

The INTERSPEECH 2019 Computational Paralinguistics Challenge: A Summary of Results

Styrian Dialects, Continuous Sleepiness, Baby Sounds & Orca Activity

Christian Bergler

Pattern Recognition Lab, Friedrich-Alexander-Universität Erlangen-Nürnberg

September 9, 2019



Outline

Facts

Styrian Dialects Sub-Challenge

Continuous Sleepiness Sub-Challenge

Baby Sounds Sub-Challenge

Orca Activity Sub-Challenge

Facts



Facts

ComParE 2019

| | |
|--|--|
| Number of registrations (participants) | 45 |
| Number of registrations (teams): | 44 |
| Number of teams that uploaded results: | 21 (7 teams without paper submission) |
| Number of submitted papers | 17 (15 w/o organizers, 2 teams à 2 papers) |
| Number of accepted papers | 12 (11 w/o organizers) |
| Acceptance rate | 70.6 % |

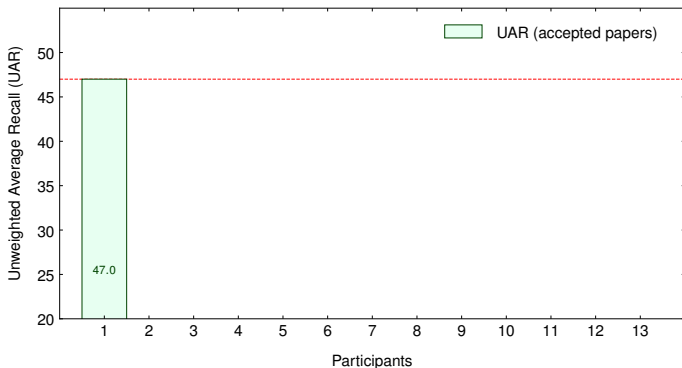
Accepted papers dealing with

| | |
|-----------------------------------|----------------------|
| – Styrian Dialects only | 2 |
| – Continuous Sleepiness only | 2 |
| – Baby Sounds only | 0 |
| – Orca Activity only | 3 |
| – Styrian, Sleepiness | 1 |
| – Styrian, Sleepiness, Baby | 1 |
| – Styrian, Sleepiness, Baby, Orca | 2 (1 w/o organizers) |
| – Sleepiness, Orca | 1 |

Styrian Dialects Sub-Challenge



Styrian Dialects Sub-Challenge: Participants

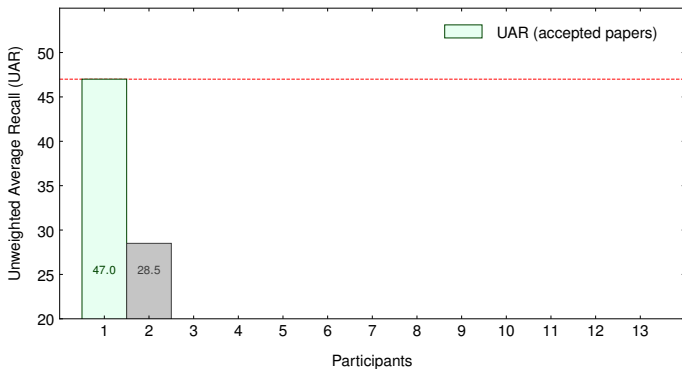


1. TeamORGA

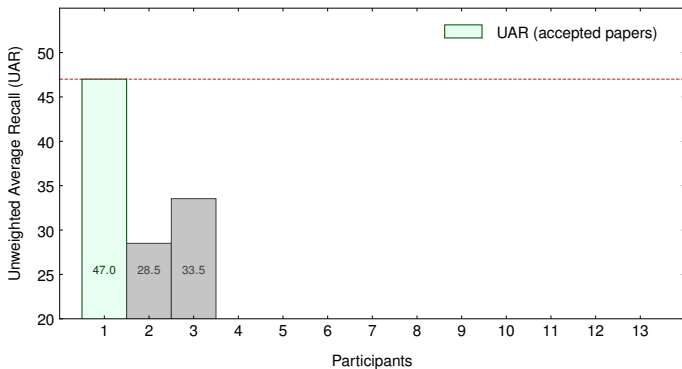
Björn W. Schuller, Anton Batliner, Christian Bergler, et al.

The INTERSPEECH 2019 Computational Paralinguistics Challenge: Styrian Dialects, Continuous Sleepiness, Baby Sounds & Orca Activity

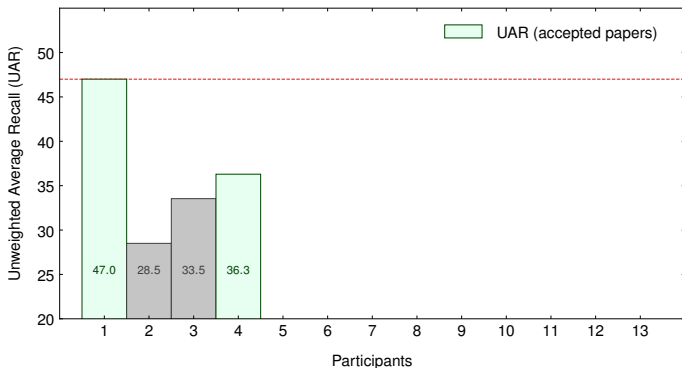
Styrian Dialects Sub-Challenge: Participants



Styrian Dialects Sub-Challenge: Participants



Styrian Dialects Sub-Challenge: Participants

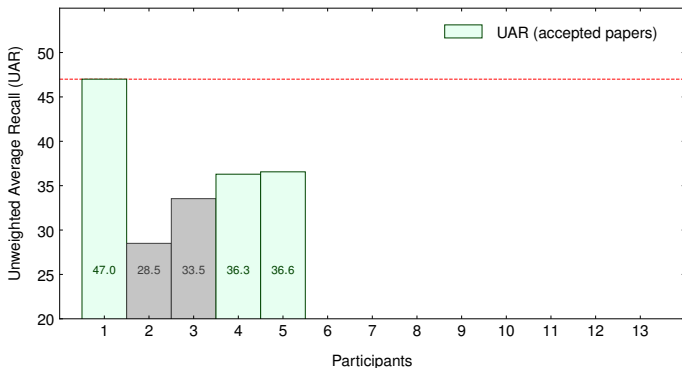


2. TeamRGAI

Gábor Gosztolya

Using Fisher Vector and Bag-of-Audio-Words Representations to Identify Styrian Dialects, Sleepiness, Baby & Orca Sounds

Styrian Dialects Sub-Challenge: Participants

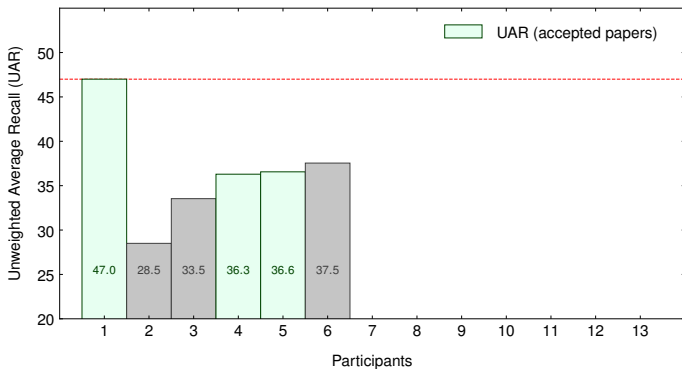


3. TeamIDIAP

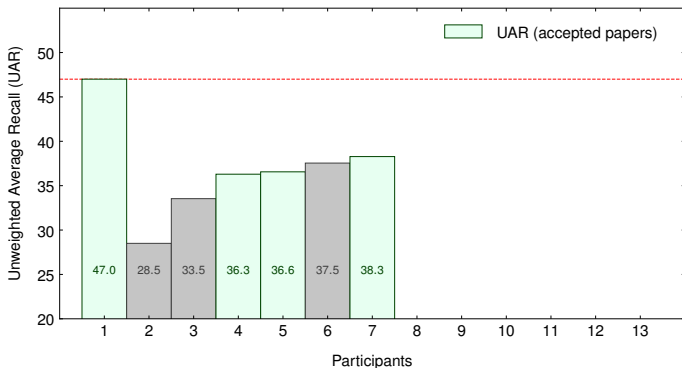
S. Pavankumar Dubagunta, Mathew Magimai Doss

Using Speech Production Knowledge for Raw Waveform Modelling based Styrian Dialect Identification

