# **TSVPR system description: NIST SRE 2010**

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## 1. Introduction

Our site submitted one system: TSVPR to NIST SRE 2010 evaluations, only for the core-core condition. The system is based on GMM-UBM, and utilize MFCC to extract features.

### 2. Feature extraction, segmentation

Using MFCC features:

• MFCC32: 16 static MFCCs and dynamic MFCCs without energy information, making 32 dimensional feature vector. The analysis window has 20ms with shift of 10ms.

Voice activity detection:

• Our system has pre-processed the speech file by silence detection using zero-rate and energy information.

Feature normalization:

• And after feature extraction, we do normalization.

#### 3. Data Processing

In order to construct effective models, we use the data from NIST06 and NIST08, and before we train our UBM, it is essential to pre-process the data.

We extract data due to the gender of the index files to produce two UBMs: one for female and another for male.

Initially, there are 610748 test files, including the same index. After processing, there are 13344 distinct evaluation speech files in NIST10 data, including the different channels in one speech file.

# 4. GMM-UBM

We make use of the data of NIST06 and NIST08 to train universal background model, and then exploit the training data of NIST10 to train 5460 models, at last utilize the trial data of NIST'10 to generate the results.

There are 128 Gaussian mixtures and 32 dimensional vectors in the model.

#### 5. Channel type condition

We calibrated the system with side information about channel provided by NIST which categorized each trial into one of four classes: phonicall/mic, phonecall/tel, interview/3min and interview/8min.

## 6. speed and resources

We run our system on an HP station with 12CPUs and 96G ROM. The time used for each single test of the evaluation is approximately: 480ms. The time used for training a single model is approximately: 3000ms. The physical memory used for evaluation is approximately: 4MBs The CPUs utilized: 49.5%.