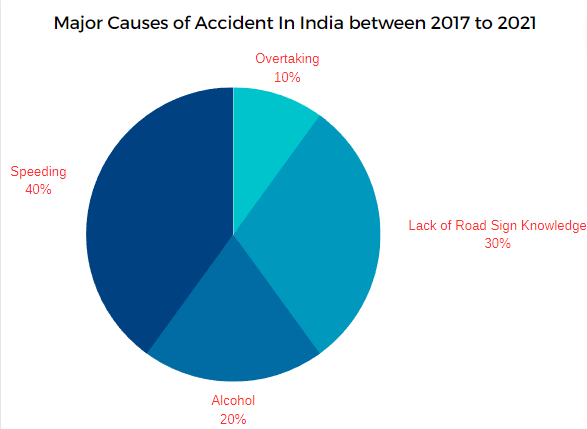


**Extreme Identification Of Navigation**

**What is Road Sign Detection?**

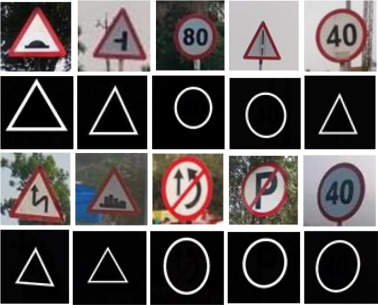
* Road Sign Detection is a computer vision task that involves the automatic identification and localization of road signs in digital images or video streams. It is a subtask of object detection, which aims to detect and classify specific objects of interest within an image.
* When it comes to detecting and mitigating threats, speed is crucial. So as our prototype is highly time efficient approximately 5000 milliseconds.



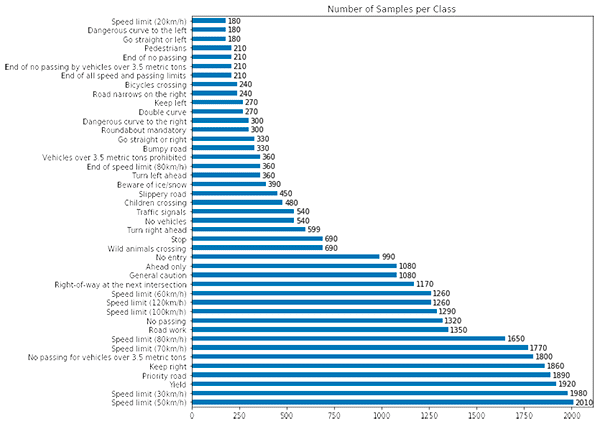
**Datasheet**

The German Traffic Sign Benchmark is a multi-class, single-image classification challenge held at the International Joint Conference on Neural Networks (IJCNN) 2011. We cordially invite researchers from relevant fields to participate: The competition is designed to allow for participation without special domain knowledge. Our benchmark has the following properties:

* Single-image, multi-class classification problem
* More than 40 classes
* More than 50,000 images in total
* Large, lifelike database

