REPORT

On **Odyssey, June 21-24, Bilbao, Spain** *(name of conference, date, place)*

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Date 18 September, 2016

1. **Current research activity** ***(approx. 300 words)***

   Describe briefly the subject of your current research, the framework in which this research is being carried out (Ph.D. thesis, project, etc.) and its stage (the time you have already dedicated to this work, expected time needed to be accomplished).

I'm in final year of my PhD program (expected graduation: Spring 2017) and my thesis is focused on robust speaker and language verification. I work on suppressing mismatches between enrollment and test conditions in speaker/language verification systems. The mismatch that I focused more in my PhD, is language mismatch in speaker verification systems. In my previous published papers, I've shown the performance degradation in speaker verification systems when there is a language mismatch between test and enrollment conditions. The performance degradation exists even if state-of-the-art system is used. I've also proposed novel methods to suppress language mismatch in speaker verification systems and consequently improve system performance. I conduct my studies on NIST Speaker Recognition Evaluation (SRE) corpora and hence work primarily on text-independent speaker verification systems. In the final phase of my PhD, I intend to work more on Domain Adaptation Challenge (DAC) in speaker verification. DAC is focused on developing approaches and techniques to effectively use unlabeled data and get the same performance as with labeled data. In practical scenarios, not only we have development data without any speaker labels, the data is also very different from the actual evaluation data. Hence, domain adaptation (suppressing mismatch between unlabeled out-of-domain data and labeled in-domain data) is one of the important and relevant areas of research in speaker verification. In future, I intend to focus my efforts in this area of research.

2. **Benefits derived for your research from attending the conference**

   Please give the following information: *(approx. 500 words)*

- Title, session and abstract of your paper.
- Questions raised or remarks made on your paper which could be beneficial for your work.
- Papers dealing with the same or similar subject which you deem most important for your work.

- **Title:** Between-Class Covariance Correction For Linear Discriminant Analysis in Language Recognition.

  Session: Poster Session 1: Language Recognition

  Abstract: Linear Discriminant Analysis (LDA) is one of the most widely-used channel compensation techniques in current speaker and language recognition systems. In this study, we propose a technique of Between-Class Covariance Correction (BCC) to improve language recognition performance. This approach builds on the idea of Within-Class Covariance Correction (WCC), which was introduced as a means to compensate for mismatch between development and test data in speaker recognition. In BCC, we compute eigendirections representing the multi-modal distributions of language i-vectors, and show that incorporating these directions in LDA leads to an improvement in recognition performance. Considering each cluster in the multi-modal i-vector distribution as a separate class, the between- and within-cluster covariance matrices are used to update the global between-language covariance. This is in contrast to WCC, for which the within-class covariance is updated. Using the proposed method, a relative overall improvement of +8.4% Equal Error Rate (EER) is obtained on the 2015 NIST Language Recognition Evaluation (LRE) data. Our approach offers insights toward addressing the challenging problem of mismatch compensation, which has much wider applications in both speaker and language recognition

- **Questions raised**: 1. Does the proposed method work on bottleneck features as well? 2. How is the performance when using Cavg as error metric instead of or in addition to Equal Error Rate (EER)?
- **Paper most related to my work**: O. Glembek, J. Ma, P. Matejka, Bing Zhang, O. Plchot, L. Burget, and S. Matsoukas, “Domain adaptation via within-class covariance correction in i-vector based speaker recognition systems,” in Acoustics, Speech and Signal Processing (ICASSP), 2014 IEEE International Conference on, May 2014, pp. 4032–4036.

3. **Personal highlight of the conference** *(approx. 100 words)*

Please report the most remarkable to you finding of the conference

The most remarkable thing about the conference for me was the discussions I had with some of the top notch researchers working in my area. I had the opportunity to discuss my problems with them. They gave me some really good suggestions, and more than that, the thing that mattered to me was knowing the way they approach a problem. It was really enlightening to observe how some of the best minds working in the area think about a problem to solve. Also, the infectious enthusiasm that they have, inspired me to do more and better research.

This short report could be published on ISCA's website.