**Faculty of Computer Science and Artificial Intelligence Helwan university‏**

**Selected-2**

Team number: **21**

**الاسم:** رحيم احمد موسي

**ID:** 202000318

**الاسم:** ايمن شوقي محمد

**ID:** 202000181

**الاسم:** حامد سامي حميدة

**ID:** 202000253

**الاسم:** يحيي طارق محمد

**ID:** 202001058

**الاسم:** بكر ابو حسيبة ذكي

**ID:** 202000206

**الاسم:** حازم احمد سعد حامد

**ID:** 202000243

**Paper Details**

1. **Paper Citation**

[1] Akatsuka, H., & Imai, S. (1987). Road signposts recognition system (No. 870239). SAE Technical Paper.

[2] Albert Keerimolel, Sharifa Galsulkar, Brandon Gowray, “A SURVEY ON TRAFFIC SIGN RECOGNITION AND DETECTION”, Xavier Institute of Engineering, Mumbai, India, International Journal of Trendy Research in Engineering and Technology Volume 7 Issue 2 April 2021.

[3] Aditya, A.M., & Moharir, S. (2016). Study of Traffic Sign Detection and Recognition Algorithms.

[4] Shao, F., Wang, X., Meng, F., Rui, T., Wang, D., & Tang, J. (2018). Real-time traffic sign detection and recognition method based on simplified Gabor wavelets and CNNs. Sensors, 18(10), 3192.

[5] SADAT, S. O., PAL, V. K., & JASSAL, K. RECOGNIZATION OF TRAFFIC SIGN.

[6] Li W., Li D., & Zeng S. (2019, November). Traffic Sign Recognition with a small convolutional neural network. In IOP conference series: Materials science and engineering (Vol. 688, No. 4, p. 044034). IOP Publishing.

[7] Brkic, K. (2010). An overview of traffic sign detection methods. Department of Electronics, Microelectronics, Computer and Intelligent Systems Faculty of Electrical Engineering and Computing Unska, 3, 10000.

[8] Almustafa, K. M. (2014). Circular traffic signs recognition using the number of peaks algorithm. Int J Image Process (IJIP), 8(6), 514.

[9] Zaibi A., Ladgham A., & Sakly A. (2021). A Lightweight Model for Traffic Sign Classification Based on Enhanced LeNet-5 Network. Journal of Sensors, 2021.

[10] G. Bharath Kumar, N. Anupama Rani, “TRAFFIC SIGN DETECTION USING CONVOLUTION NEURAL NETWORK A NOVEL DEEP LEARNING APPROACH”, International Journal of Creative Research Thoughts (IJCRT), ISSN:2320-2882, Vol.8, Issue 5, May 2020.

[11] Alghmgham, D. A., Latif, G., Alghazo, J., & Alzubaidi, L. (2019). Autonomous traffic sign (ATSR) detection and recognition using deep CNN. Procedia Computer Science, 163, 266-274.

1. **Dataset Used**

GTSRB (German Traffic Sign Recognition Benchmark) dataset

1. **the implemented algorithms**

**they used cnn algorithm:** two convolutional layers, one pooling layer, dropout layer, flattening layer, dense layer, again a dropout layer and finally the dense layer.

1. **The results**

The accuracy achieved on the test dataset is 93%.

**Project Description Document**

**A) General information on dataset**

# Name of dataset: Traffic Signs Preprocessed

# Link of the dataset: https://www.kaggle.com/datasets/valentynsichkar/traffic-signs-preprocessed

**Number of classes and their labels:**

There are 43 classes (+10000 image) and the labels are

['Speed limit (20km/h)', 'Speed limit (30km/h)', 'Speed limit (50km/h)', 'Speed limit (60km/h)', 'Speed limit (70km/h)', 'Speed limit (80km/h)', 'End of speed limit (80km/h)', 'Speed limit (100km/h)', 'Speed limit (120km/h)', 'No passing', 'No passing for vehicles over 3.5 metric tons', 'Right-of-way at the next intersection', 'Priority road', 'Yield', 'Stop', 'No vehicles', 'Vehicles over 3.5 metric tons prohibited', 'No entry', 'General caution', 'Dangerous curve to the left', 'Dangerous curve to the right', 'Double curve', 'Bumpy road', 'Slippery road', 'Road narrows on the right', 'Road work', 'Traffic signals', 'Pedestrians', 'Children crossing', 'Bicycles crossing', 'Beware of ice/snow', 'Wild animals crossing', 'End of all speed and passing limits', 'Turn right ahead', 'Turn left ahead', 'Ahead only', 'Go straight or right', 'Go straight or left', 'Keep right', 'Keep left', 'Roundabout mandatory', 'End of no passing', 'End of no passing by vehicles over 3.5 metric tons']

**The total number of samples in the datasets and the size of each:**

The total number of samples is (+104000) and the size of each is 32x32.

**B) Implementing details**

**The total number of samples used in training, validating, and testing:**

Number of samples in training is 86989 and validation is 4410 and testing is 12630 with a ratio of ~83% training ,~12% testing and ~5% validation.

**Block Diagram:**

صورة تحتوي على مخطط بياني

تم إنشاء الوصف تلقائياً

**Hyperparameters:**

learning rate : started from .1 and changes with every epoch

epochs: 20

batch size: 128

**C) RESULT DETAILS:**

We used the accuracy measure and on training it was scoring ~98%, on validation it scored ~97% and on testing it scored ~95%.

صورة تحتوي على مخطط بياني

تم إنشاء الوصف تلقائياًصورة تحتوي على مخطط بياني

تم إنشاء الوصف تلقائياً