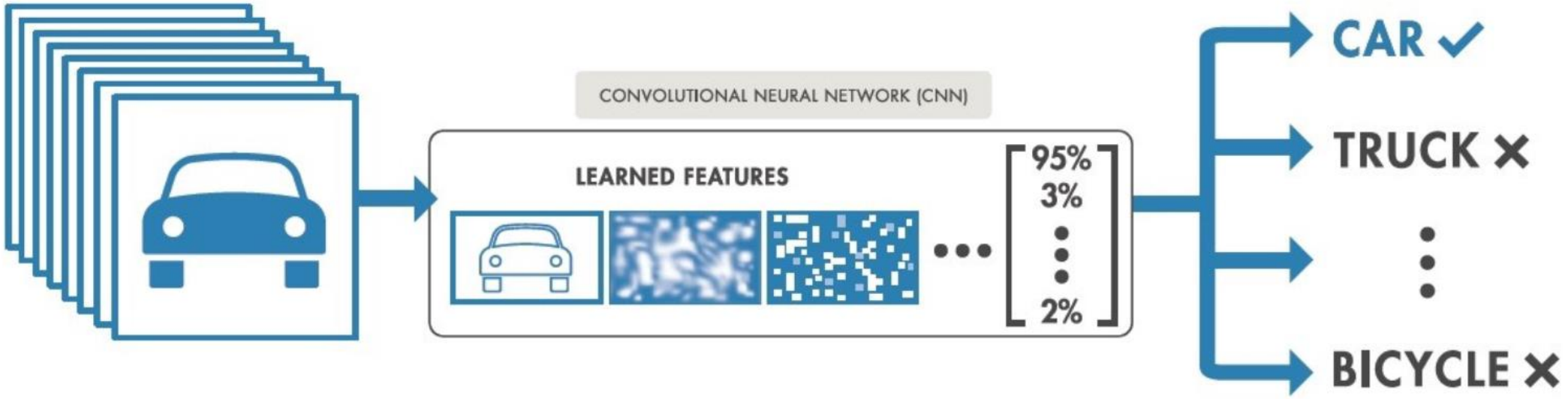
source: https://quantdare.com/what-is-the-difference-between-deep-learning-and-machine-learning/

