VEHICLE DENT DETECTION

AN INTERNSHIP PROJECT UNDERTAKEN BY **iNEURON**

PROBLEM STATEMENT

DEVICE A DEEP NEURAL NETWORK MODEL

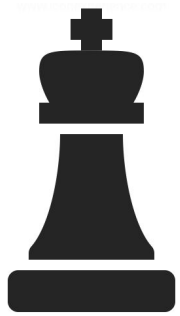
CLASSIFICATION TASK

DETECT

- DENT
- SCRATCH
- DAMAGE

PREVIOUS FINDINGS

- DATA COLLECTION
- TENSORFLOW 1 EXPERIENCE
- DETECTRON 2 MODEL

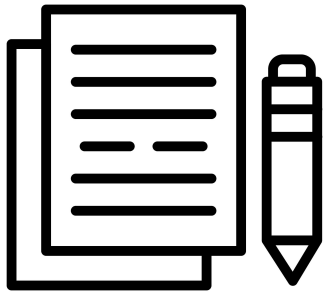


OUR APPROACH

- SUB-TEAM FOR DIFFERENT MODELS
- DOCUMENT THE FINDINGS
- TRI-WEEKLY MEETINGS

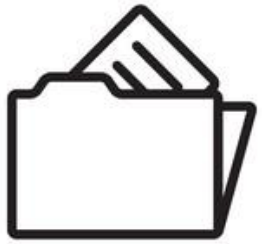
TASKS

- RESEARCH ON SEPARATE MODELS
  - YOLO ACT
  - UNET
  - MASK RCNN
- DOCUMENTATION
- RE-ORDER FOLDER STRUCTURE



DOCUMENTATION

- NO PREVIOUS DOCUMENTATION
- NO DOCUMENTATION OF IPYNB NOTEBOOKS
- KNOWLDEGE TRANSFER
- UNDERSTAND HLD AND LLD
- UNDERSTANDING DATASET
- UNDERSTANDING FOLDER STRUCTURE OF GITHUB REPO AND GITHUB REPO
- DOCUMENT THE ABOVE FINDINGS

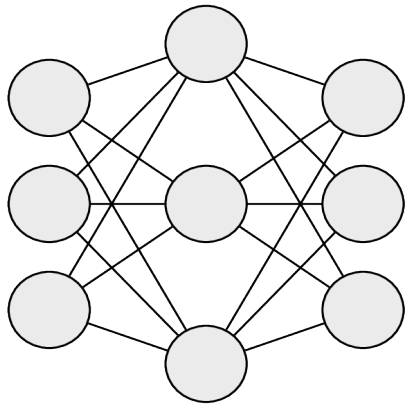


FOLDER RESTRUCTURING

- NO STRUCTURE WAS FOLLOWED ON GITHUB REPO
- VAGUE STRUCTURE IN GOOGLE DRIVE

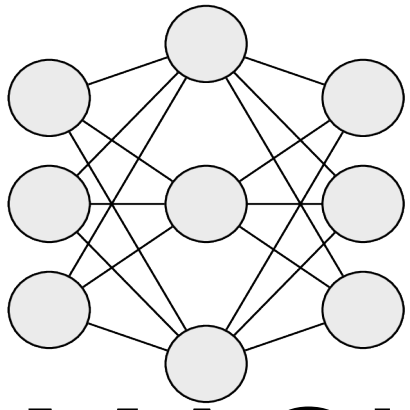
DATA CONVERSION

- DATA WAS PRESENT IN JSON FORMAT
- PREPROCESSING DATA TO BE FIT FOR ANY MODEL
- SCRIPTS TO CONVERT ANY ANNOTATED DATA TO:
  - UNET FORMAT
  - MASK RCNN FORMAT
- SEPARATE IMAGE AND ANNOTATION DATA



UNET

- IMPLEMENTING UNET MODEL
- TRAINING ON PRESENT DATASET
- HYPERPARAMETER TUNING
  - LEARNING RATE
  - OPTIMIZERS
  - REDUCING LR ON FLY



MASK RCNN

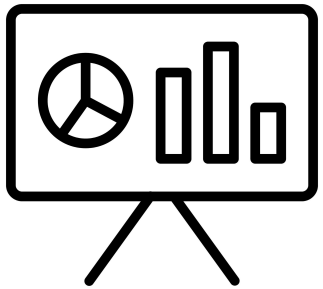
- SETTING UP TFOD IN COLAB
- TRAINING
- INFERENCE

FLASK APPLICATION

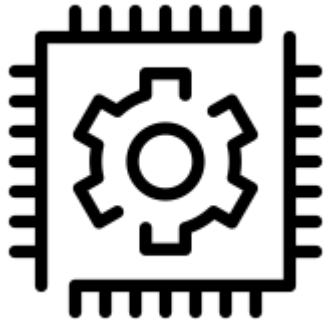
- BASIC APPLICATION SETUP
- INTEGRATING WITH UNET
- DESIGNING PROTOTYPE
- IMPLEMENTING THE DESIGN
- INTEGRATING MASK RCNN

ROADBLOCKS

- NO DOCUMENTATION
- CONFUSING FOLDER STRUCTURE
- MISSING DATA



WORKING DEMO



TECHNOLOGIES

FLASK FRAMEWORK

TENSORFLOW

GOOGLE COLAB

HTML,CSS,JAVASCRIPT

FURTHER IMPROVEMENTS

- ADDING DETECTRON 2 MODEL TO APPLICATION
- MORE MODELS
  - YOLO ACT
  - UNET++
- MORE ANNOTATED DATA
- BETTER DATA VARIANCE
- PRODUCTIONIZING THE APPLICATION

QUESTIONS?

THANK YOU