Student(s)
Bartu Kaan Ertuğrul
Batuhan Özkan
Kaan Kaptan
Tarık Çetkin

Faculty Member(s)
Barış Balcıoğlu

Company Advisor(s)
Ayhan Kuzu
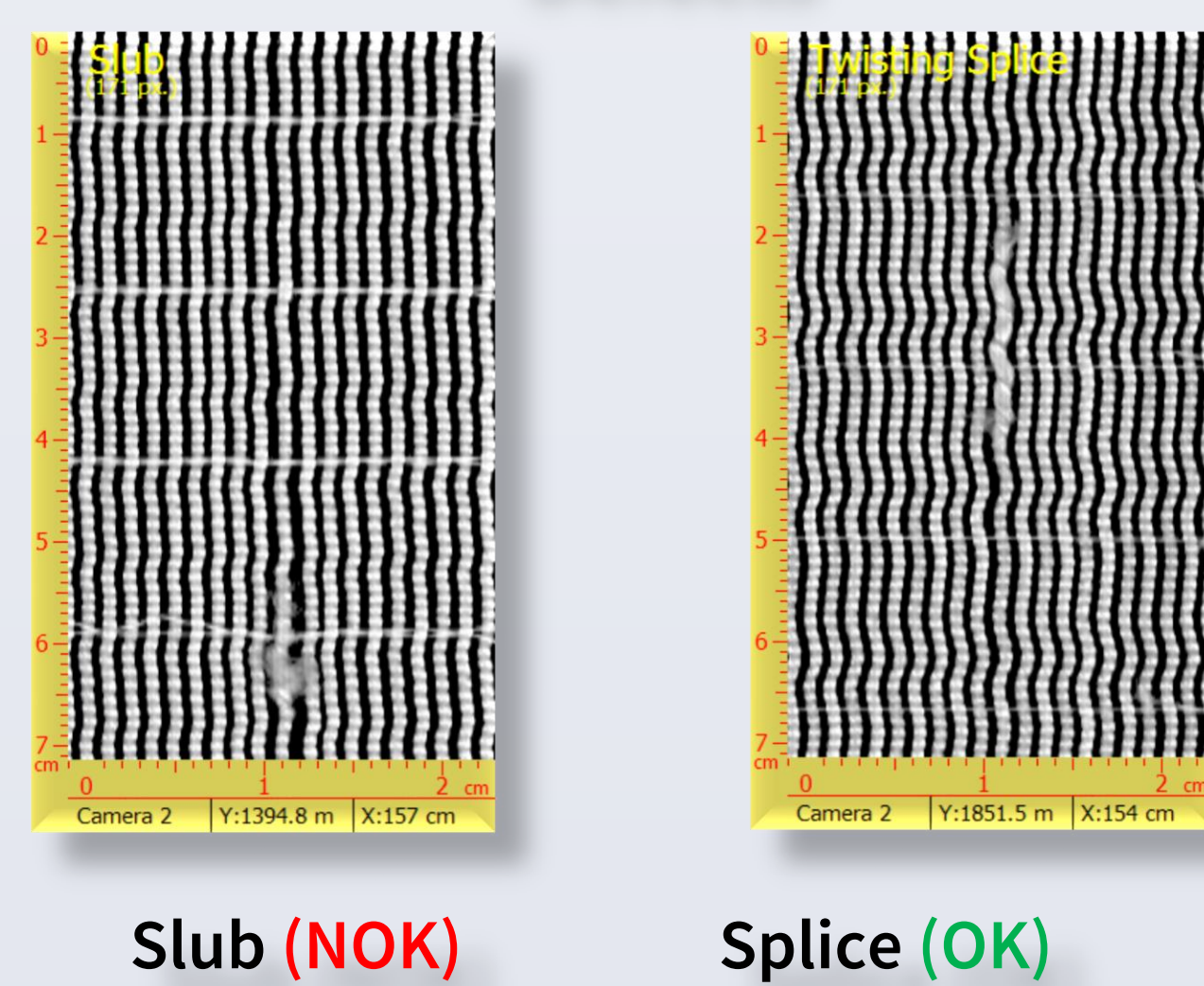
