J. C. Vásquez-Correa
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Juan Camilo Vásquez Correa

MSc.

About me

I have performed research and development activities related to signal processing and machine learning for health-care and biometric applications for six years now, both in academic and industrial partners like Telefnica research or the center of speech and language processing of Jhons Hopkins University. I am co-author of more than 50 papers related to signal processing and Machine learning in high impact international conferences and journals. Currently working as a researcher at the Pattern recognition Lab from the Friedrich Alexander University. Passionate about Machine learning, deep learning, speech processing, and natural language processing technologies.

My main professional aim is to develop scientific and technological knowledge to provide efficient solutions to the challenges of the current society. My research interests include Speech Processing, Machine Learning, Deep Learning, Data science, Signal Processing, and Natural language processing.

Experience

May. 2018. - Present
Pattern recognition Lab, University of Erlangen, Staff researcher
Research activities in speech and natural language processing for medical applications.
https://lme.tf.fau.de/person/vasquez/

Aug. 2016. - Present
Department of Electronics and Telecommunications Engineering, University of Antioquia, Colombia. Lecturer
Teaching activities: digital signal processing

Apr. 2016 - Sep. 2016.
Faculty of Engineering, University of Antioquia, Colombia. Software developer
Software development for speech processing for clinical applications.

2016
Johns Hopkins University, Baltimore, USA. Graduate Visiting Scholar
Member of a team in the 2016 Jelinek Memorial Summer Workshop on Speech and Language Technologies.

2015
Telefónica Research, Barcelona, Spain. Intern Researcher
Research in speech processing in noisy conditions for medical applications.

Education

2018 - Present, University of Erlangen
PhD. in Computer Science.
Research Topic: combination of speech and natural language processing for medical applications
Advisor: Prof. Dr. Ing. Elmar Nöth
elmar.noeth@fau.de

2017 - Present, University of Antioquia
PhD. in Electronics and Computer Science.
Research Topic: Speech processing for medical applications
Advisor: Prof. Juan Rafael Orozco Arroyave
rafael.orozco@udea.edu.co

2014 - 2016, University of Antioquia
MSc. Telecommunication Engineering. GPE: 4.81/5.0
Research Topic: Digital Signal Processing.

2007 - 2013, University of Antioquia
BSc. Electronic Engineering. GPE: 4.05/5.0
Area: Telecommunications.

Software

Phonet: Python framework based on bidirectional gated recurrent neural networks for phoneme recognition and to compute phonological posterior probabilities from speech signals.
Python, Keras.
`https://github.com/jcvasquezc/phonet`

Apkinson: Android application for the continuous monitoring of the neurological state of patients with Parkinson's disease.
Android.
`https://github.com/jcvasquezc/SMA2/`

NeuroSpeech: Open source software platform designed to perform speech analysis of people with neuro-degenerative disorders.
Qt, C++, Python.
`https://github.com/jcvasquezc/NeuroSpeech`

Disvoice: Python framework for feature extraction of pathological speech.
Python.
`https://github.com/jcvasquezc/DisVoice`

Languages

English (B2), German (Basic), Spanish (Native)

Areas of Interest and Skills

Machine Learning, Deep learning, Data analysis, Predictive modeling, Data visualization, Statistics, Natural Language processing.

Programming Languages

- Python: 6+ years
- Matlab: 6+years
- Linux-Bash: 4+years
- C/C++: 3+years
- Android. 2+years
- Java

Tools/Frameworks

Pytorch (Python), Keras (Python), Scikit-learn (Python), Kaldi (bash), Flask (Python), Pandas, Numpy, MongoDB, Matplotlib, Qt (C++), Git, LaTeX.

Community

Organization/Groups

- Member of **Marie Curie Alumni Association (MCAA)**
- Member of **International speech and communication association (ISCA)**

Achievements

1. Best paper award Ibeoramerican congress on Pattern Recognition (CIARP), 2019.
2. IEEE signal processing society travel grant to attend ICASSP conference 2017. Januray 2017.
3. ISCA student grant to attend the INTERSPEECH conference 2015. International Speech and Communication Association. June 2015.
4. Young researcher and innovator COLCIENCIAS, Colombian government. February, 2014.

Projects

Research and innovation programme under Marie Sklodowska-Curie actions: European Union's Horizon 2020 (2018-2021)

TAPAS – Training Network on Automatic Processing of PAthological Speech.

CODI: University of Antioquia (2019)

Analysis of architectures based on deep learning methods to evaluate and recognize traits in speech signals.

COLCIENCIAS and Ministry of Communication Technologies: Colombian government (2018)

Study to measure the level of Communication and information technologies (TICs) in the public Health Services institutions of Colombia.

CODI: University of Antioquia (2017)

Asynchronous Non–Intrusive Multi–Modal Analysis of Bio–Signals for the Automatic evaluation of the Neurological State of People With Parkinson's Disease.

COLCIENCIAS: Colombian government (2014-2016)

Analysis of phonation, articulation, and prosody of patients with Parkinsons disease to support diagnosis and monitoring of the patients.

COLCIENCIAS: Colombian government (2014-2015)

Automatic recognition of emotion from speech signals in non-controlled environments.

Publications

For a detailed list of my publications check my *Google-Scholar* profile
`https://scholar.google.es/citations?hl=es&user=bgWhMokAAAAJ`

Highlighted publications

1. T. Arias-Vergara, P. Klumpp, **J. C. Vásquez-Correa** et al. Multi-channel spectrograms for speech processing applications using deep learning methods. *Pattern analysis and applications*, 2020.

2. **J. C. Vásquez-Correa** et al. Parallel Representation Learning for the Classification of Pathological Speech: Studies on Parkinsons Disease and Cleft Lip and Palate *Speech Communication*, Vol. 122, pp. 56-67, 2020.

3. **J. C. Vásquez-Correa**, et al. Phonet: A Tool Based on Gated Recurrent Neural Networks to Extract Phonological Posteriors from Speech. *20th International Conference of the Speech and Communication Association (INTERSPEECH)*, Gratz (Austria), 2019.

4. **J. C. Vásquez-Correa** et al. Multimodal assessment of Parkinson's disease: a deep learning approach *IEEE Journal of Biomedical and Health Informatics*, Vol. 23, pp. 1618-1630, 2019.

5. J. R. Orozco-Arroyave, **J. C. Vásquez-Correa**, et al. NeuroSpeech: an open-source software for Parkinson's speech analysis. *Digital Signal Processing*, Vol. 77, pp. 207-221, 2018

6. **J. C. Vásquez-Correa**, et al. Convolutional Neural Network to Model Articulation Impairments in Patients with Parkison's Disease. *18th International Conference of the Speech and Communication Association (INTERSPEECH)*, Stockholm (Sweden), 2017.

7. **J. C. Vásquez-Correa**, et al. Multi-view Representation Learning via GCCA for Multimodal Analysis of Parkinson's Disease *42nd IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, New Orleans (USA), 2017.