Deep Neural Network



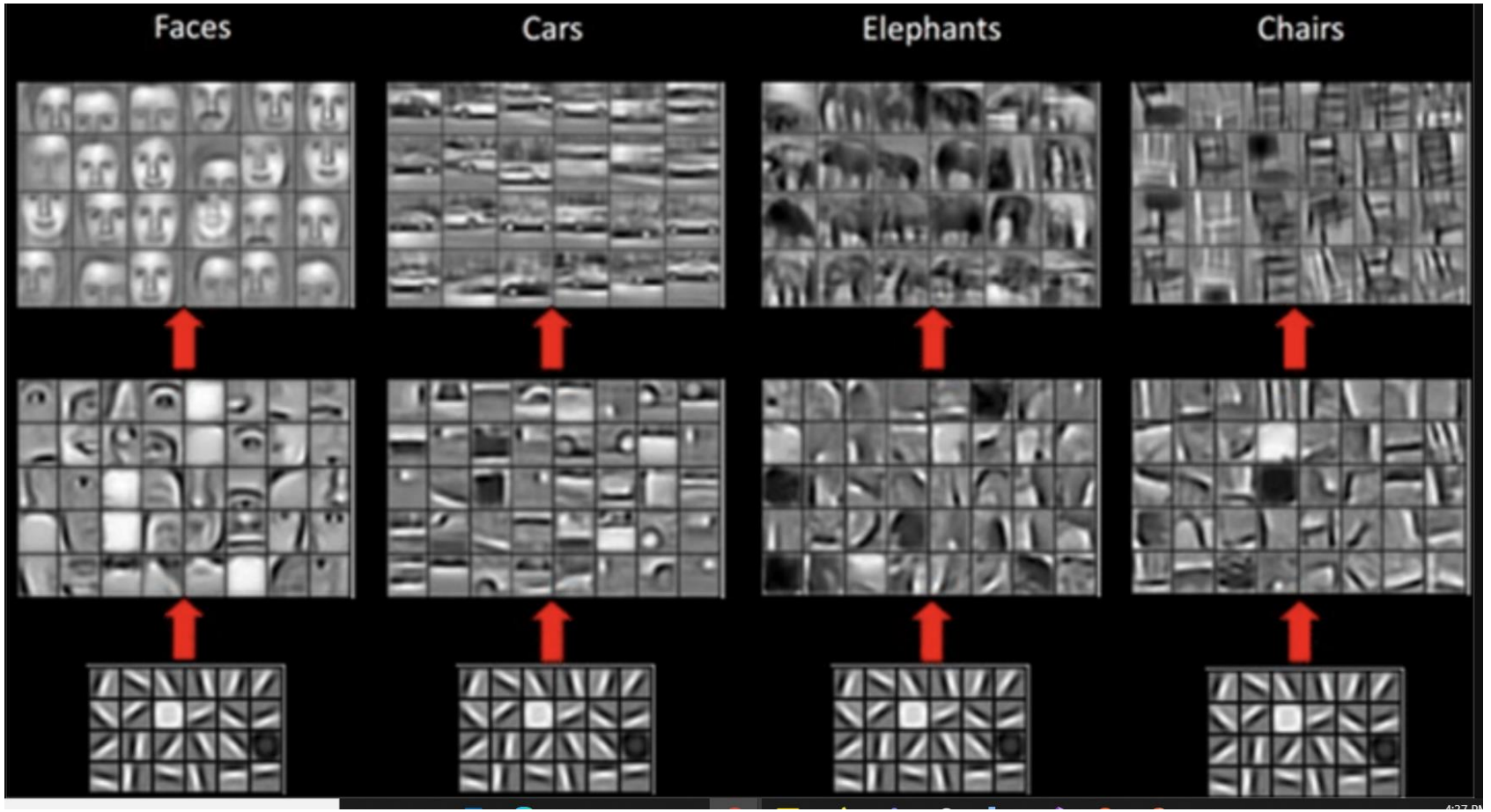
source: https://quantdare.com/what-is-the-difference-between-deep-learning-and-machine-learning/

Image Classification



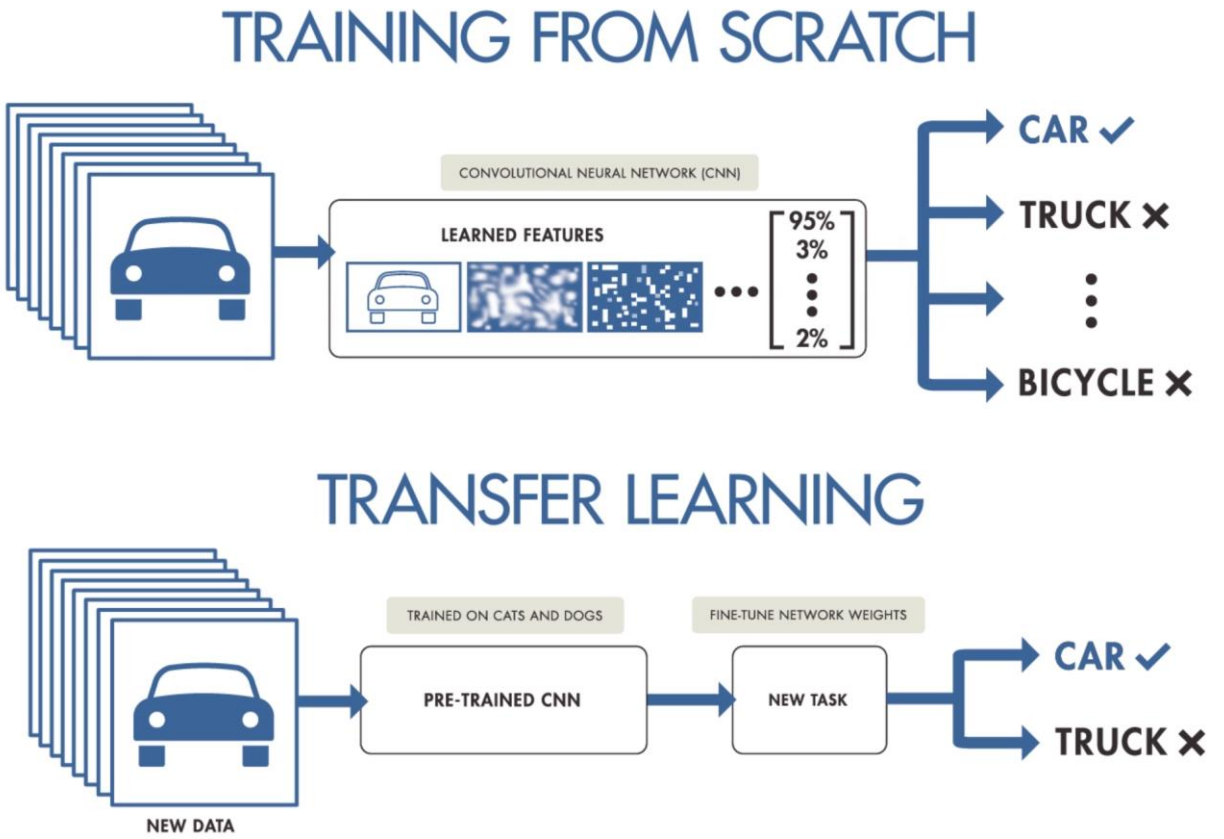
Source : MathWorks (https://goo.gl/zondfq)

