Fast.ai

The Researcher's ML Toolkit

Iain Keaney PhD
iain@skellig.ai

Artificial General Intelligence

SKELLIG.AI

Applications

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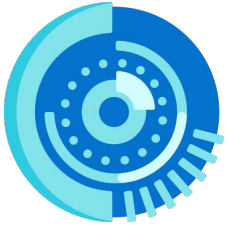
Event Prediction



Understanding Images

Autonomous Vehicles

Computer Vision

Iceberg Detection

Vessel Identification

Natural Disaster Assessment

Object Detection

Applications

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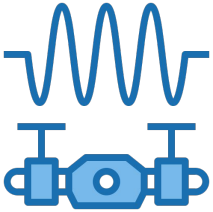
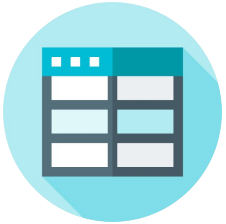
Guidance Navigation & Control



Time-Series



Structured Data

Component Failure Prediction

Anomaly Detection

Smart Payload Data

IOT

NLP

Signal Analysis

ML Learning Curve

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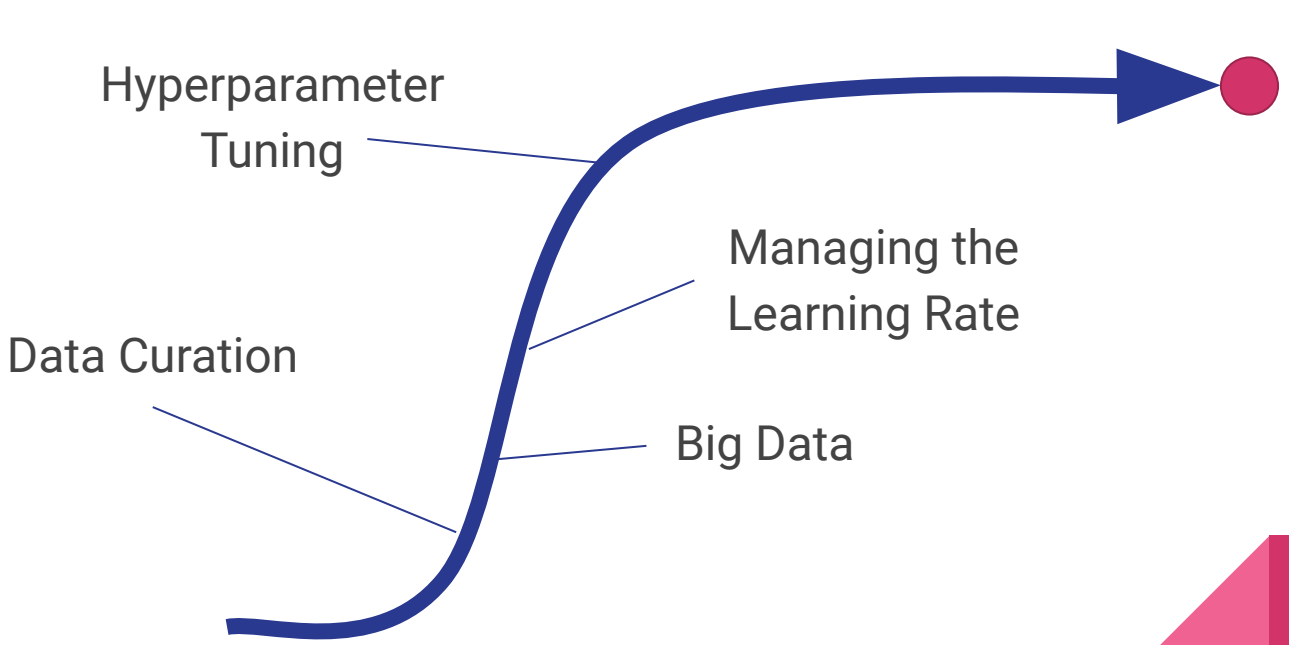

Fast.ai

- Wrapper on Pytorch.
- Rapid Iterations for Proof Of Concepts.
- Typically achieves better results than previous state-of-the-art.

