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# Dr.-Ing. Tomás Arias-Vergara

## Ph.D. in Computer Science

### Personal information

**Nationality:** Colombian

**Year of birth:** 1991

**ORCID:** 0000-0001-9405-4154

**Language proficiency:**

**Spanish:** native ○ **English:** C1 ○ **German:** A2

### Education

#### 2022 – Ph.D. in Computer Science (**Summa cum laude**)

- Research topic: Analysis of Pathological Speech Signals
- Bi-national program: Universidad de Antioquia (UdeA), Colombia & Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany

#### 2017 – Master degree in Engineering (**with distinction**)

- Research topic: Parkinson's Disease Progression Assessment From Speech
- Universidad de Antioquia (Colombia)

#### 2014 – Bachelor degree in Electronic Engineering

- Universidad de Antioquia (Colombia)

### Current position

#### 2023 - present – Scientific coordinator

- Pattern Recognition Lab
- Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany)

#### 2024 - present – Visiting scholar

- Gordon Center for Medical Imaging
- Massachusetts General Hospital & Harvard Medical School (Boston, USA)

### Previous positions

#### 2021 - 2023 – Postdoctoral reasearcher

- Topic: Machine learning methods for the analysis of voice disorders using high-speed videoendoscopy data
- Department of Otorhinolaryngology, Head and Neck Surgery
- University Hospital Erlangen (Germany)

#### 2018 - 2021 – Marie Curie Research Fellow

- Topic: Automatic methods for the analysis of speech production of people with cochlear implants
- Department of Otorhinolaryngology, Head and Neck Surgery
- Ludwig-Maximilians Universität München (Germany)

#### 2017 (Feb–Aug) – Software developer

- Faculty of Engineering
- Universidad de Antioquia (Colombia)



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## Teaching

### 2022 - 2023 – Lecturer (Virtual program)

- Undergraduate: *Signal Processing I*
- Graduate: *Laboratory of Pattern Analysis*
- UdeA (Colombia)

### 2017 - 2019 – Lecturer (Onsite/Virtual program)

- Undergraduate: *Laboratory of Digital Signal Processing, Laboratory of Signal Processing III*
- UdeA (Colombia)

## Fellowships, Awards, and Academic Memberships

2023

GI-Dissertation price nominee

Nominated by FAU

2023

Member of the Signal Processing Society

IEEE

2022-present

Member of the Andean-Caribbean Chapter of the MCAA

European Commission

2022

Junior researcher status

Ministry of Science, Technology, and Innovation (Colombia)

2022

Summa cum laude (Doctoral thesis)

FAU & UdeA

2021-present

Member of the Marie Curie Alumni Association (MCAA)

European Commission

2018-2021

Early Stage Researcher under Marie Skłodowska-Curie grant

European Union's Horizon 2020

2017-2021

National PhD scholarship program

COLCIENCIAS (Colombia)

2017

Distinction to Master thesis

UdeA (Colombia)

2015

Young researchers and innovators scholarship

COLCIENCIAS (Colombia)

## Reviewing services

### Journals

Movement disorders ○ Speech Communication ○ Biomedical Signal Processing and Control ○ IEEE Journal of Biomedical and Health Informatics ○ Expert Systems with Applications ○ Sensors ○ ACM Transactions on Asian and Low-Resource Language Information Processing ○ IEEE/ACM Transactions on Audio, Speech, and Language Processing ○ IEEE Access ○ Diagnostics ○ Bulletin of the Polish Academy of Sciences: Technical Sciences ○ Journal of Speech, Language, and Hearing Research (JSLHR) ○ Journal of Voice



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◦ Pattern Recognition Letters ◦ Computer Speech & Language ◦ Digital Signal Processing ◦ European Journal of Investigation in Health, Psychology and Education