Styrian Dialects Sub-Challenge: Participants



Styrian Dialects Sub-Challenge: Participants

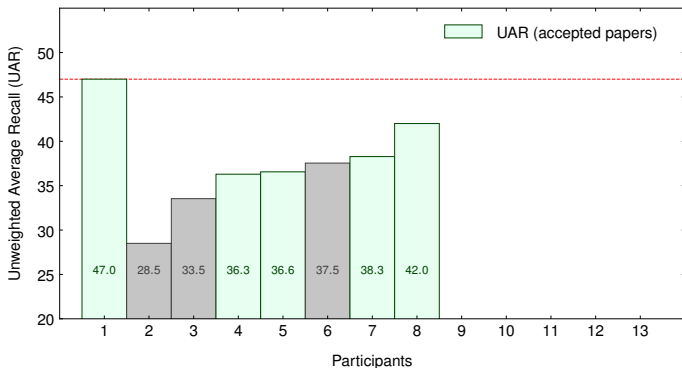


4. TeamFILMU

Daniel Elsner, Stefan Langer, Fabian Ritz, Robert Mueller, Steffen Illium

Deep Neural Baselines for Computational Paralinguistics

Styrian Dialects Sub-Challenge: Participants

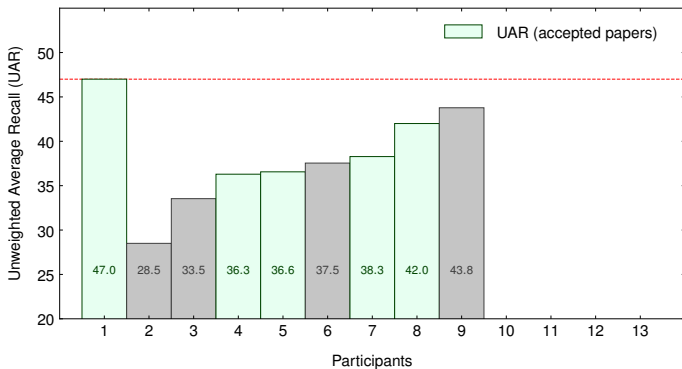


5. TeamBAS

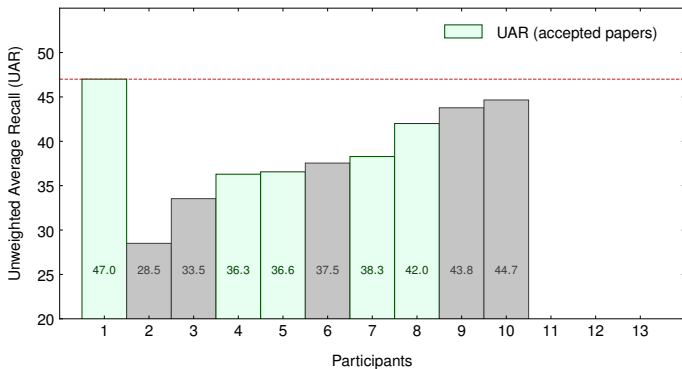
Thomas Kisler, Raphael Winkelmann, Florian Schiel

Styrian dialect classification: comparing and fusing classifiers based on a feature selection using a genetic algorithm

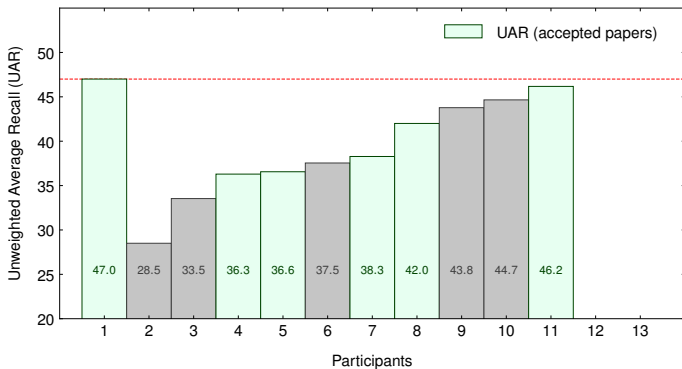
Styrian Dialects Sub-Challenge: Participants



Styrian Dialects Sub-Challenge: Participants



Styrian Dialects Sub-Challenge: Participants



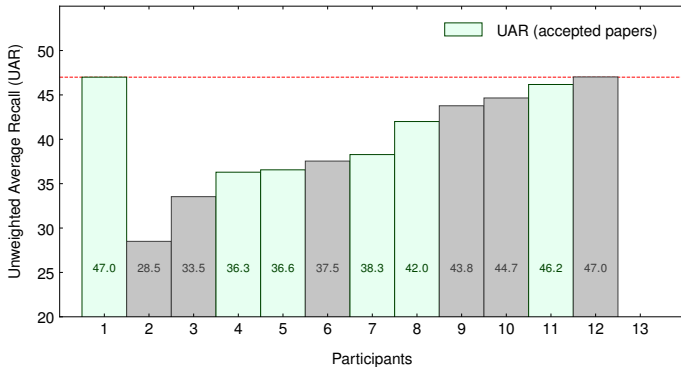
6. TeamSTIH

Marie-José Caraty, Claude Montacé

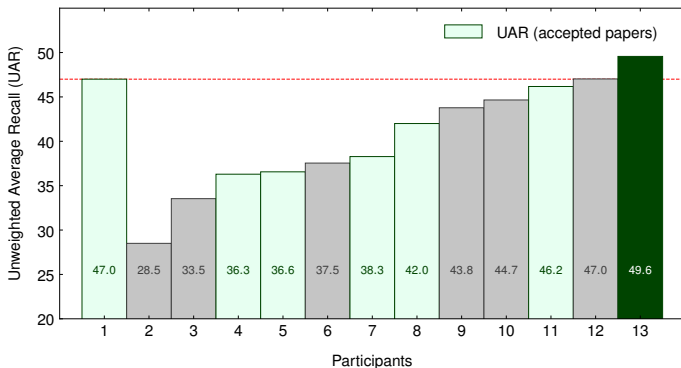
Spatial, Temporal and Spectral Multiresolution Analysis for the INTERSPEECH 2019 ComParE Challenge

Note: Paper only about Orca Activity Challenge!

Styrian Dialects Sub-Challenge: Participants



Styrian Dialects Sub-Challenge: Participants



7. TeamNTHU

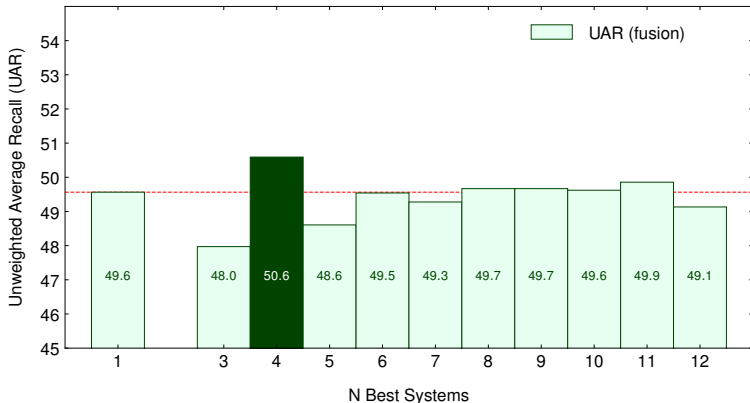
Sung-Lin Yeh, Gao-Yi Chao, Bo-Hao Su, et al.