ABSTRACT

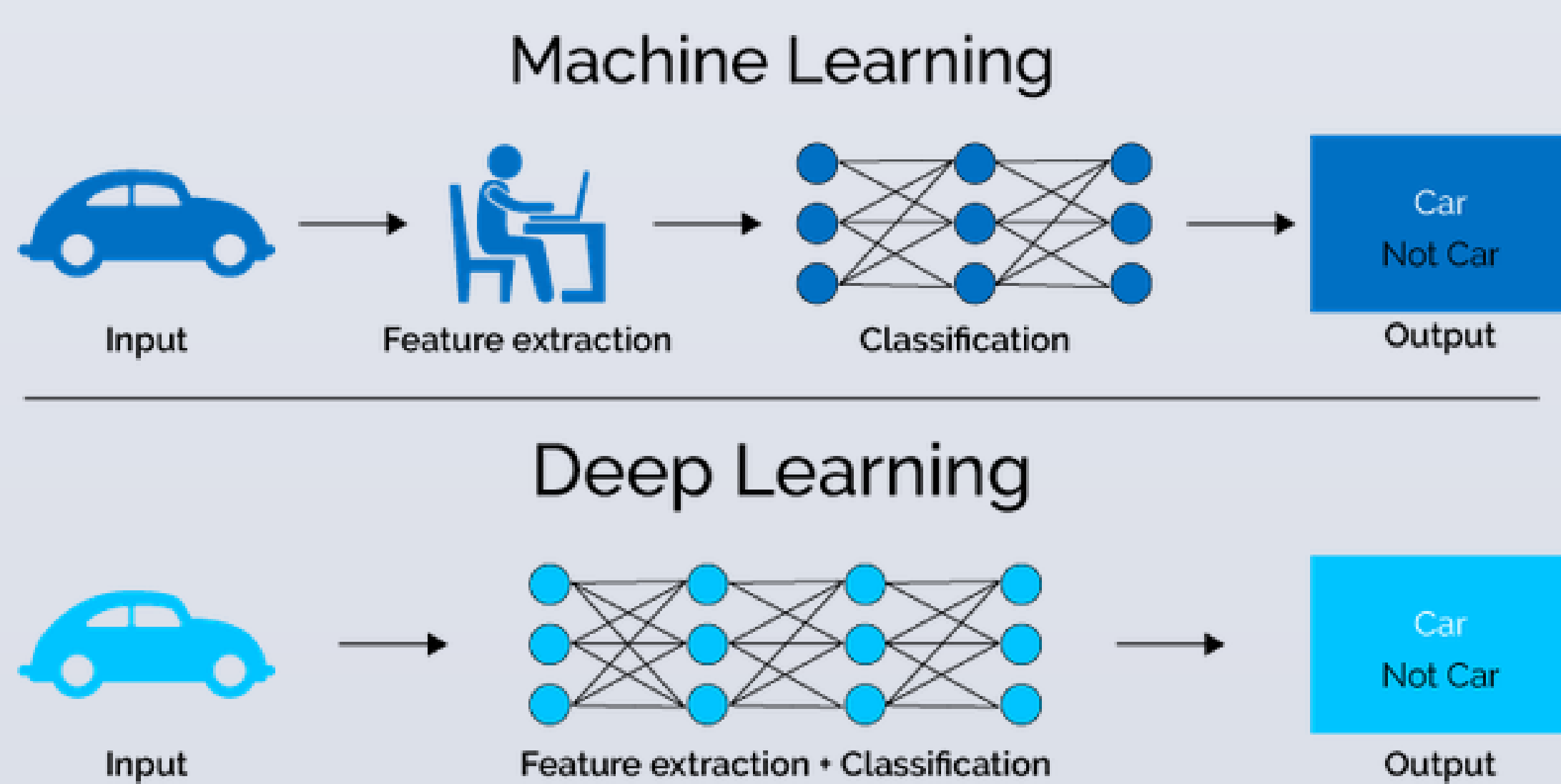Artificial Intelligence / Machine Learning / Deep Learning
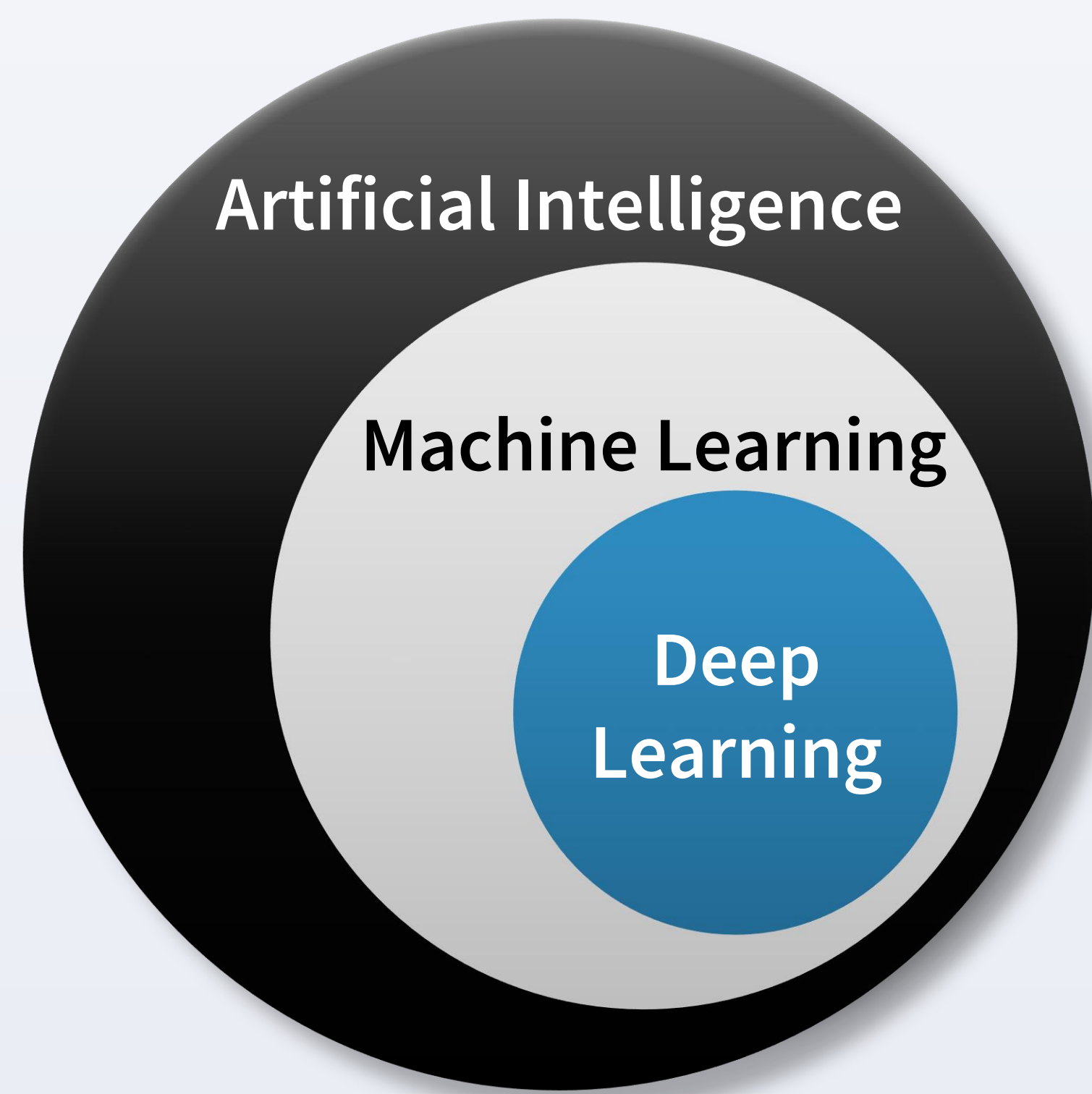
- Deep learning algoritm (CNN)
