alitourani

# Deep Learning from Scratch

## Session #0: Greetings!

by: Ali Tourani – Summer 2021

# About the Instructor

## Ali Tourani

- Researcher, Developer, Lecturer
- Graduate MSc Software Engineering

- Interested in Computer Vision and Deep Learning
- Where to find me:
  - E-mail: a.tourani1991@gmail.com

# About the Instructor - Backgrounds

## Deep learning-based applications in Intelligent Transportation Systems

- Iranis Dataset (+8,000 Farsi License Plate Characters - 2021)
  - Sponsored by **Guilan Science and Technology Park Business Incubator**

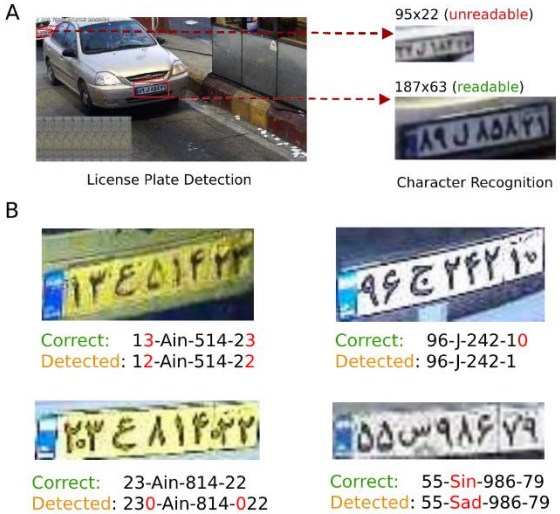
| Category | Label (class name) | Character | # of Instances |
|---|---|---|---|
| Number | 0 | 0 | 2501 |
| Number | 1 | 1 | 3495 |
| Number | 2 | 2 | 3930 |
| Number | 3 | 3 | 2745 |
| Number | 4 | 4 | 5774 |
| Number | 5 | 5 | 3610 |
| Number | 6 | 6 | 5753 |
| Number | 7 | 7 | 3736 |
| Number | 8 | 8 | 3583 |
| Number | 9 | 9 | 3528 |


Available on GitHub, Kaggle, Data.World
(https://github.com/alitourani/Iranis-dataset)

# About the Instructor - Backgrounds

## Deep learning-based applications in Intelligent Transportation Systems

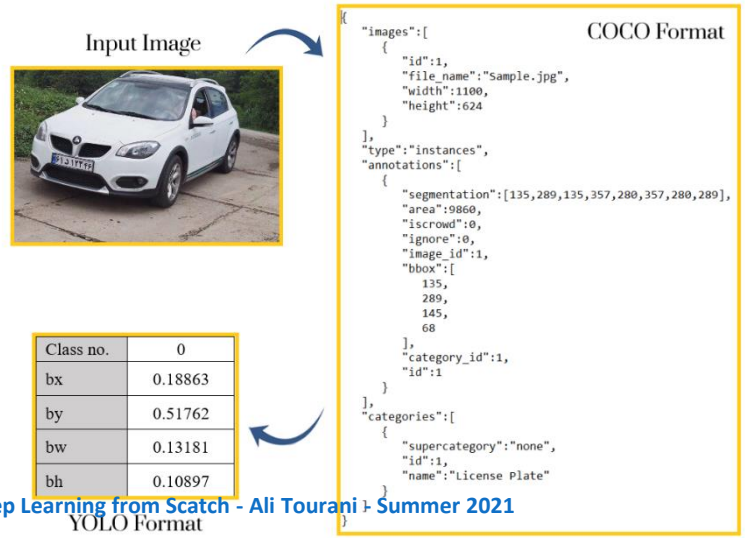
- Automatic License Plate Detection and Farsi Character Recognition (2020-2021)
  - Published version available on IEEE Access (DOI)




# About the Instructor - Backgrounds

**Deep learning-based applications in Intelligent Transportation Systems**

- Iranian License Plate Detection (2019-2020)
  - Sponsored by **Guilan Science and Technology Park Business Incubator**
  - Published version available on **Springer Lecture Notes in Computer Science** (**DOI**)