Using Attention Networks and Adversarial Augmentation for Styrian Dialect Continuous Sleepiness and Baby Sound Recognition



Styrian Dialects Sub-Challenge: Fusion – Majority Vote

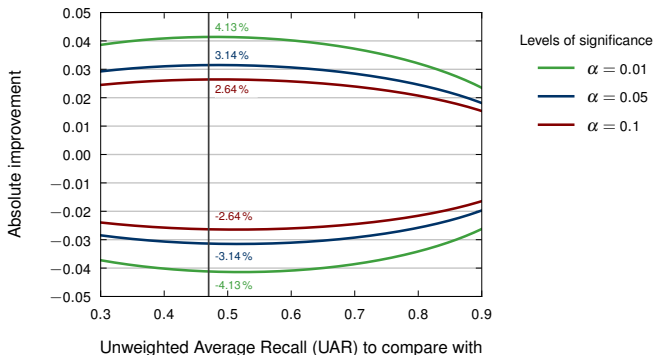
Fusion of the n best systems



Styrian Dialects Sub-Challenge: Significance Test

Baseline: 47.0 % UAR (3-class problem)

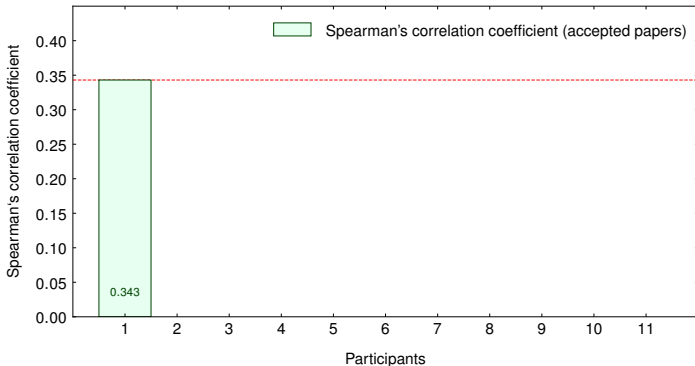
Test set size: 1,935 samples



Continuous Sleepiness Sub-Challenge



Continuous Sleepiness Sub-Challenge: Participants

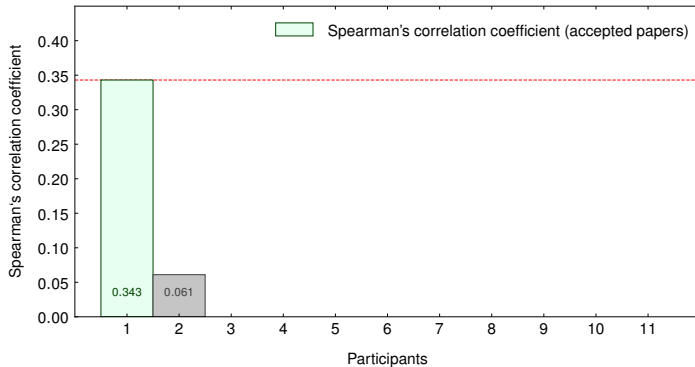


1. TeamORGA

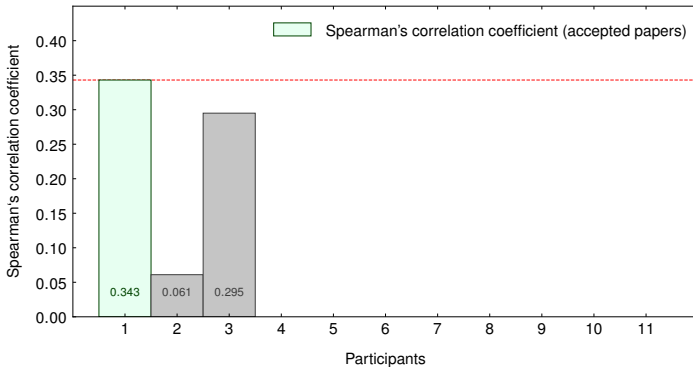
Björn W. Schuller, Anton Batliner, Christian Bergler, et al.

The INTERSPEECH 2019 Computational Paralinguistics Challenge: Styrian Dialects, Continuous Sleepiness, Baby Sounds & Orca Activity

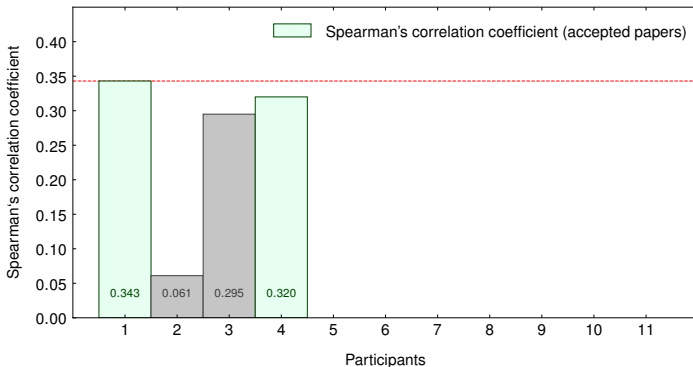
Continuous Sleepiness Sub-Challenge: Participants



Continuous Sleepiness Sub-Challenge: Participants



Continuous Sleepiness Sub-Challenge: Participants

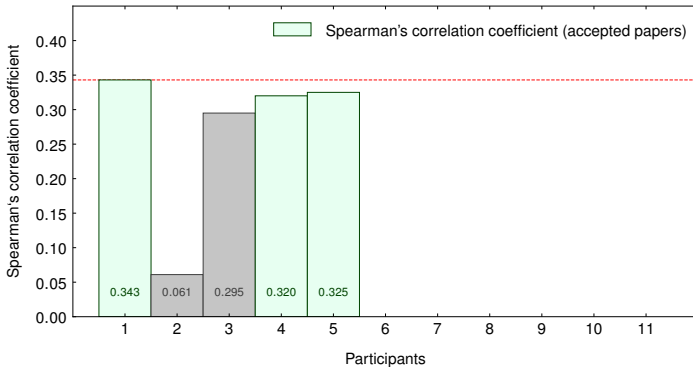


2. TeamLTI

Peter Wu, Sai Krishna Rallabandi, Alan W Black, Eric Nyberg

Ordinal Triplet Loss: Investigating Sleepiness Detection from Speech

Continuous Sleepiness Sub-Challenge: Participants



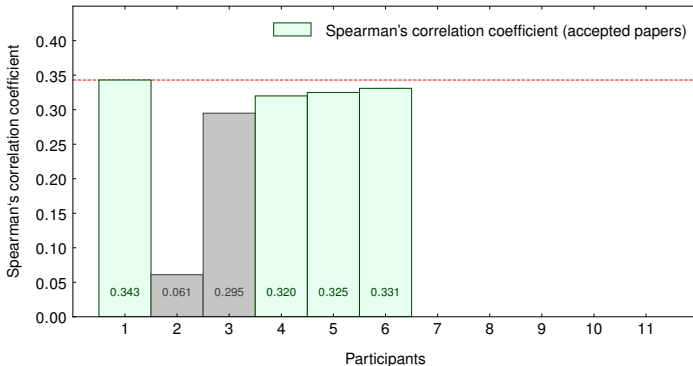
3. TeamIDIAP

S. Pavankumar Dubagunta, Mathew Magimai Doss

Using Speech Production Knowledge for Raw Waveform Modelling based Styrian Dialect Identification

Note: Paper only about Styrian Dialects Challenge!

Continuous Sleepiness Sub-Challenge: Participants

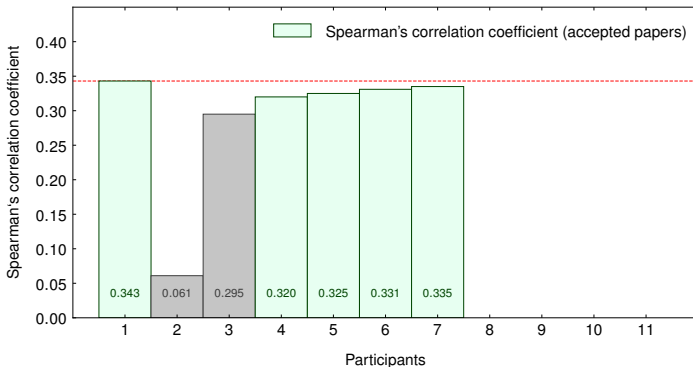


4. TeamUCLA

Vijay Ravi, Soo Jin Park, Amber Afshan, Abeer Alwan

Voice Quality and Between-Frame Entropy for Sleepiness Estimation

Continuous Sleepiness Sub-Challenge: Participants

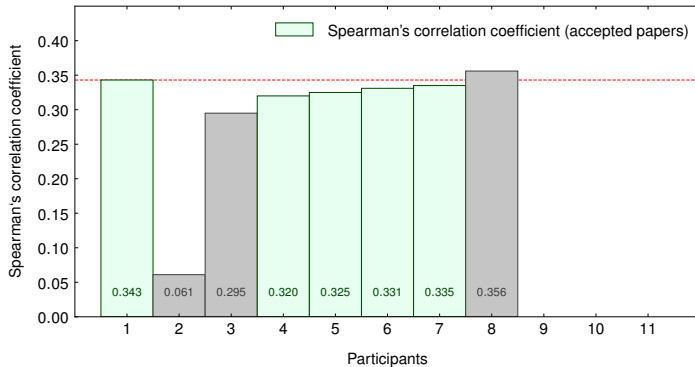


5. TeamFILMU

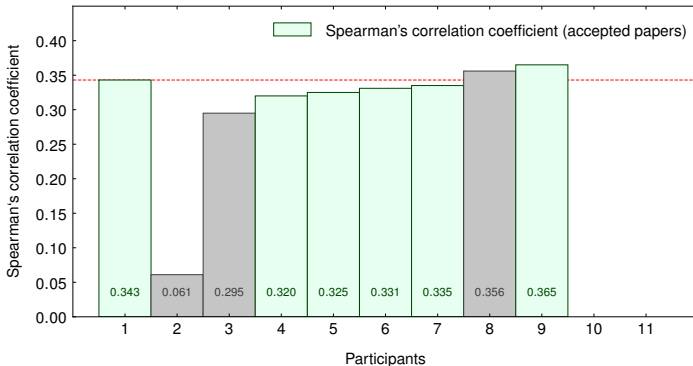
Daniel Elsner, Stefan Langer, Fabian Ritz, Robert Mueller, Steffen Illium