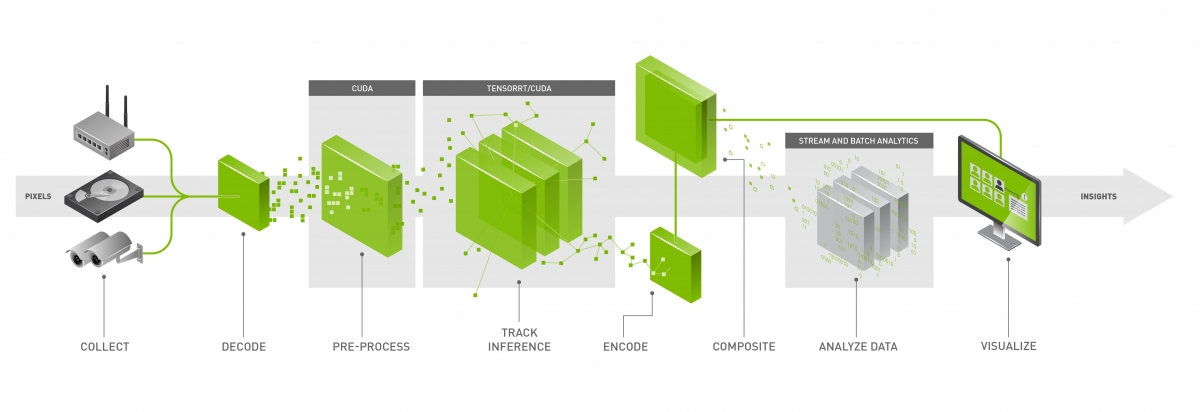


**A Snapshot of Datasheet**

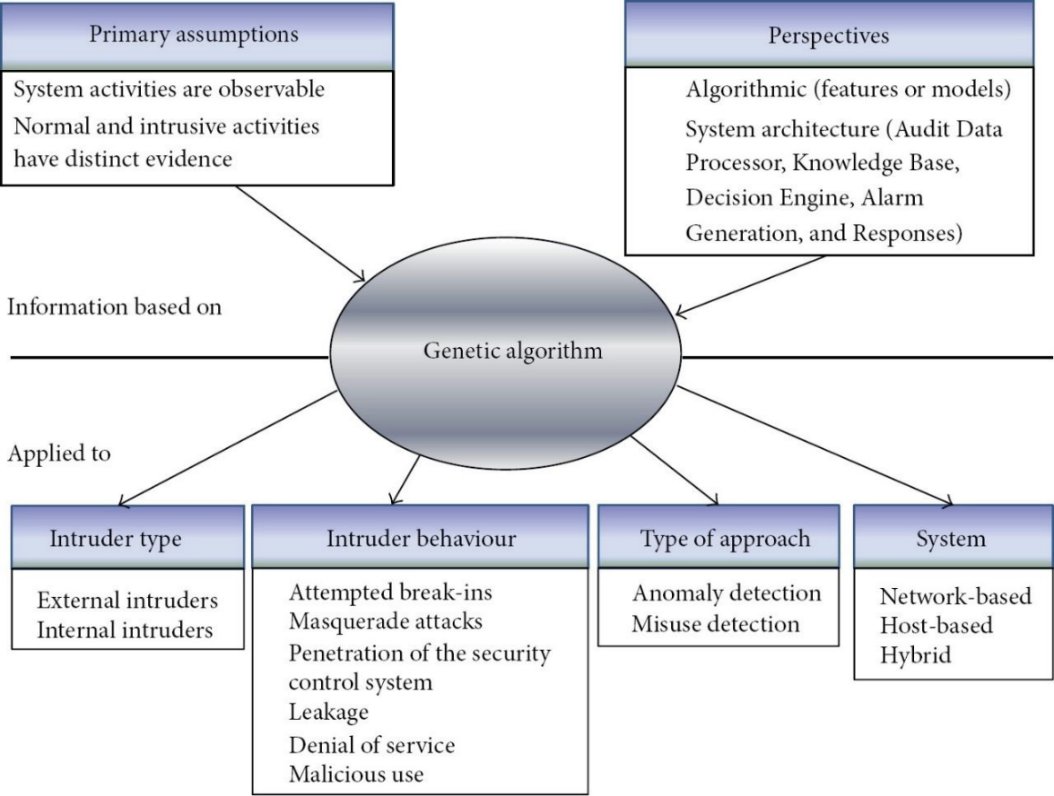
**Collection of data in German Traffic Sign Benchmark**

**Model Selection**

In traditional machine learning models, we cannot store a model’s previous stages. However, SSDlite\_mobilenet\_v2 can do this for us. Let’s take a closer

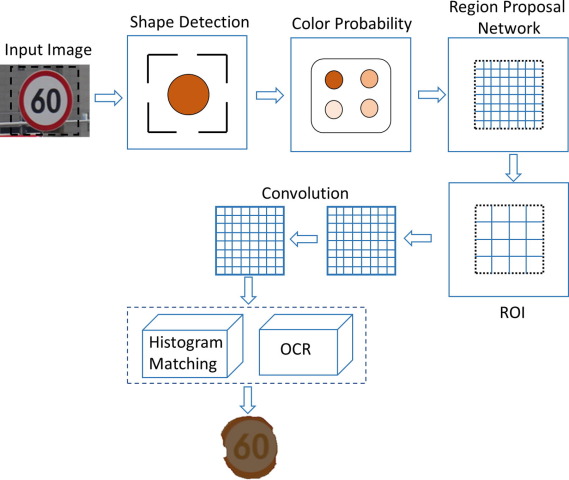


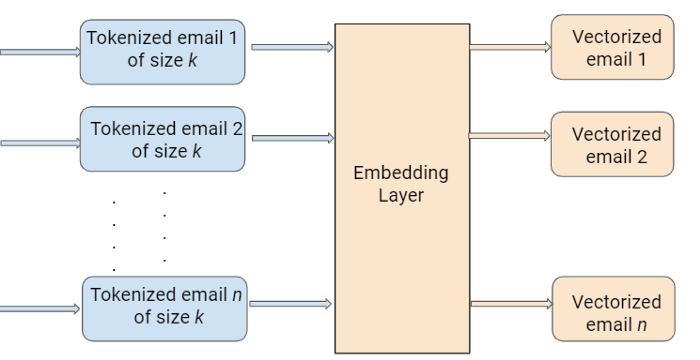
A ssdlite\_mobilenet\_v2 has a repeating module that takes input from the previous stage and gives its output as input to the next stage. However, in ssdlites\_mobilenet\_v2, we can only retain information from the most recent stage. To learn long-term dependencies, our network needs memorization power. Here’s where International Joint Conference on Neural Networks (IJCNN) come to the rescue.



**Implementation**

Embedding -: Text data can be easily interpreted by humans. But for machines, reading and analyzing is a very complex task. To accomplish this task, we need to convert our text into a machine-understandable format.

