**Benchmarking Probabilistic Deep Learning Methods for License Plate Recognition**

Learning-based algorithms for automated license plate recognition implicitly assume that the training and test data are well aligned. However, this may not be the case under extreme environmental conditions, or in forensic applications where the system cannot be trained for a specific acquisition device. Predictions on such out-of-distribution images have an increased chance of failing. But this failure case is oftentimes hard to recognize for a human operator or an automated system. Hence, in this work we propose to model the prediction uncertainty for license plate recognition explicitly. Such an uncertainty measure allows to detect false predictions, indicating an analyst when not to trust the result of the automated license plate recognition. In this paper, we compare three methods for uncertainty quantification on two architectures. The experiments on synthetic noisy or blurred low-resolution images show that the predictive uncertainty reliably finds wrong predictions. We also show that a multi-task combination of classification and super-resolution improves the recognition performance by 109% and the detection of wrong predictions by 29%.

**EXISTING SYSTEM:**

The license plate recognition CNN and SR2 framework are deep learning models that can be used for license plate recognition. However, both models have some negative points. The license plate recognition CNN requires a lot of training data and can be slow to train. The SR2 framework is not as accurate as the license plate recognition CNN and is not as robust to noise and distortions. the license plate recognition CNN and SR2 framework are both powerful deep learning models that can be used for license plate recognition. However, there are some negative points to these models that you should be aware of.

**DISADVANTAGES OF EXISTING SYSTEM:**

* The models can be computationally expensive to run.
* The models can be sensitive to the quality of the input images.
* The models can be susceptible to adversarial attacks.

**Algorithm**:

**PROPOSED SYSTEM:**

They evaluate these methods on a dataset of synthetically degraded images. The results show that MC-dropout is the best method for detecting out-of-distribution images. The authors also show that a multi-task combination of classification and super-resolution can improve the accuracy of LPR systems by 109% and the detection of wrong predictions by 29%. the experiments are conducted on a dataset of synthetically degraded images. It is not clear how well the results will generalize to real-world images. Second, the paper does not consider the computational cost of the different methods for uncertainty quantification. The authors propose a new method for improving the accuracy of LPR systems by using uncertainty quantification. They also compare three different methods for uncertainty quantification and show that MC-dropout is the best method for detecting out-of-distribution images. The paper also shows that a multi-task combination of classification and super-resolution can improve the accuracy of LPR systems.

**ADVANTAGES OF PROPOSED SYSTEM:**

* Uncertainty quantification can be used to improve the accuracy of license plate recognition (LPR) systems.
* MC-dropout is the best method for detecting out-of-distribution images.
* A multi-task combination of classification and super-resolution can improve the accuracy of LPR systems by 109% and the detection of wrong predictions by 29%.

**Algorithm**: : LPR CNN.

**SYSTEM REQUIREMENTS:**

**HARDWARE REQUIREMENTS:**

* System : Intel Core i7.
* Hard Disk : 1TB.
* Monitor : 15’’ LED
* Input Devices : Keyboard, Mouse
* Ram : 8GB.

**SOFTWARE REQUIREMENTS:**

* Operating system : Windows 11.
* Coding Language : Python
* Tool : PyCharm, Visual Studio Code
* Database : SQLite

**REFERENCES:**

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