Ana Elisa **Méndez**

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Education

New York University   New York, NY

PH.D. IN MUSIC TECHNOLOGY   *Sep 2017 - Dec 2023*

- Advised by Dr. Juan Pablo Bello, GPA 3.72/4.00
- Research interests include the intersection between human-computer interaction and machine learning in music information retrieval and 3D audio.

New York University   New York, NY

M.M. IN MUSIC TECHNOLOGY   *Sep 2013 - May 2015*

- Thesis advised by Prof. Paul Geluso. GPA 3.48/4.00
- Tutored the Digital Signal Theory and Lab class for Dr. Agnieszka Roginska.

Universidad Metropolitana   Caracas, Venezuela

B.ENG. IN SYSTEMS ENGINEERING   *Sep 2009 - Dec 2012*

- GPA 16.00/20.00

Research Interests

Active learning, human-computer interaction, machine learning, audio, music, machine listening, music information retrieval, digital signal processing, crowdsourcing, 3D audio.

Relevant Coursework

- Independent Research — Human Computer Interaction and Active Learning - Advised by Dr. Oded Nov.
- Independent Study — Crowdsourced Annotation of Urban Sounds - Advised by Dr. Juan P. Bello.
- Independent Study — Crowdsourcing Audio Annotations - Advised by Dr. Juan P. Bello.
- Music Information Retrieval.
- Digital Signal Processing Lab.
- Machine learning.

Programming and Software Skills

- Python (+statsmodels package), Matlab, SQL, Stata.
- Protools, Logic Pro X.

Publications

Eliciting Confidence for Improving Crowdsourced Audio Annotations

A.E. MENDEZ MENDEZ, M. CARTWRIGHT, J.P. BELLO, O. NOV, IN *Companion Publication of the 2022 Conference on Computer Supported Cooperative Work and Social Computing (CSCW)*   *Apr 2022*

SONYC-UST-V2: An Urban Sound Tagging Dataset with Spatiotemporal Context

M. CARTWRIGHT, J. CRAMER, A.E. MENDEZ MENDEZ, Y. WANG, H.H. WU, V. LOSTANLEN, M. FUENTES, G. DOVE, C. MYDLARZ, J. SALAMON, O. NOV, J.P. BELLO, IN *Detection and Classification of Acoustic Scenes and Events Workshop*   *Nov 2020*

Multi-label Sound Event Retrieval Using a Deep Learning-based Siamese Structure with a Pairwise Presence Matrix

J. FAN, E. NICHOLS, D. TOMPKINS, A.E. MENDEZ MENDEZ, B. ELIZALDE, P. PASQUIER, IN *2020 IEEE International Conference on Acoustics, Speech and Signal Processing*   *May 2020*

SONYC Urban Sound Tagging (SONYC-UST): A Multilabel Dataset from an Urban Acoustic Sensor Network

M. CARTWRIGHT, A.E. MENDEZ MENDEZ, J. CRAMER, V. LOSTANLEN, G. DOVE, H.H. WU, J. SALAMON, O. NOV, J.P. BELLO, IN *Detection and Classification of Acoustic Scenes and Events Workshop*   *Oct 2019*

Machine-Crowd-Expert Model for Increasing User Engagement and Annotation Quality

A.E. MENDEZ MENDEZ, M. CARTWRIGHT, J.P. BELLO, IN *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*   *May 2019*

Active Learning for Efficient Audio Annotation and Classification with a Large Amount of Unlabeled Data

Y. Wang, A.E. Mendez Mendez, M. Cartwright, J.P. Bello, in *2019 IEEE International Conference on Acoustics, Speech and Signal Processing*

May 2019

Crowdsourcing Multi-label Audio Annotation Tasks with Citizen Scientists

M. Cartwright, G. Dove, A.E. Mendez Mendez, J.P. Bello, O. Nov, in *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*

May 2019

CityTones: A Repository of Crowdsourced Annotated Soundfield Soundscapes

A. Roginska, H. Lee, A.E. Mendez Mendez, S. Murakami, A. Genovese, Andrea, in *Audio Engineering Society Convention 146*

Mar 2019

Patents

Deep Reinforcement Active Learning for Audio Event Detection and Classification

A.E. Mendez Mendez, S. Ghaffarzadegan, in *preparation for submission*

Oct 2023

Work Experience

Bosch
Sunnyvale, CA

Deep Learning Research Intern - Audio AI
May 2023 - Aug 2023

- Investigate deep active learning sampling strategies with the goal of understanding the trade-offs between uncertainty and diversity for sample selection.
- Research reinforcement learning and state-of-the-art deep reinforcement learning methods to understand its potential for audio classification problems.
- Implement active reinforcement learning with the goal of sampling queries efficiently leading to higher quality models with less human power, and compare it with the classical active learning approaches.