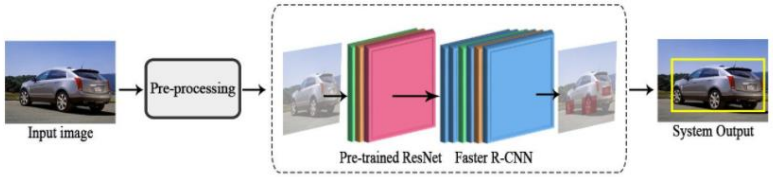



Available on GitHub
(https://github.com/alitourani/yolo-license-plate-detection)

# About the Instructor - Backgrounds

**Deep learning-based applications in Intelligent Transportation Systems**

- Vehicle Detection (2019-2020)
  - Sponsored by **Guilan Science and Technology Park Business Incubator**
  - Published version available on **IEEE Xplore** (**DOI**)




Available on GitHub
(https://github.com/alitourani/deep-learning-vehicle-detection)

# About the Instructor - Backgrounds

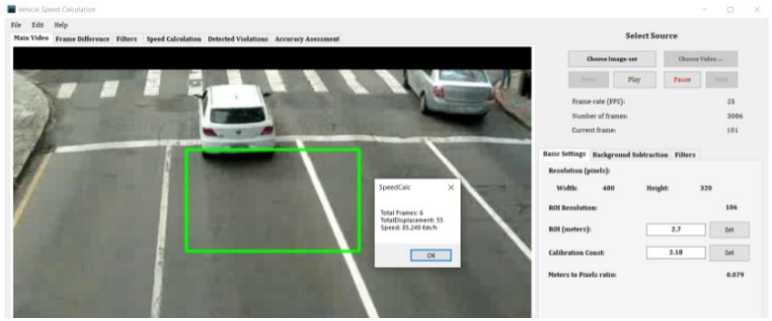
## Master of Science Thesis

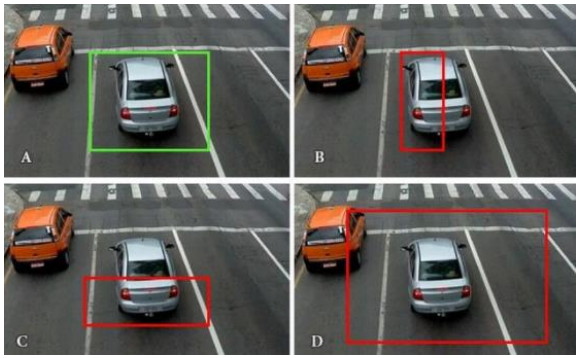
- Motion-based Vehicle Speed Measurement

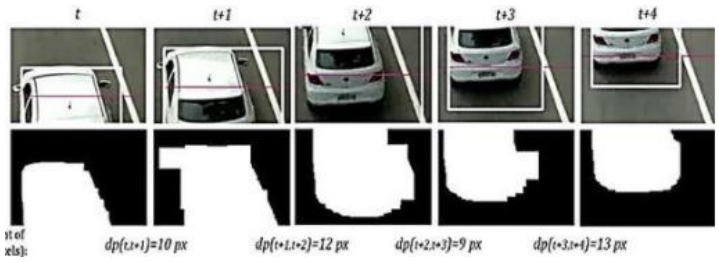
### Motion-based Vehicle Speed Measurement

This project is a vehicle speed measurement application for video-based Intelligent Transportation Systems (ITS). These systems utilize roadway camera outputs to apply video processing techniques and extract the desired information, which is instantaneous vehicle speed in this particular case. This approach can estimate the vehicles' speed by their motion features (if a correct calibration is provided). Thus, by analyzing each vehicle's motion parameters inside a pre-defined Region of Interest (ROI), the amount of displacement in sequential frames is provided, which is an essential parameter for calculating instantaneous speed.

⚠ Note: This repository contains the implementation source code for Master's thesis with the same name.




Source-code available on [https://github.com/alitourani/vehicle-speed-measurement](https://github.com/alitourani/vehicle-speed-measurement)

# About the Course

**We are going to:**

- Learn fundamental concepts of Deep Learning
- Implement some Deep Neural Networks in Python
- Work on basic projects and progress to more advanced ones
  - Share the codes on **GitHub** (if you don't have an account, create one!)
- Conduct research and publish the results on high-quality venues
- And finally, make a curated **TEAM**!

# Questions?