- Intensive image processing
- Works with unstructured data
- Ability to learn new data
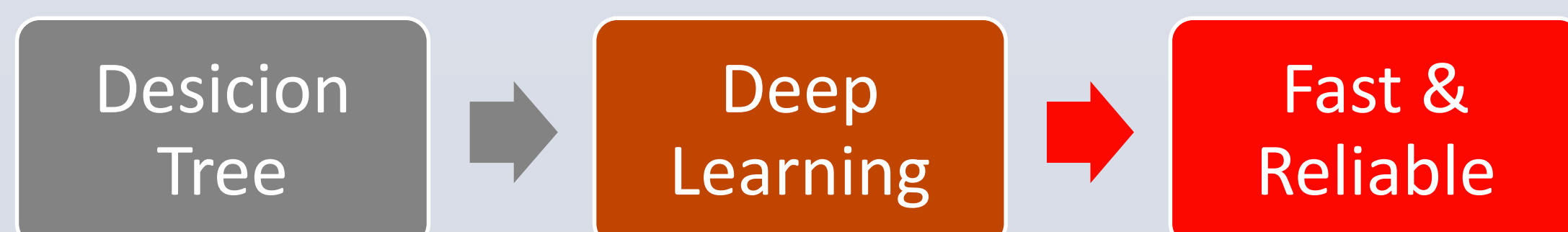- Automatic classification
- Decision support tool

