Ahsanullah University of Science and Technology

Department of Computer Science and Engineering

Project Proposal

Course No.: CSE4238

Course Title: Soft Computing Lab

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“Forgery Detection in Offline Signatures: A CNN-driven Authentication Framework”

Objective:

The paper proposes using Convolutional Neural Networks (CNNs) to develop a writer-independent authentication system for offline signatures, aiming to distinguish genuine from forged signatures by capturing subtle patterns. The research aims to improve offline signature verification, providing insights to biometrics and document forensics, and offering practical solutions for real-world challenges.

Tentative method:

1. **Dataset:**

Dataset Name	Genuine Signatures	Forged Signatures
CEDAR	1320	1320
MCYT-75	2250	2250
GPDS300	7200	9000
GPDS synthetic	96000	120000
BHSig260(Bangla)	2400	3000

We are working with the combined dataset of 244740 signature images, of which 109170 signatures are genuine and 135570 signatures are forged.

2. **Model to evaluate :**
   We'll assess each of the following models:
   - Convolutional siamese networks,
   - vgg19,
   - Deep Multitask Metric Learning strategy used by CNN,
     to authenticate handwritten offline signatures. After that, we'll proceed to determine which is most effective and continue developing that framework.

3. **Evaluation metrics:**
   - Classification Accuracy: We employ accuracy as the metric to quantitatively assess the proficiency of our Convolutional Neural Network model in discriminating between authentic and forged offline signatures

   - FAR (False Acceptance Rate): We utilize the False Acceptance Rate (FAR) as a key metric to measure the rate of falsely accepting forged signatures as genuine, providing a nuanced evaluation of the model's specificity in offline signature verification.