Image Classification



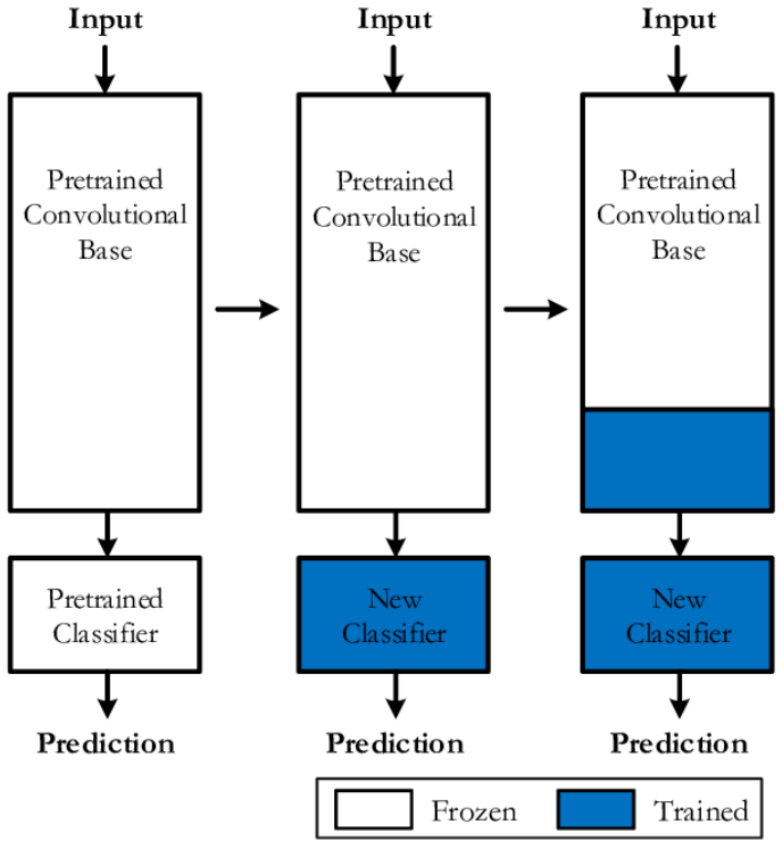
source: https://miro.medium.com/max/1910/1*fLGuAUT5imTIGAeA4zzaWA.png