Deep Neural Baselines for Computational Paralinguistics

Continuous Sleepiness Sub-Challenge: Participants



Continuous Sleepiness Sub-Challenge: Participants

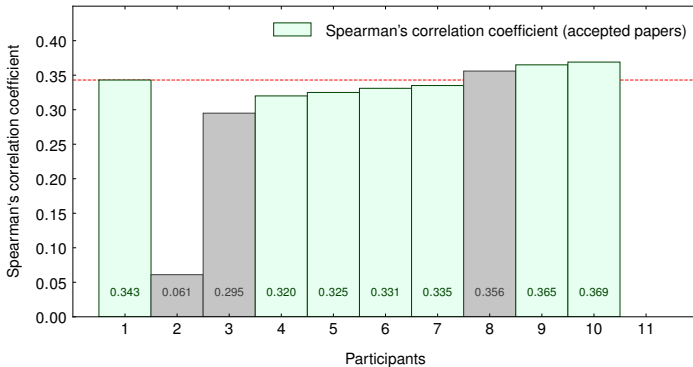


6. TeamDKUAILR

Haiwei Wu, Weiqing Wang, Ming Li

The DKU-LENOVO Systems for the INTERSPEECH 2019 Computational Paralinguistic Challenge

Continuous Sleepiness Sub-Challenge: Participants

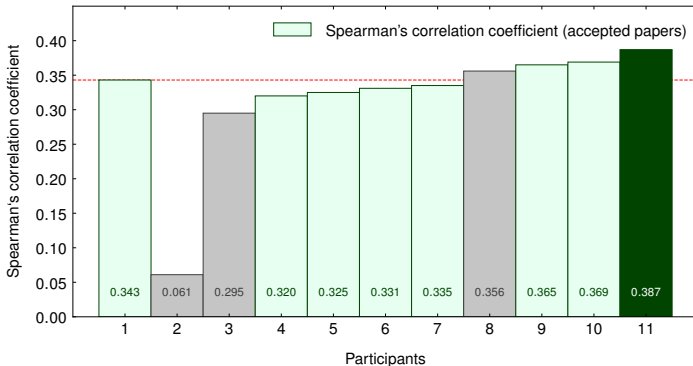


7. TeamNTHU

Sung-Lin Yeh, Gao-Yi Chao, Bo-Hao Su, et al.

Using Attention Networks and Adversarial Augmentation for Styrian Dialect Continuous Sleepiness and Baby Sound Recognition

Continuous Sleepiness Sub-Challenge: Participants



8. TeamRGAI

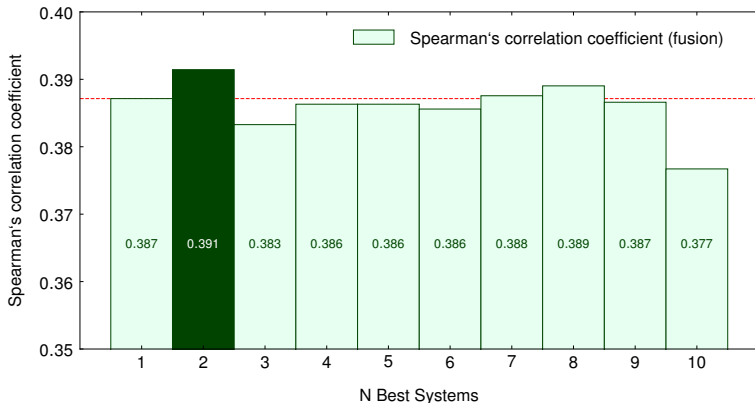
Gábor Gosztolya

Using Fisher Vector and Bag-of-Audio-Words Representations to Identify Styrian Dialects, Sleepiness, Baby & Orca Sounds



Continuous Sleepiness Sub-Challenge: Fusion – Majority Vote

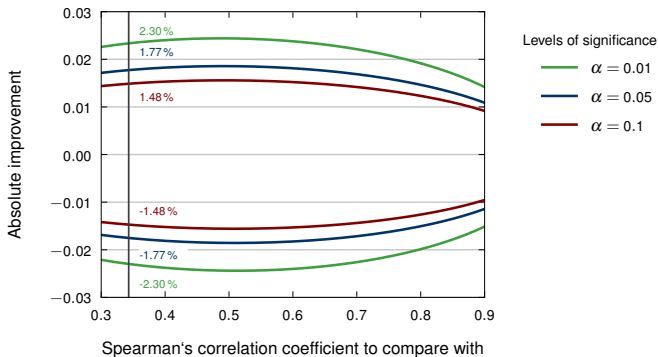
Fusion of the n best systems



Continuous Sleepiness Sub-Challenge: Significance Test

Baseline: 0.343 Spearman's correlation coefficient
(Karolinska Sleepiness Scale (KSS) [0-9])

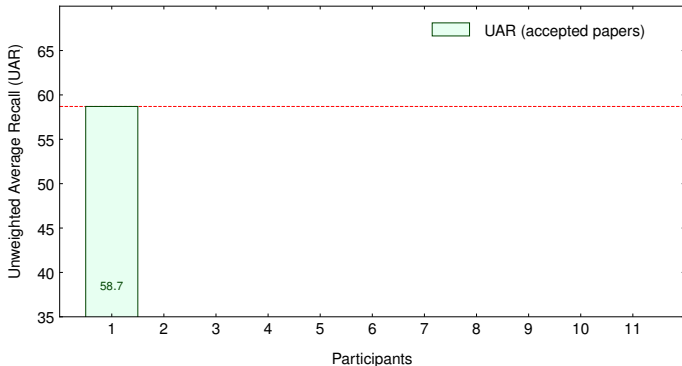
Test set size: 5,570 samples



Baby Sounds Sub-Challenge



Baby Sounds Sub-Challenge: Participants

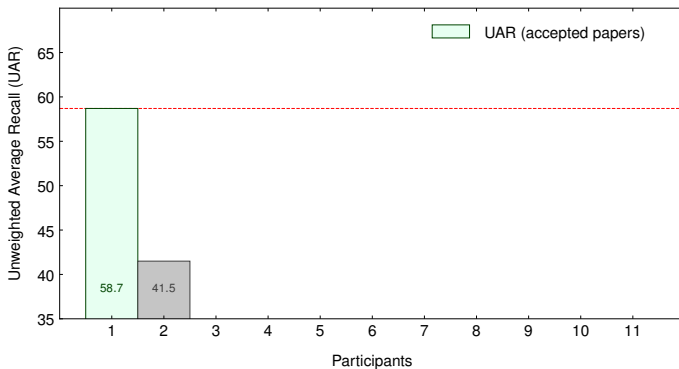


1. TeamORGA

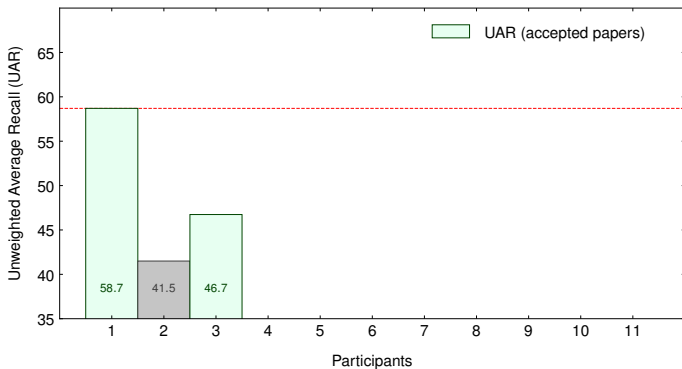
Björn W. Schuller, Anton Batliner, Christian Bergler, et al.