Microsoft Corporation
Redmond, WA

Research Intern
Jun 2021 - Aug 2021

- Conducted a user research study for designing an expert data annotation tool and redesigning a current tool for non-expert annotation.
- Conducted interviews with NLP and machine listening experts to understand their needs when designing and developing an annotation tool, and with non-expert current tool users to understand how their use of the tool could benefit from re-design.
- Used thematic analysis to understand the results from the interviews and provided re-design recommendations to the team, used to design a prototype for further testing.

Microsoft Corporation
Redmond, WA

Research Intern
Jun 2020 - Aug 2020

- Performed research about internationalization and localization to get familiarized with the industry and to better understand the applications of machine learning and visualization tools for finding issues in code and source files.
- Researched human interaction and visualization techniques and their applications for text classification and annotation.
- Researched different word-, context-, and character-based embeddings with the goal of understanding which can be better used for different text classification tasks.

Microsoft Corporation
Redmond, WA

Research Intern
Jun 2019 - Aug 2019

- Researched clustering techniques and their applications and prepared a detailed summary of the findings.
- Implemented different clustering algorithms to both multi-class and multi-label data with the goal of generating a better clustering technique for multi-labeled audio data.
- Developed a web application for data annotation, using the best performing clustering algorithm to color examples in feature space, with the goal of creating a useful tool for experts to redefine the already existing label space.

Entrepidus, LLC
Miami, FL

Trainee
Jan 2016 - Jun 2016

- Researched the best digital signal processing techniques and how their implementation would help improve different audio files.
- Researched different audio libraries for C# in order to determine the best option available to fulfill the project goals.
- Developed an audio feature for the business application, in order to enhance sound by using DSP techniques.

E Source Capital Inc.
Caracas, Venezuela

Intern
Apr 2012 - Dec 2012

- Created and managed internal data into a database to help improve communication between different offices located in the United States, Central America and South America.
- Researched Google Apps for Business to understand its potential applications and benefits.
- Developed a Human Resources and Administrative business application using Google Apps Scripts that helped manage employee's information, create benefit requests and have access to the company's information, in order expand the product base of the Google Apps for Business package available to E Source Capital Inc. clients.

Research Experience

New York University, MARL   New York, NY

RESEARCH ASSISTANT - SOUND CAPTIONING FOR ACCESSIBILITY   *Sep 2023 - present*

- Worked for a collaborative project called Sound Captioning for Accessibility, a project for investigating the accessibility of non-speech sound captions, to enhance the experience for individuals who are deaf, Deaf, and hard of hearing (DHH).
- Developed a survey for understanding the non-speech captioning needs of the DHH community.
- Analyze participant responses and provide meaningful insights to guide the design and implementation of a sound captioning tool aimed at assisting the DHH community.
- PI: Magdalena Fuentes

RESEARCH ASSISTANT - S3D   *Sep 2020 - Dec 2023*

- Worked for a collaborative project called S3D: Spatial Sound Scene Description, a project for describing real-world spatial sound scenes with potential impact for hearing impaired individuals, city agencies, and ecologists.
- Developed experiments for understanding on how humans perceive their environments, i.e., how many sources can they identify and localize correctly.
- Proposed a citizen science annotation campaign for collecting data for training machine listening models.
- PI: Juan P. Bello and Agnieszka Roginska

RESEARCH ASSISTANT - SONYC   *Sep 2017 - Dec 2023*

- Worked for a collaborative, multidisciplinary project called Sounds of New York City (SONYC), a cyber physical system consisting of an acoustic sensor network for understanding and dealing with noise pollution in NYC.
- Developed a citizen science project for collecting sound data annotations from the sensor network recordings from SONYC.
- Proposed an active learning framework that can help collect annotations of rare classes from the network recordings more efficiently.
- PI: Juan P. Bello.

Teaching Experience

New York University   New York, NY

LEAD INSTRUCTOR, FUNDAMENTALS OF DIGITAL SIGNAL THEORY LAB   *Sept 2023 - Present*

- Programming language: Python.

LEAD INSTRUCTOR, ADVANCED TOPICS IN MUSIC TECHNOLOGY: C++ AUDIO APPLICATION DEVELOPMENT LAB   *Sept 2023 - Dec 2023*

- Programming language: C++

TEACHING ASSISTANT, MUSIC INFORMATION RETRIEVAL   *Sept 2019 - Dec 2019*

- Programming language: Python

TUTOR, FUNDAMENTALS OF DIGITAL SIGNAL THEORY   *Jan 2014 - May 2015*

- Prorgramming language: Matlab

New York University, ieSoSC Summer Program   New York, NY

SUMMER TUTOR   *Jun 2018 - Aug 2018*

- Built a curriculum for the Summer program for Innovation, Entrepreneurship and the Science of Smart Cities for teaching middle school students about applying technology to urban environments.
- Taught students how to build prototype circuits and code to create mini projects that help make cities more efficient.
- Taught students about SONYC to help them understand the problem of noise pollution by developing projects that underlined how their lives are affected every day by noise.