Transfer Learning – MobileNet V2



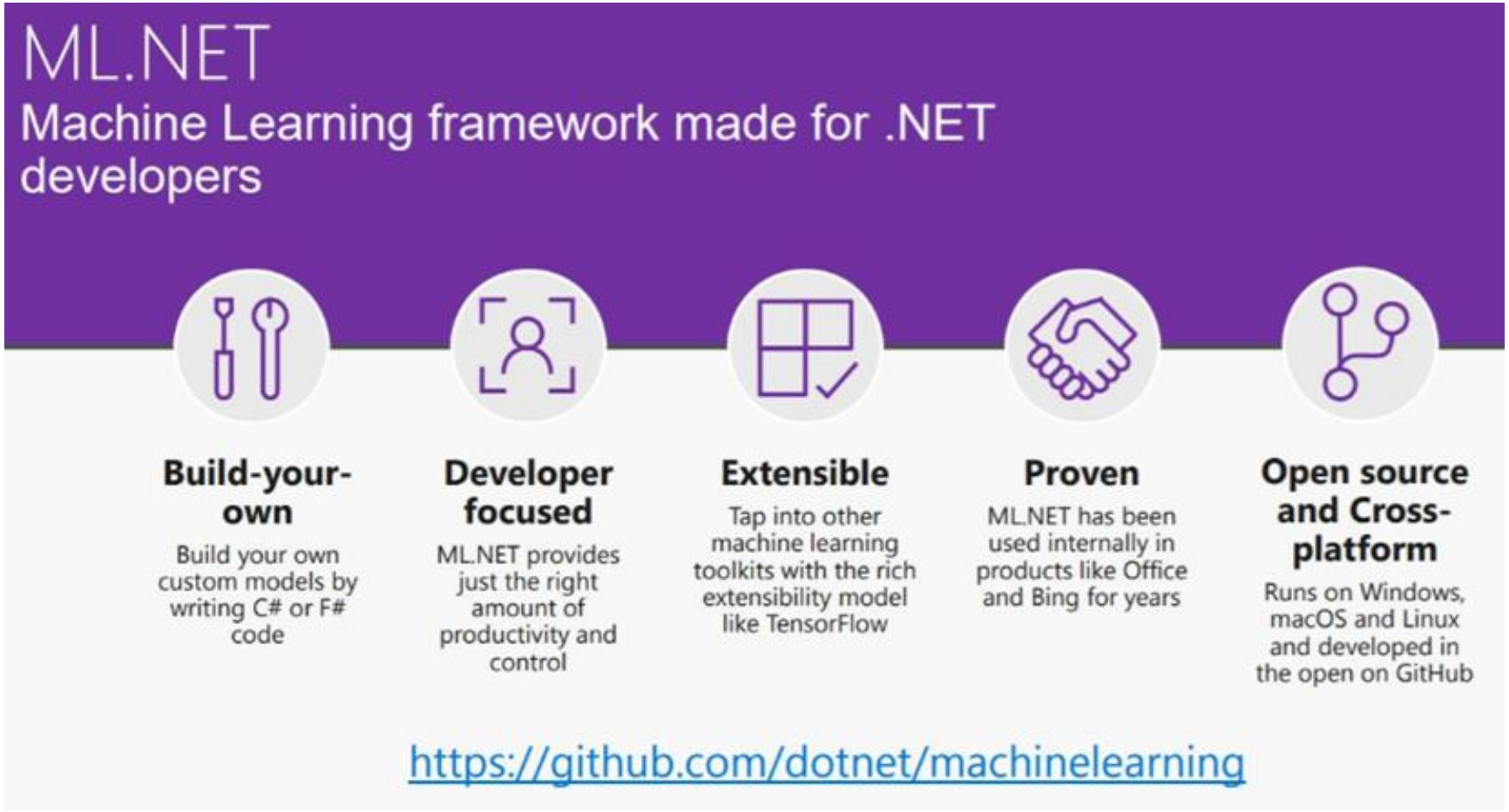
source: https://i.pinimg.com/originals/0a/76/eb/0a76eb3c95c249cdff9449af08ac4efc.png