The INTERSPEECH 2019 Computational Paralinguistics Challenge: Styrian Dialects, Continuous Sleepiness, Baby Sounds & Orca Activity

Baby Sounds Sub-Challenge: Participants



Baby Sounds Sub-Challenge: Participants



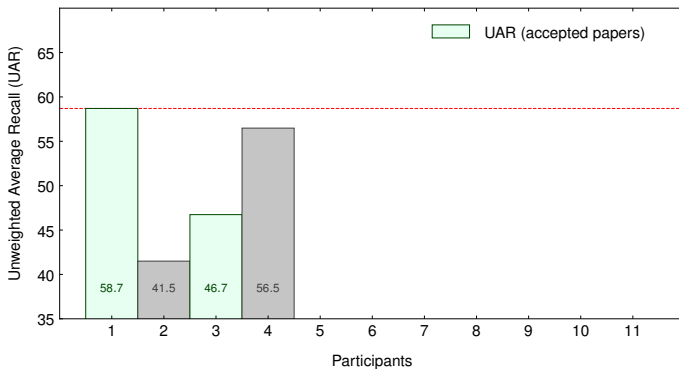
2. TeamIDIAP

S. Pavankumar Dubagunta, Mathew Magimai Doss

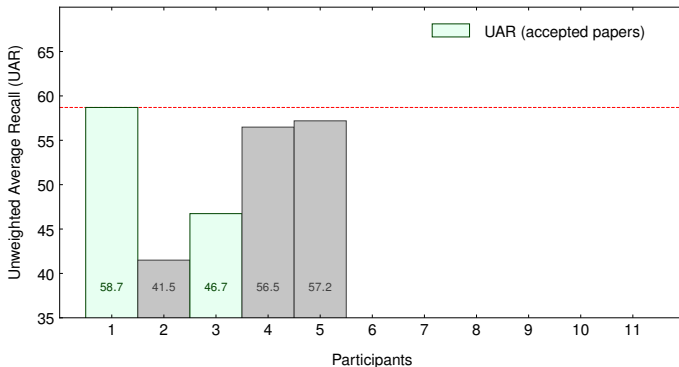
Using Speech Production Knowledge for Raw Waveform Modelling based Styrian Dialect Identification

Note: Paper only about Styrian Dialects Challenge!

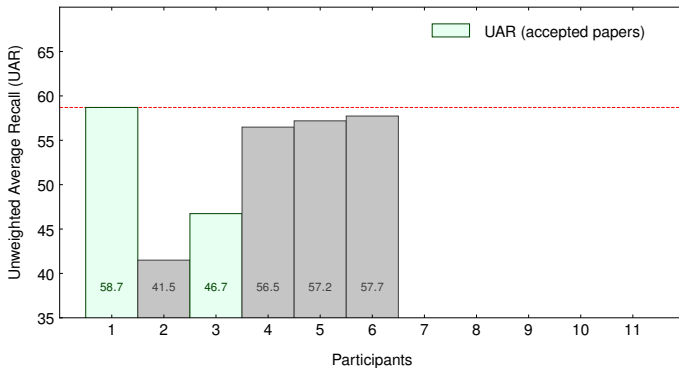
Baby Sounds Sub-Challenge: Participants



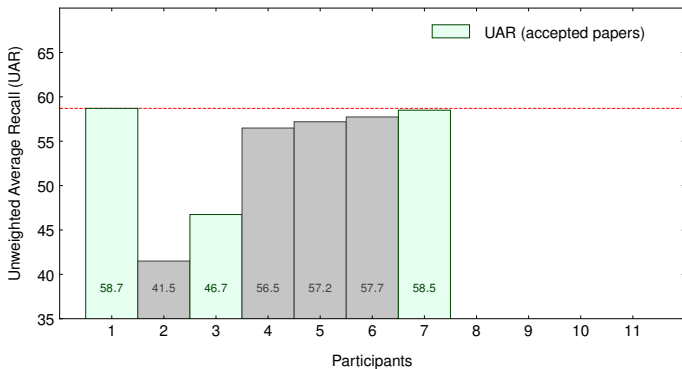
Baby Sounds Sub-Challenge: Participants



Baby Sounds Sub-Challenge: Participants



Baby Sounds Sub-Challenge: Participants



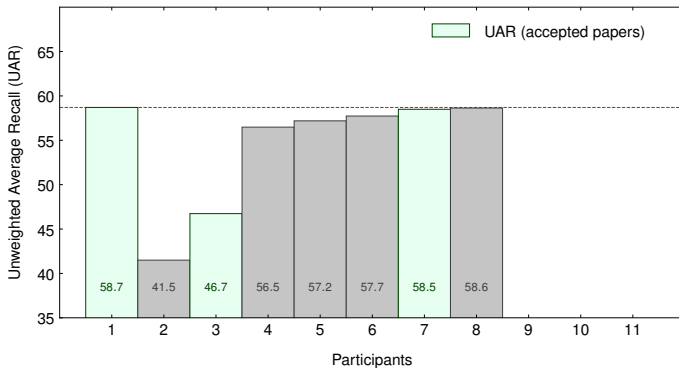
3. TeamSTIH

Marie-José Caraty, Claude Montacié

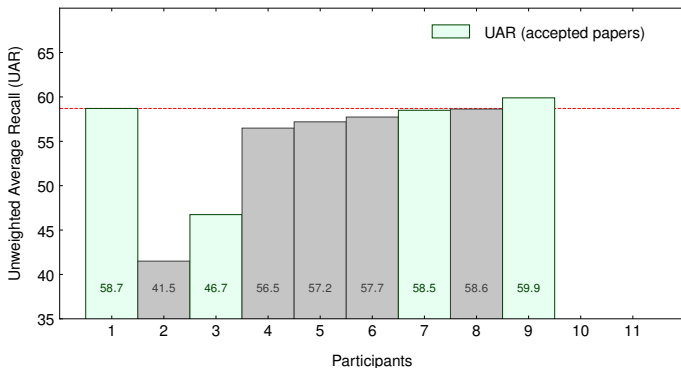
Spatial, Temporal and Spectral Multiresolution Analysis for the INTERSPEECH 2019 ComParE Challenge

Note: Paper only about Orca Activity Challenge!

Baby Sounds Sub-Challenge: Participants



Baby Sounds Sub-Challenge: Participants

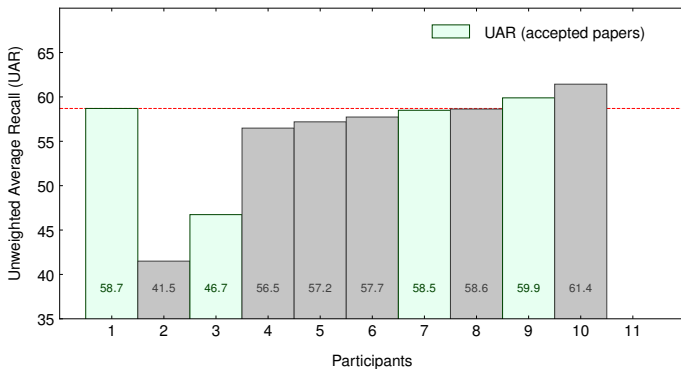


4. TeamRGAI

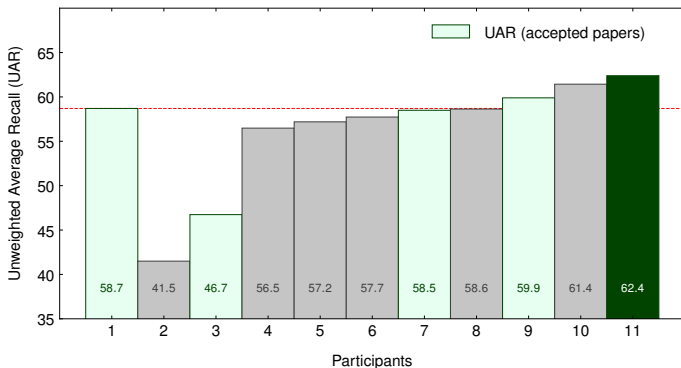
Gábor Gosztolya

Using Fisher Vector and Bag-of-Audio-Words Representations to Identify Styrian Dialects, Sleepiness, Baby & Orca Sounds

Baby Sounds Sub-Challenge: Participants



Baby Sounds Sub-Challenge: Participants



5. TeamNTHU

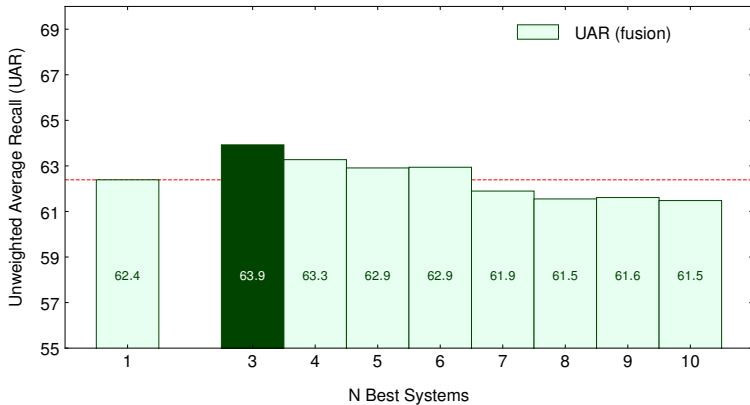
Sung-Lin Yeh, Gao-Yi Chao, Bo-Hao Su, et al.