Deploying on Edge

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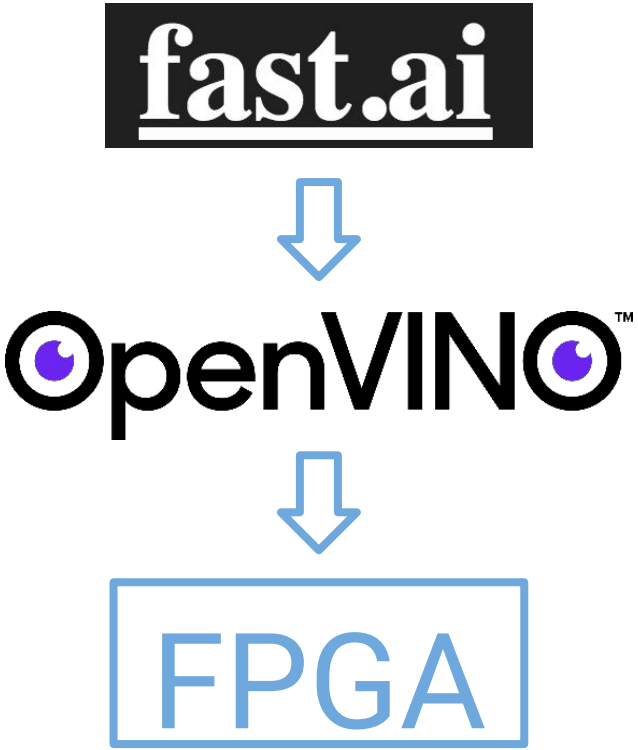

What Fast.ai brings

Data Block API

Hyperparameters

Learning Rate

Data Augmentation

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Unreasonable Effectiveness of Fast.ai

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```
data = ImageDataBunch.from_folder(path, train="train", valid='valid',
                                  ds_tfms=get_transforms(), size=224
                                  ).normalize(imagenet_stats)
```

```
learn = cnn_learner(data, models.resnet34, metrics=accuracy)
```

```
learn.fit_one_cycle(2)
```

epoch	train_loss	valid_loss	accuracy	time
0	0.073472	0.031247	0.992000	05:22
1	0.047799	0.021588	0.992500	05:21

Out-performing State-Of-The-Art in SEM Imaging

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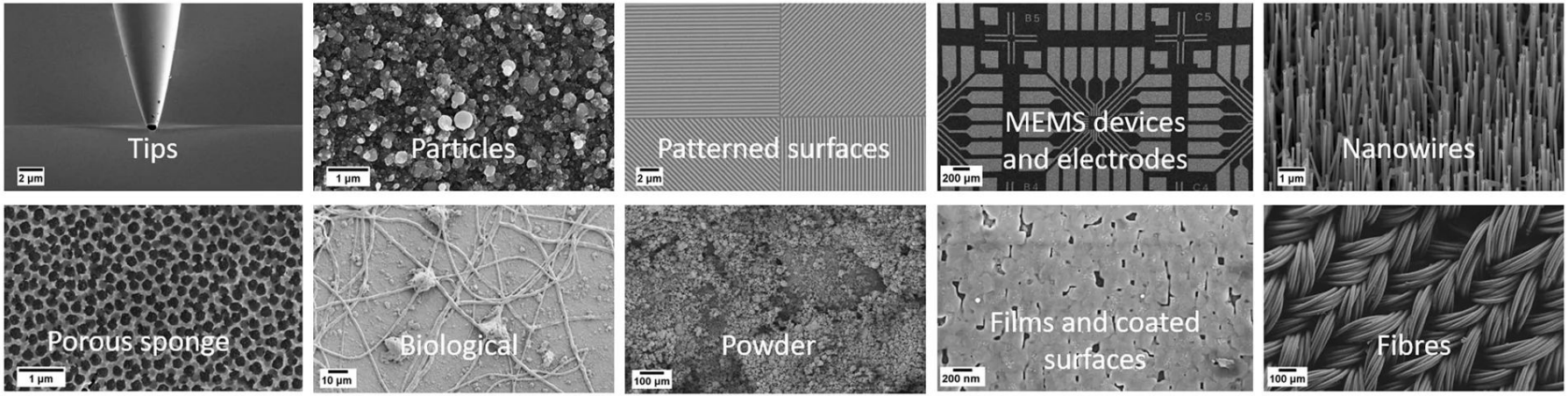

Computation of Models

M. H. Modarres, R. Aversa, et. al. 2017 obtained an accuracy of 90%

With Fastai we achieved an accuracy of 93.5%

Inference footprint on Memory: ~ 300Mb

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