Transfer Learning

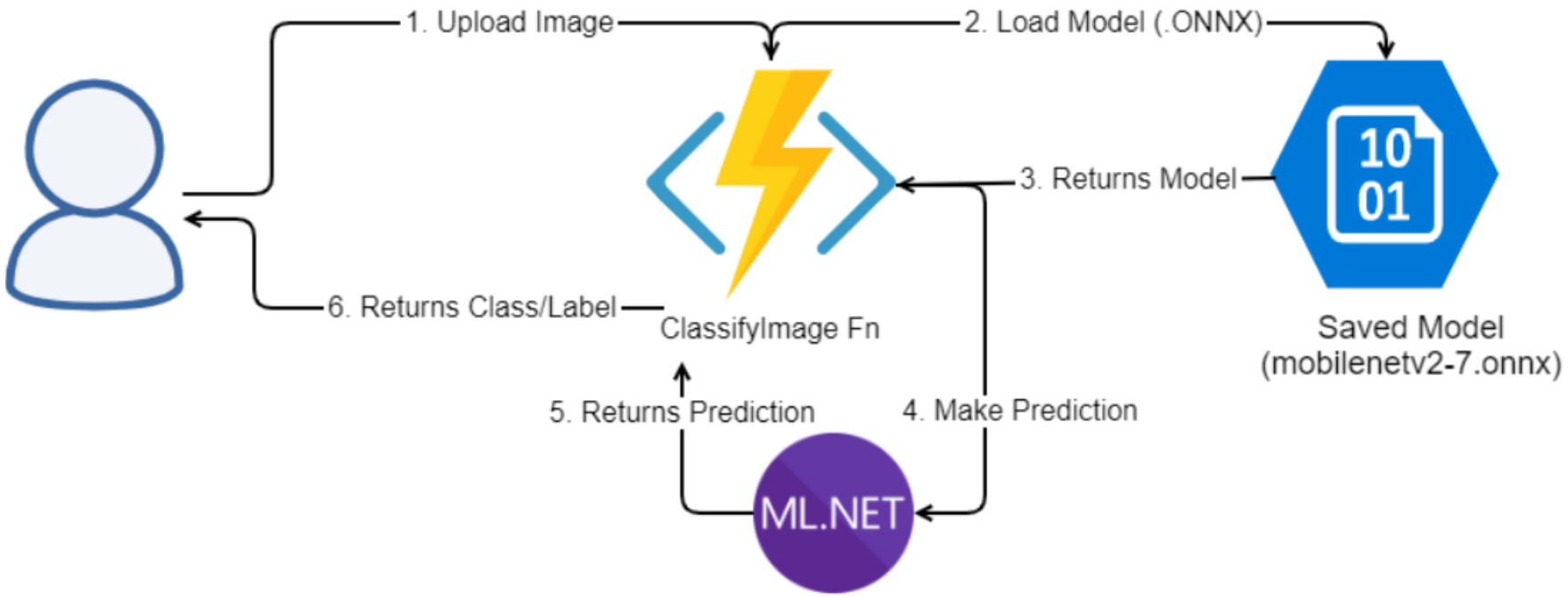


source: https://www.researchgate.net/figure/TOP-LEVEL-DIAGRAM-OF-TRANSFER-LEARNING-FROM-A-PRE-TRAINED-CNN-MODEL_fig4_333882146