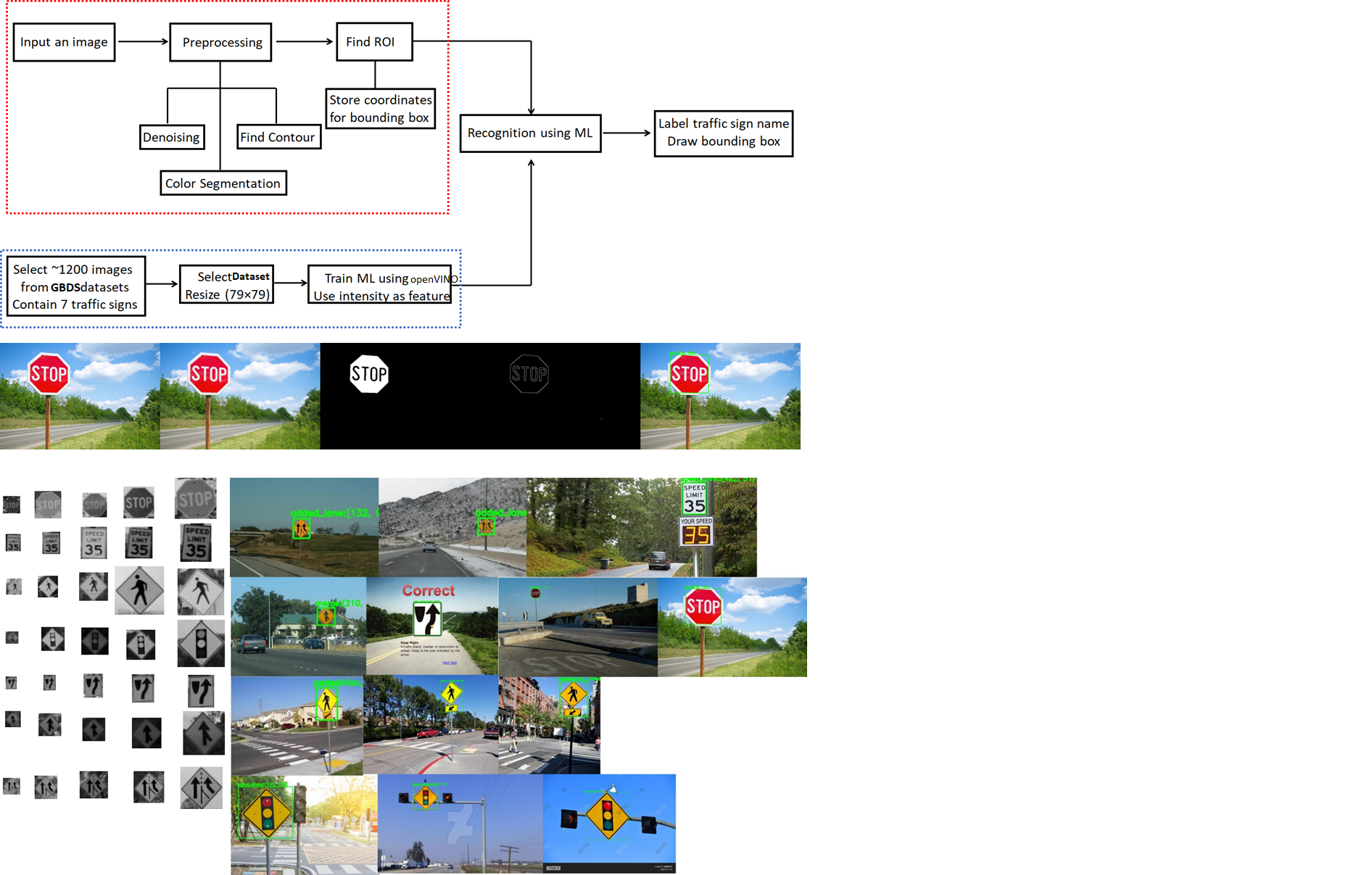
Embedding is the process of converting formatted text data into numerical values/vectors which a machine can interpret.



Process flow in text preprocessing along with expected output

**Summary**

The following diagram summarizes the steps involved in training the Road sign detection model and its integration in a live environment.



* Automatic labelling based on frequency allows for a reasonable creation of a labelled dataset.
* Road Sign detection can be re-framed as a regression problem and the added structure of message spam probability provides a more subtle classification.
* The model successfully detects road sign patterns seen on the training set.
* Results improve considerably from better labels.
* Road Sign probabilities should not be interpreted in a vacuum but rather in the context of the problem and the analysed dataset.
* Running the model on the cloud is very cheap due to its speed and low memory usage.

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**Future implementation**

—Improve labels. This is by far the most important thing. The quality of the data is very highly correlated with the quality of the predictions. Some of the possibilities are:

— Use message clustering after feature extraction to group similar messages together and manually label a representative of the group. The label is then shared with all data points in the group.

— Come up with better labelling heuristics.

— Use road sign data from other sources (with care) if it helps training.

— More research can be done to make an AI that can verify reports , images and videos automatically without human intervention and make the entire process smooth and fast.

— More manual labelling.