

Master/ Bachelor Thesis

Meta pseudo labels for few-shot Face Presentation Attack Detection

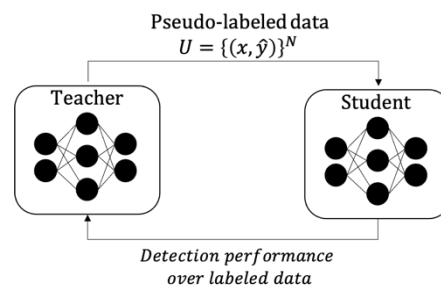
da/sec



da/sec is the biometrics and internet security research group and is affiliated with University of Applied Sciences Darmstadt and the National Research Center for Applied Cybersecurity (ATHENE). The group is led by Prof. Dr. Christoph Busch. The focus of the group is on highly innovative and applied IT security research in the special fields of biometrics, internet security, and digital forensics. Read more on <http://www.dasec.h-da.de/>.

Motivation & Goals

In order to generalise to realistic and more challenging scenarios where unknown attacks are frequently launched; numerous deep learning-based Presentation Attack Detection (PAD) methods have been proposed. Most of them presented powerful architectures to distinguish an attack presentation (AP) from a bona fide presentation (BP). However, they commonly overfit training data, thereby leading to a performance degradation for the detection of unknown attacks. In order to overcome earlier issues, we intend to explore, for facial PAD, Meta pseudo label techniques which consists of two networks (i.e., teacher and student), one trained with a rather limited number of samples (few shots) to improve the performance of the other network.



Tasks

- Analysis of different Pseudo labels-based techniques.
- Design and implementation of new Meta pseudo labels-based techniques which use a limited number of AP samples for facial PAD.
- Evaluation and benchmark of the semi-supervised techniques.

Requirements

- High motivation.
- Interest in security technologies and biometrics.
- Strong interest in research.
- Knowledge of Deep learning frameworks is of advantage (e.g., Tensorflow or Pytorch).

Start / Period

Immediately / by appointment

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