Introduction to Digital Speech Processing, Final Exam

Jun. 27, 2018, 10:00-12:00

- OPEN Lecture Power Point (Printed Version) and Personal Notes
- You have to use CHINESE sentences to answer all the questions, but you can use English terminologies
- Total points: 145 (will be normalized to 100)

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1. (a) (10) Describe what is Maximum Likelihood Linear Regression(MLLR)?
   (b) (10) Describe how eigenvoices can be obtained from PCA?
2. (15) Explain what is the Conditional Random Field (CRF) and how it can be used for slot filling in spoken dialogues.
3. (20) What parameters are shared in Subspace Gaussian Mixture Model? How to use shared parameters to calculate HMM state parameters?
4. (10) What is Probabilistic Latent Semantic Analysis (PLSA)?
5. (15) Explain what Vector Taylor's Series (VTS) approach for robust speech recognition is and how it works.
6. (15) What is WFST? How is it used in speech recognition?
7. (10) What do we mean by spoken document understanding and organization?
8. (10) Explain what is Support Vector Machine(SVM).
9. (15) Explain why and how vector space model based on subword units are useful in retrieving speech information using speech queries.
10. (15) What is the mismatch in acoustic environment between training/testing conditions for speech recognition? Explain what the model-based approaches, and feature-based approaches are, including mentioning the names of two examples for each of them.