Defects

Slub (NOK)   Splice (OK)

Machine Learning

Input → Feature extraction → Classification → Output (Car / Not Car)

Deep Learning

Input → Feature extraction + Classification → Output (Car / Not Car)

OBJECTIVES

Desicion Tree → Deep Learning → Fast & Reliable

Our objectives

Trained CNN to classify Splice and Slub on Python platform
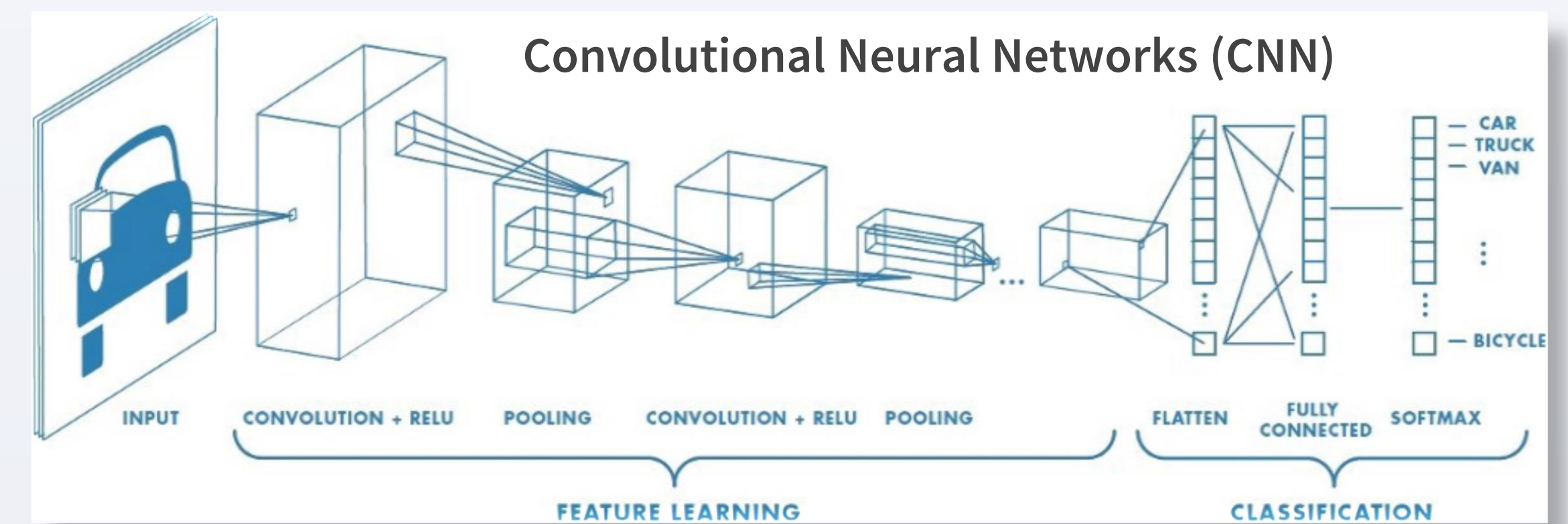as a decision support tool (MVP)