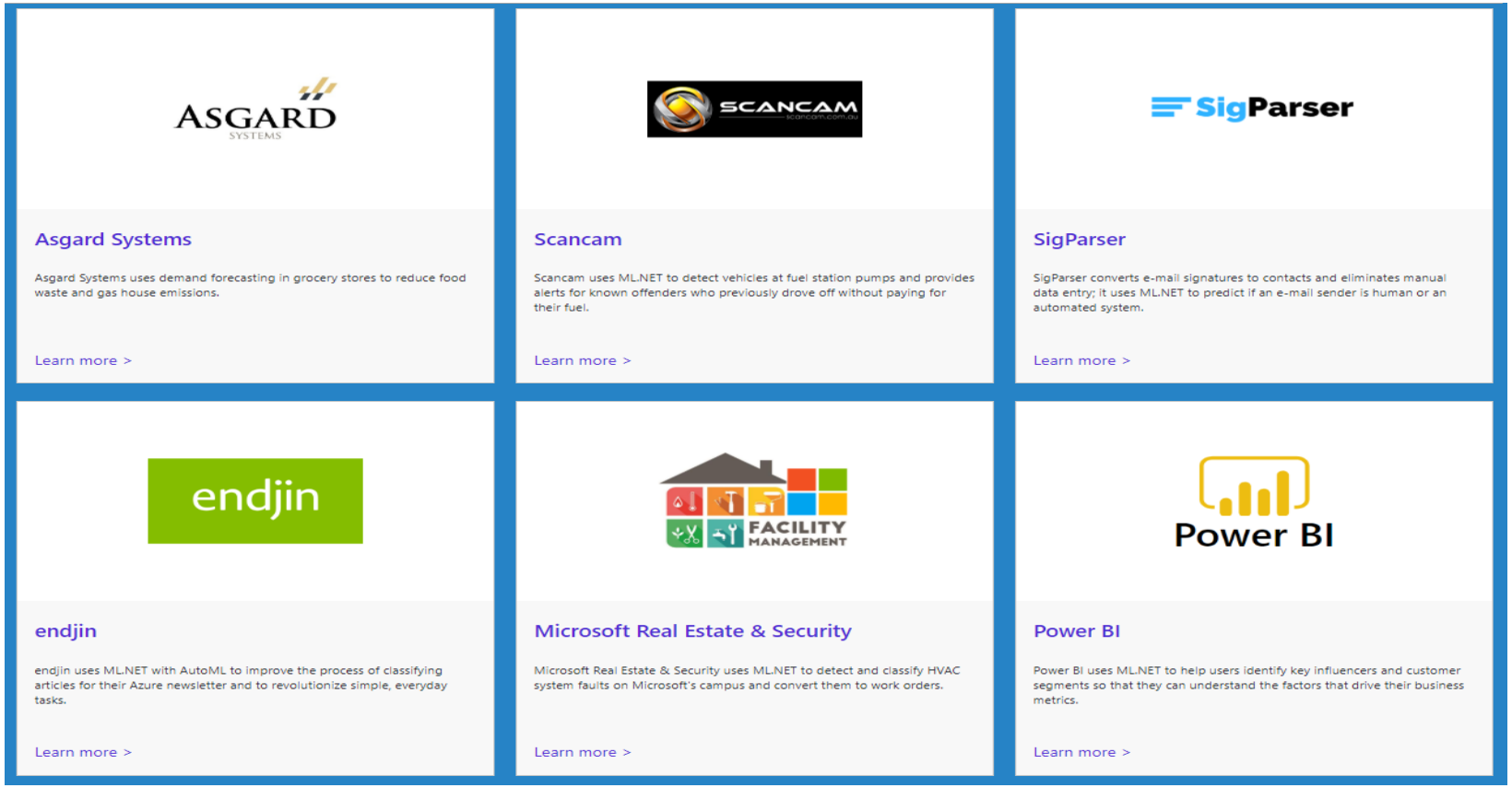
ML.Net


ML.NET
Machine Learning framework made for .NET developers
Build-your-own
Build your own custom models by writing C# or F# code
Developer focused
ML.NET provides just the right amount of productivity and control
Extensible
Tap into other machine learning toolkits with the rich extensibility model like TensorFlow
Proven
ML.NET has been used internally in products like Office and Bing for years
Open source and Cross-platform
Runs on Windows, macOS and Linux and developed in the open on GitHub
https://github.com/dotnet/machinelearning

Cloud Architecture



Customer Success Stories – ML.Net



https://dotnet.microsoft.com/apps/machinelearning-ai/ml-dotnet/customers

Azure COMMUNITY CONFERENCE

Demo

Resources

Github: https://github.com/praveenraghuvanshi/tech-sessions/tree/master/27102021-AI-Dev-World-2021

References

- https://docs.microsoft.com/en-us/azure/azure-functions/functions-develop-vs
- https://blog.rasmustc.com/multipart-data-with-azure-functions-httptriggers/
- https://docs.microsoft.com/en-us/dotnet/machine-learning/tutorials/image-classification
- https://docs.microsoft.com/en-us/samples/dotnet/machinelearning-samples/mlnet-image-classification-transfer-learning/
- https://docs.microsoft.com/en-us/dotnet/machine-learning/tutorials/object-detection-onnx

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Thank you

Q & A


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https://t.me/joinchat/IifUJQ_PuYT757Turx-nLg