

Handwritten Signature Verification

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Introduction

Handwriting has been considered as one of the most important security means related to human traits, which have been accepted as evidence for many important applications such as claims, wills, and contacts, especially in biometrics and forensic science.

The purpose of our project is to develop an **offline** and **writer-independent** approach to verify whether an input signature is genuine or forged according to an input reference genuine signatures. A **siamese convolutional network** architecture is used in our project.

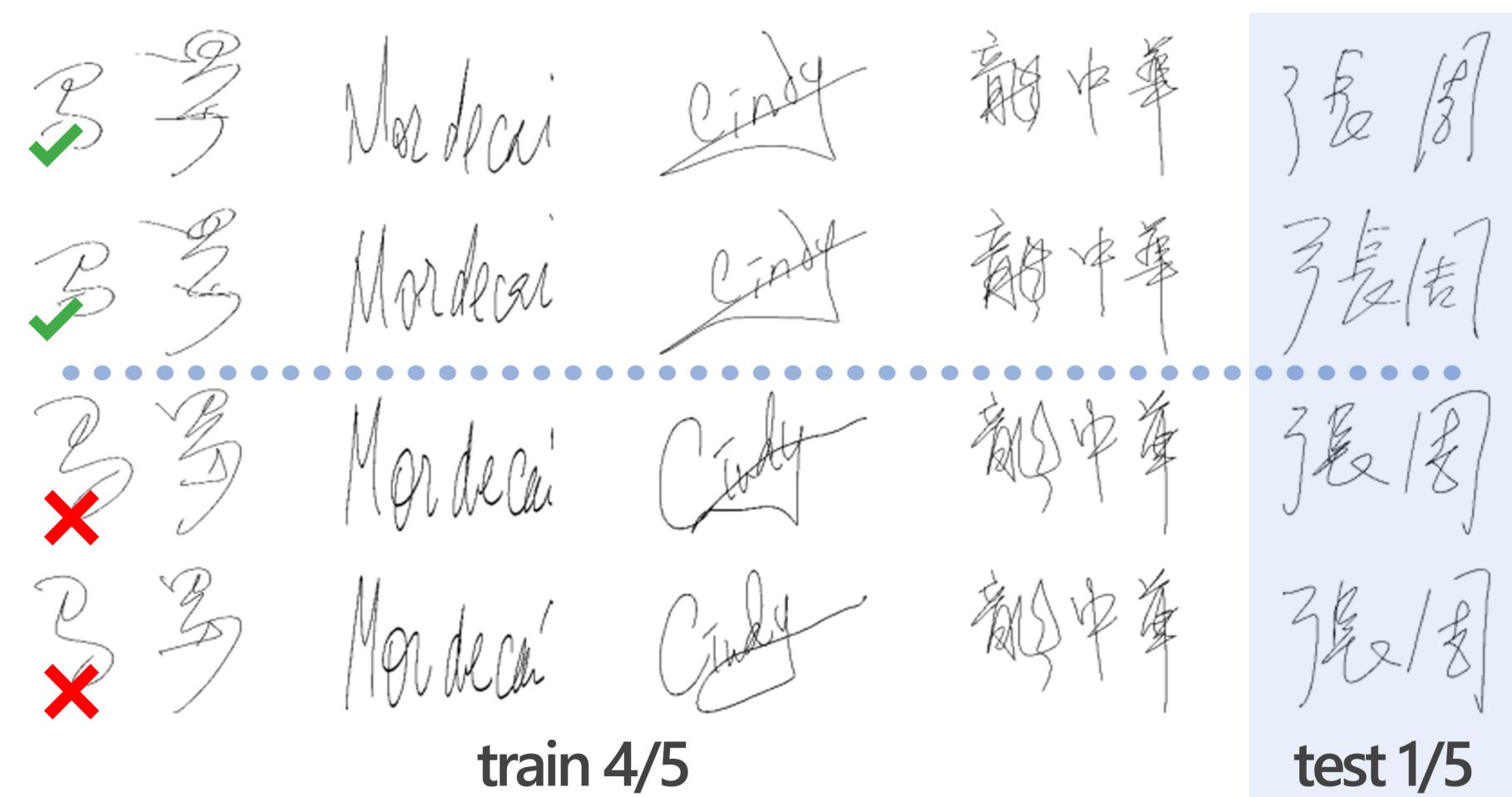
Method

1. Preprocessing dataset by normalization & cropping the center & resizing to 155x220
2. Generating & splitting train-test data
3. Train siamese CNN with contrastive loss
3. Test and set threshold for verification task

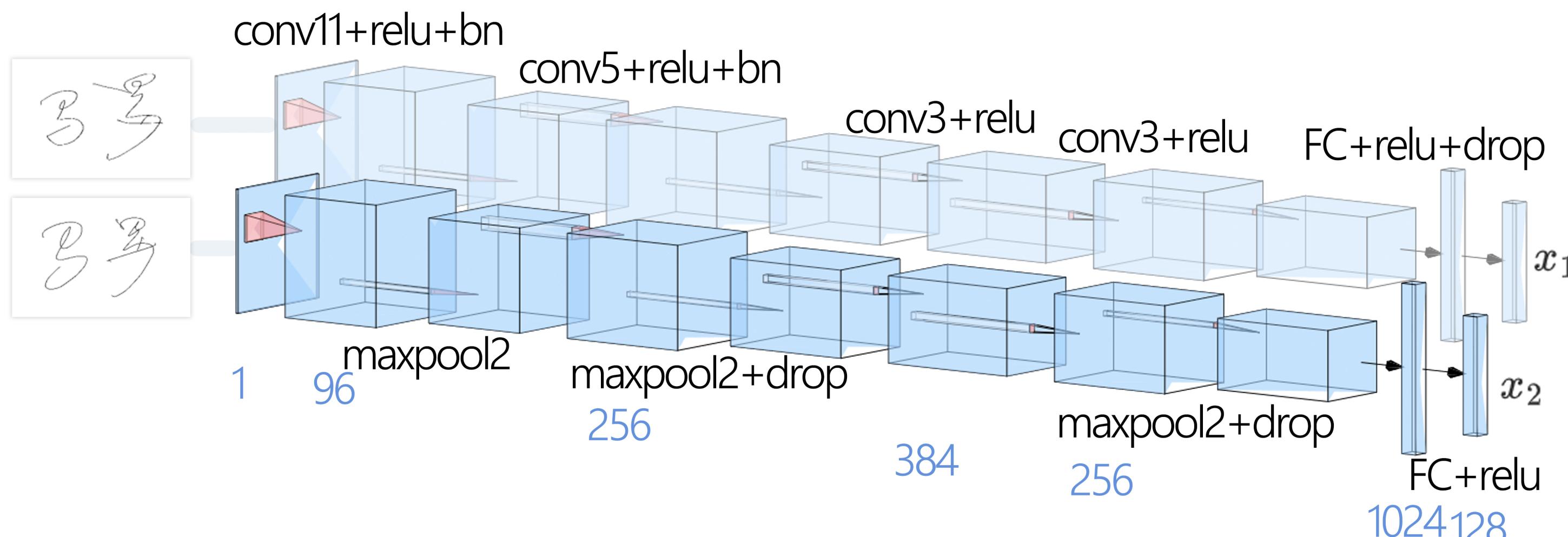
Dataset

CEDAR 55 x (24+24) signatures in English

SVC2004 40 x (20+20) in different languages



Network Architecture



$$\begin{aligned} \text{ContrastiveLoss}(x_1, x_2, y) \\ = (1 - y) \|x_1 - x_2\|^2 \\ + \alpha \max(0, 1 - \|x_1 - x_2\|^2) \end{aligned}$$