Our motivation

Upcoming trend of digitalisation

PROJECT METHODOLOGY : SCRUM

- ➢ Leatime: September 2019
- ➢ Setup: PO: Ayhan, SM: Tarık, Sprint lengths: 2W
- ➢ Backlog items;
  - ➢ Data collection, Importing Libraries
  - ➢ Building the CNN
  - ➢ Full Connection
  - ➢ Data Augmentation
  - ➢ Train & Test

PROJECT DETAILS

Convolutional Neural Networks (CNN)

- Kordsa uses Decision Tree algorithms for defect classification
- Decision tee parameters set manually
- Deep learning to improve accuracy for higher OEE
- Pyhton 3 open source community platform
- Google Colab as a tool
- Microsoft teams for team communication and sharing
- Deep learning algorithm with 4 main code blocks;
  1. Setups and libraries
  2. Data preparation block (image resize, sample size)
  3. CNN model (loss function (softmax), optimizer in CNNs, Convolutional Layers, Pooling Layers, and Flatten Layers, Rectified linear unit (Relu), weights and biases)
  4. Classification Layer

Data Manipulation
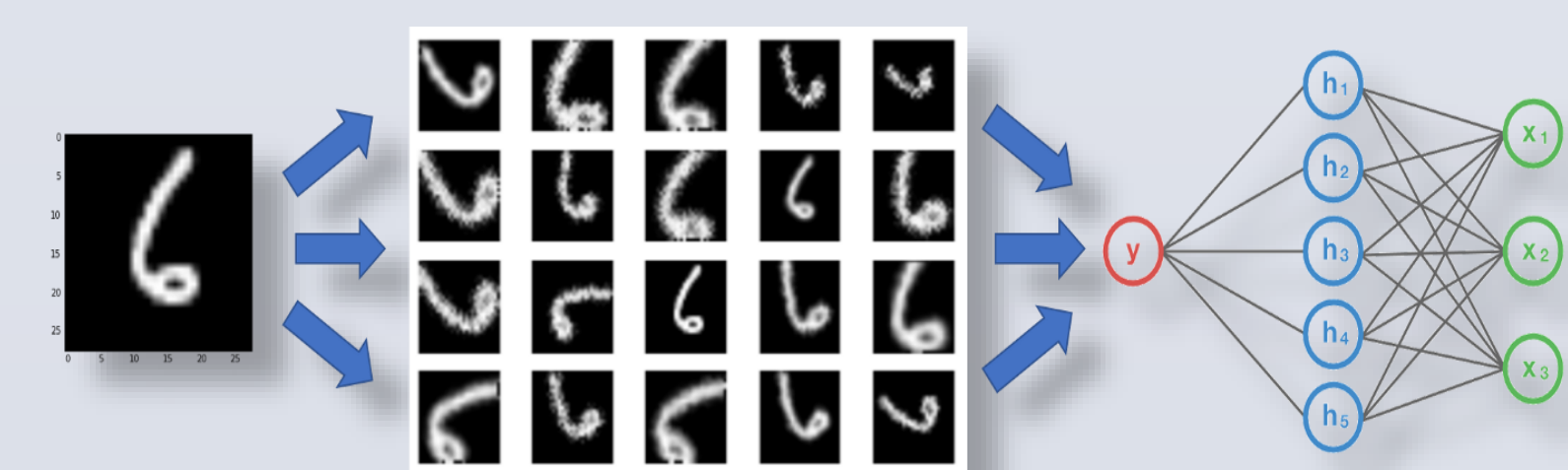
CONCLUSIONS

- Managing large data rapidly
- Training and testing the Model
- Increasing accuracy through data manipulation
- Play with the number of nodes and epochs & higher accuracy
- Reduce cost & time
- Fast & reliable deep learning model

Before   After

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