Using Attention Networks and Adversarial Augmentation for Styrian Dialect Continuous Sleepiness and Baby Sound Recognition



Baby Sounds Sub-Challenge: Fusion – Majority Vote

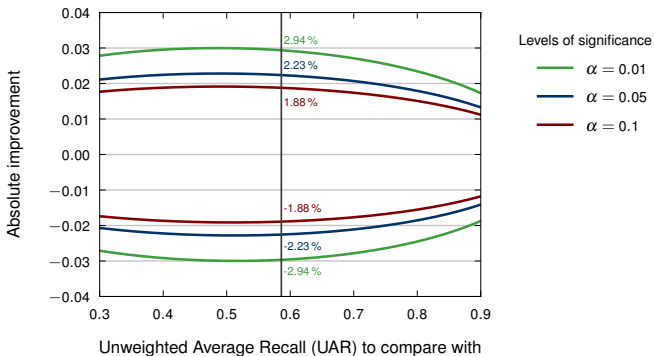
Fusion of the n best systems



Baby Sounds Sub-Challenge: Significance Test

Baseline: 58.7 % UAR (5-class problem)

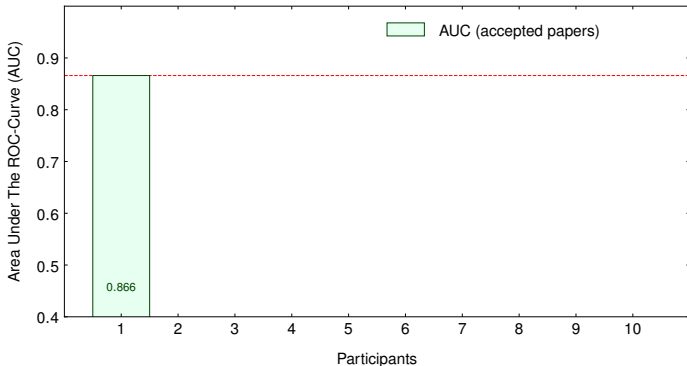
Test set size: 3,691 samples



Orca Activity Sub-Challenge



Orca Activity Sub-Challenge: Participants

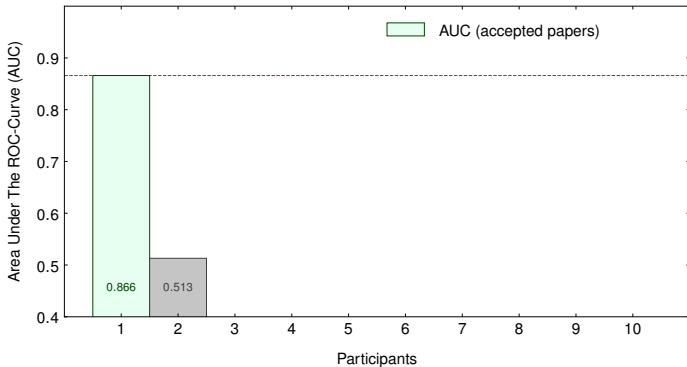


1. TeamORGA

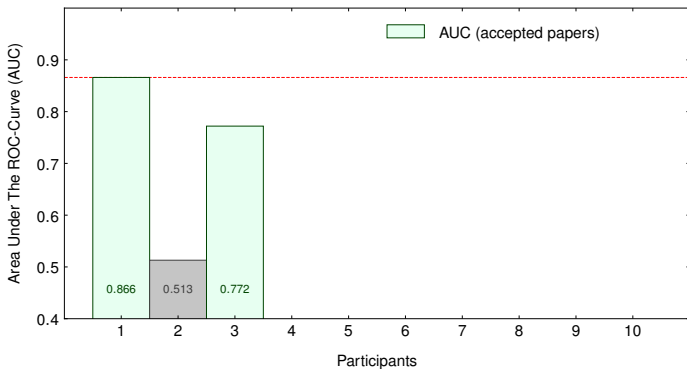
Björn W. Schuller, Anton Batliner, Christian Bergler, et al.

The INTERSPEECH 2019 Computational Paralinguistics Challenge: Styrian Dialects, Continuous Sleepiness, Baby Sounds & Orca Activity

Orca Activity Sub-Challenge: Participants



Orca Activity Sub-Challenge: Participants



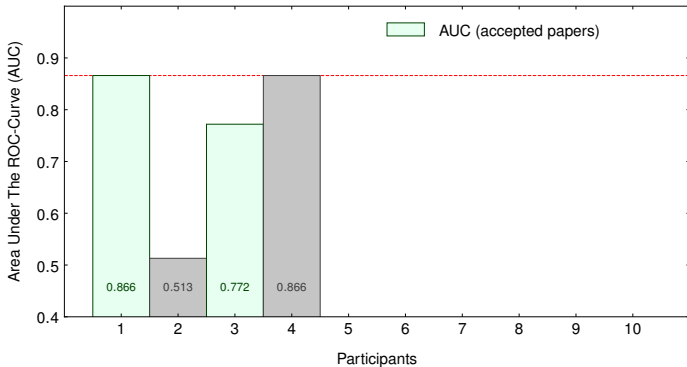
2. TeamIDIAP

S. Pavankumar Dubagunta, Mathew Magimai Doss

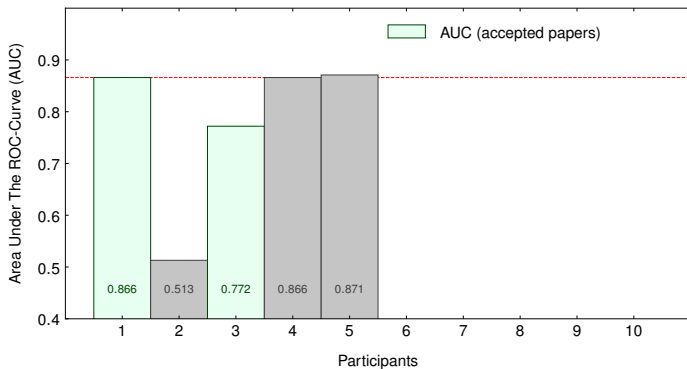
Using Speech Production Knowledge for Raw Waveform Modelling based Styrian Dialect Identification

Note: Paper only about Styrian Dialects Challenge!

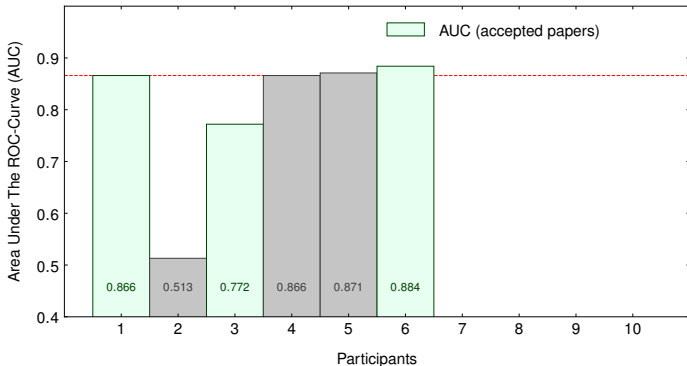
Orca Activity Sub-Challenge: Participants



Orca Activity Sub-Challenge: Participants



Orca Activity Sub-Challenge: Participants

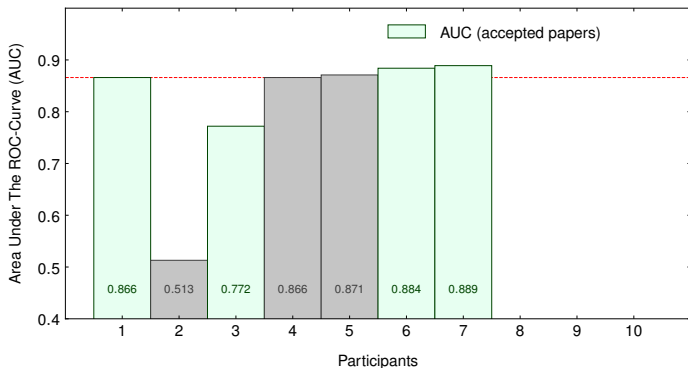


3. TeamRGAI

Gábor Gosztolya

Using Fisher Vector and Bag-of-Audio-Words Representations to Identify Styrian Dialects, Sleepiness, Baby & Orca Sounds