## Conferences

International Conference on Acoustics, Speech, & Signal Processing (ICASSP 2023,2024) ◦ IEEE Automatic Speech Recognition and Understanding Workshop (ASRU 2022) ◦ Workshop on Engineering Applications (WEA 2019) ◦ Text, Speech & Dialogue (TSD 2023) ◦ Workshop on Multimodal Healthcare Data (International Conference on Machine Learning - ICML, 2023) ◦ Interspeech (2023) ◦ International Symposium on Biomedical Imaging (ISBI 2024)

## Selected publications

For the complete list, please visit [https://scholar.google.com/citations?hl=en&user=rLGzEMsAAAAJ&view\\_op=list\\_works](https://scholar.google.com/citations?hl=en&user=rLGzEMsAAAAJ&view_op=list_works)

- **T. Arias-Vergara**, M. Döllinger, T. Schraut, K. A. M. Khairuddin, and A. Schützenberger. *Nyquist Plot Parametrization for Quantitative Analysis of Vibration of the Vocal Folds*. Journal of Voice. 2023.
- **T. Arias-Vergara**, A. Batliner, T. Rader, D. Polteraue, C. Högerle, J. Müller, J. R. Orozco-Arroyave, E. Nöth, M. Schuster. *Adult CI users vs typical hearing persons: An automatic analysis of acoustic-prosodic parameters*. Journal of Speech, Language, and Hearing Research, Vol 65, pp 1-14, 2022.
- **T. Arias-Vergara**, T., Schraut, J. R. Orozco-Arroyave, and M. Döllinger. *Parameterization of voice onset for automatic assessment of Parkinson's disease*. The Journal of the Acoustical Society of America, 152(4), A140-A140, 2022.
- **T. Arias-Vergara**, P. Klumpp, J.C. Vásquez-Correa, J. R. Orozco-Arroyave, E. Nöth and M. Schuster. *Multi-channel spectrograms for speech processing applications using deep learning methods*. Pattern Analysis and Applications, Vol 24, pp 423–431, 2021.
- A. M. García, **T. Arias-Vergara**, J. C. Vásquez-Correa, E. Nöth, M. Schuster, A. E. Welch, Y. Bocanegra, A. Baena, and J. R. Orozco-Arroyave. *Cognitive Determinants of Dysarthria in Parkinson's Disease: An Automated Machine Learning Approach*. Movement Disorders; 36(12), 2862-2873, 2021.
- **T. Arias-Vergara**, P. Arguello-Velez, J. C. Vásquez-Correa, E. Nöth, M. Schuster, M. C. González-Rátiva, and J. R. Orozco-Arroyave. *Automatic detection of Voice Onset Time in voiceless plosives using gated recurrent units*. Digital Signal Processing. Vol 104. 2020.
- **T. Arias-Vergara**, J. C. Vásquez-Correa, J. R. Orozco-Arroyave, and E. Nöth. *Speaker models for monitoring Parkinson's disease progression considering different communication channels and acoustic conditions*, Speech Communication. Vol 101, pp 11-25, 2018.
- **T. Arias-Vergara**, J. C. Vásquez-Correa, and J. R. Orozco-Arroyave. *Parkinson's Disease and Aging: Analysis of Their Effect in Phonation and Articulation of Speech*. Cognitive Computation, pp 1-18, 2017.



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## References

### Prof. Dr.-Ing. habil. Elmar Nöth

- Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany)
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- phone number: +49 9131 8527 888

### Prof. Dr.-Ing Michael Döllinger

- Universitätsklinikum Erlangen (Germany)
- e-mail: michael.doellinger@uk-erlangen.de
- phone number: +49 9131 8533 814

### Prof. Dr.-Ing habil. Andreas Maier

- Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany)
- e-mail: andreas.maier@fau.de
- phone number: +49 9131 85 27883

### Prof. Dr. med. Maria Schuster

- Klinikum der Universität München (Germany).
- e-mail: Maria\_Elke.Schuster@med.uni-muenchen.de
- phone number: +49 8944 0073 861

### Prof. Dr.-Ing Juan Rafael Orozco-Arroyave

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Date