Orca Activity Sub-Challenge: Participants

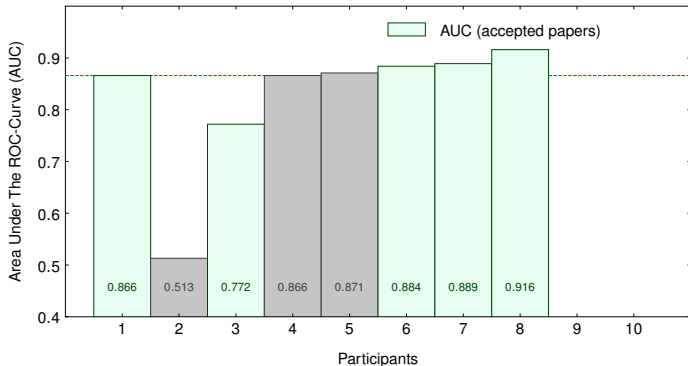


4. TeamNUS

Rohan Kumar Das, Haizhou Li

Instantaneous Phase and Long-term Acoustic Cues for Orca Activity Detection

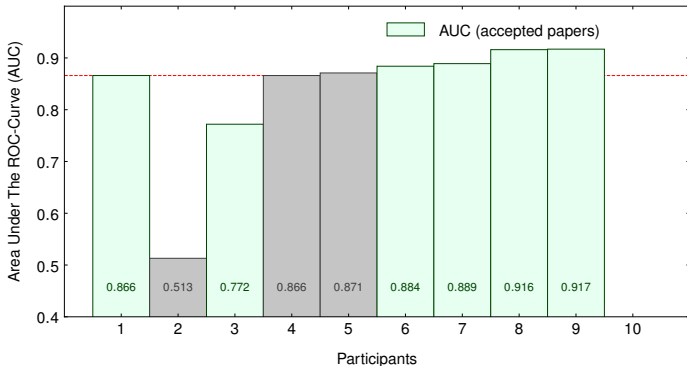
Orca Activity Sub-Challenge: Participants



5. TeamUAHCM

Dominik Schiller, Tobias Huber, Florian Lingentfeller, Michael Dietz, Andreas Seiderer, Elisabeth André
Relevance-based Feature Masking: Improving Neural Network based Whale Classification through Explainable Artificial Intelligence

Orca Activity Sub-Challenge: Participants

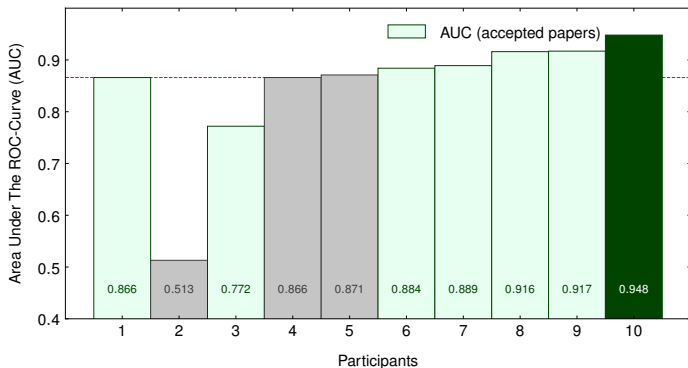


6. TeamSTIH

Marie-José Caraty, Claude Montacié

Spatial, Temporal and Spectral Multiresolution Analysis for the INTERSPEECH 2019 ComParE Challenge

Orca Activity Sub-Challenge: Participants



7. TeamDKUAILR

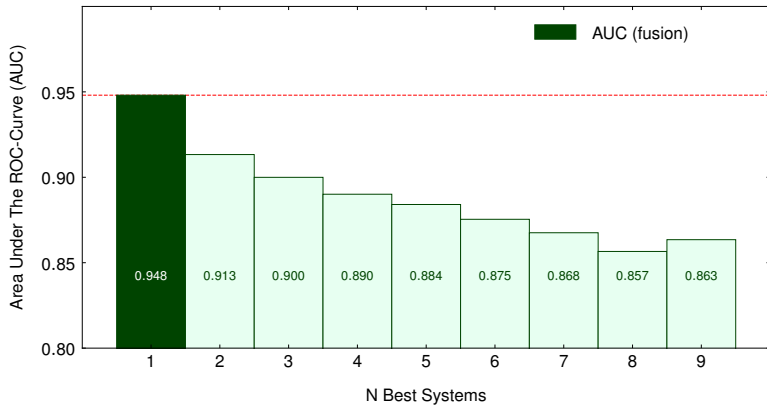
Haiwei Wu, Weiqing Wang, Ming Li

The DKU-LENOVO Systems for the INTERSPEECH 2019 Computational Paralinguistic Challenge



Orca Activity Sub-Challenge: Fusion – Majority Vote

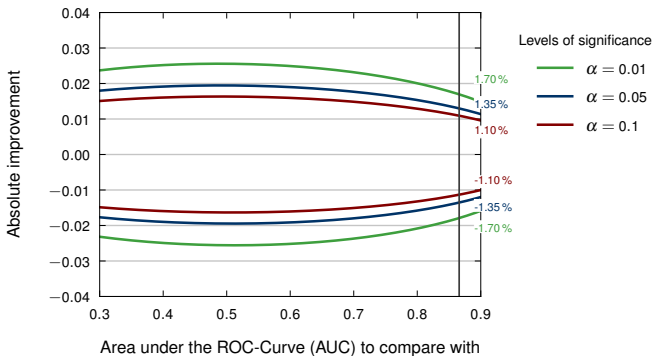
Fusion of the n best systems



Orca Activity Sub-Challenge: Significance Test

Baseline: 0.866 AUC (2-class problem)

Test set size: 5,071 samples



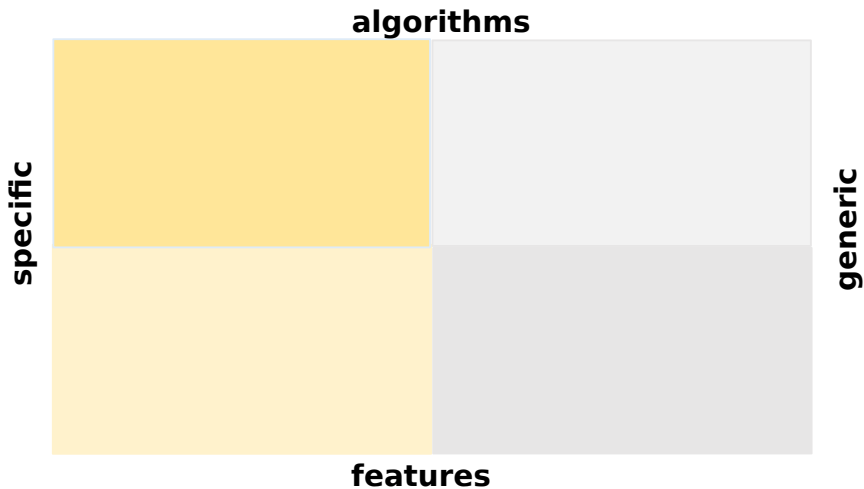
ComParE 2019 Approaches

Approaches chosen by the participants
in the ComParE challenge at
Interspeech 2019

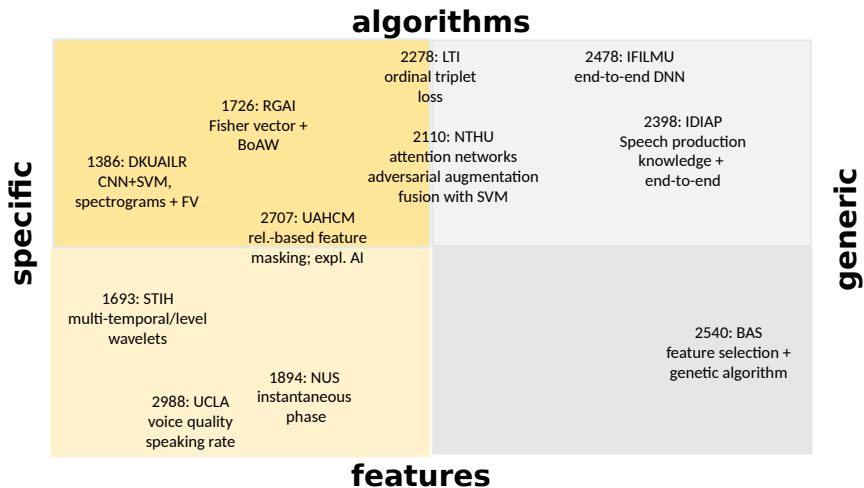
Only from submitted and accepted papers,
with „competitive“ performance on test

Anton Batliner

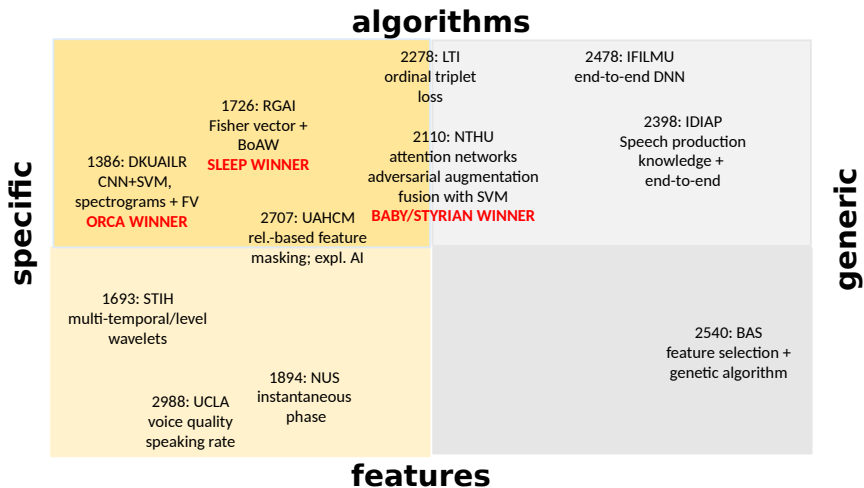
ComParE 2019 Approaches



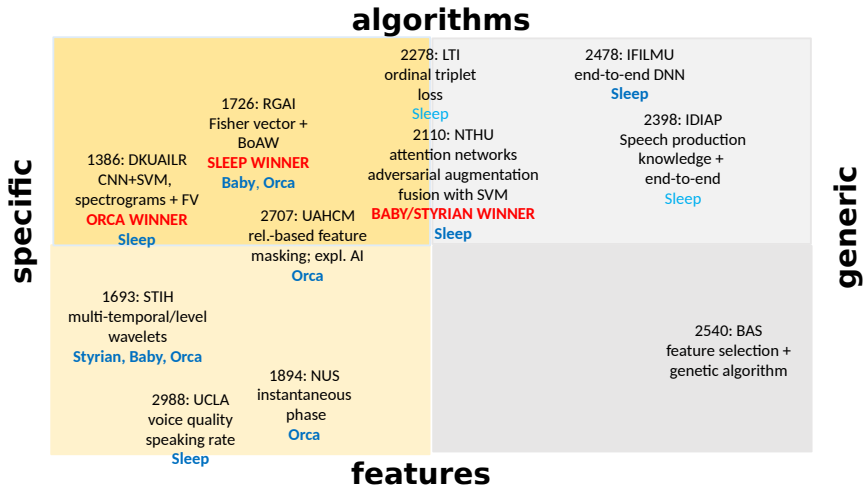
ComParE 2019 Approaches



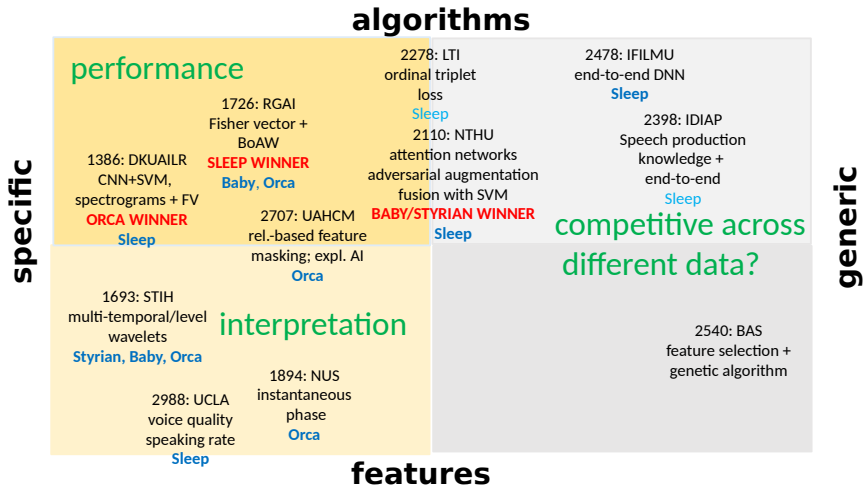
ComParE 2019 Approaches



ComParE 2019 Approaches



ComParE 2019 Approaches



INTERSPEECH 2019, ComParE – Summary of all winners

INTERSPEECH 2019, ComParE – Summary of all winners

Styrian Dialects Sub-Challenge

- **TeamNTHU, UAR=49.6**

Sung-Lin Yeh, Gao-Yi Chao, Bo-Hao Su, et al.

Using Attention Networks and Adversarial Augmentation for Styrian Dialect Continuous Sleepiness and Baby Sound Recognition

INTERSPEECH 2019, ComParE – Summary of all winners

Styrian Dialects Sub-Challenge

- **TeamNTHU, UAR=49.6**

Sung-Lin Yeh, Gao-Yi Chao, Bo-Hao Su, et al.

Using Attention Networks and Adversarial Augmentation for Styrian Dialect Continuous Sleepiness and Baby Sound Recognition

Continuous Sleepiness Sub-Challenge

- **TeamRGAI, SpearmanCC=0.387**

Gábor Gosztolya

Using Fisher Vector and Bag-of-Audio-Words Representations to Identify Styrian Dialects, Sleepiness, Baby & Orca Sounds

INTERSPEECH 2019, ComParE – Summary of all winners

Styrian Dialects Sub-Challenge

- **TeamNTHU, UAR=49.6**
Sung-Lin Yeh, Gao-Yi Chao, Bo-Hao Su, et al.
Using Attention Networks and Adversarial Augmentation for Styrian Dialect Continuous Sleepiness and Baby Sound Recognition

Continuous Sleepiness Sub-Challenge

- **TeamRGAI, SpearmanCC=0.387**
Gábor Gosztolya
Using Fisher Vector and Bag-of-Audio-Words Representations to Identify Styrian Dialects, Sleepiness, Baby & Orca Sounds

Baby Sounds Sub-Challenge

- **TeamNTHU, UAR=62.4**
Sung-Lin Yeh, Gao-Yi Chao, Bo-Hao Su, et al.
Using Attention Networks and Adversarial Augmentation for Styrian Dialect Continuous Sleepiness and Baby Sound Recognition

INTERSPEECH 2019, ComParE – Summary of all winners

Styrian Dialects Sub-Challenge

- **TeamNTHU, UAR=49.6**
Sung-Lin Yeh, Gao-Yi Chao, Bo-Hao Su, et al.
Using Attention Networks and Adversarial Augmentation for Styrian Dialect Continuous Sleepiness and Baby Sound Recognition

Continuous Sleepiness Sub-Challenge

- **TeamRGAI, SpearmanCC=0.387**
Gábor Gosztolya
Using Fisher Vector and Bag-of-Audio-Words Representations to Identify Styrian Dialects, Sleepiness, Baby & Orca Sounds

Baby Sounds Sub-Challenge

- **TeamNTHU, UAR=62.4**
Sung-Lin Yeh, Gao-Yi Chao, Bo-Hao Su, et al.
Using Attention Networks and Adversarial Augmentation for Styrian Dialect Continuous Sleepiness and Baby Sound Recognition

Orca Activity Sub-Challenge

- **TeamDKUAILR, AUC=0.948**
Haiwei Wu, Weiqing Wang, Ming Li
The DKU-LENOVO Systems for the INTERSPEECH 2019 Computational Paralinguistic Challenge

INTERSPEECH 2019, ComParE – Summary of all winners

The winners will receive their awards during the

INTERSPEECH 2019 Closing Ceremony

tomorrow, September 19, 2019

04:00 pm, Main Hall

Thanks to all participants who made this great event possible!