Martin A. Miguel

PhD Student · Comp. Sci. Department

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Education

University of Buenos Aires (UBA) *Buenos Aires, Argentina*

PhD in Computer Science *April 2016 - May 2022 (Expected)*

- Advisor: Diego Fernandez Slezak - Applied Artificial Intelligence Lab (LIAA), Computer Science Department, University of Buenos Aires, Buenos Aires, Argentina; Computer Science Institute, National Scientific and Technical Research Council (CONICET)-UBA, Argentina
- Co-advisor: Mariano Sigman - Neuroscience Laboratory, Torcuato Di Tella University, Buenos Aires, Argentina; Faculty of Language and Education, Nebrija University, Madrid, Spain

Contemporary Music School *Buenos Aires, Argentina*

Professonal Musician *April 2015 - June 2017 (Paused)*

University of Buenos Aires *Buenos Aires, Argentina*

BS + MS in Computer Science *April 2008 - December 2015*

Main Publications

Published

Miguel, M.A. and Fernandez Slezak, D. (2021). Modeling beat uncertainty as a 2D distribution of period and phase: a MIR task proposal. Proc. of the 22nd Int. Society for Music Information Retrieval Conf., Online. Paper describing a methodology to model beat uncertainty considering period and phase from free tapping data and an evaluation criterion for MIR models.

Pironio, N., Fernandez Slezak, D. and **Miguel, M.A.** (2021) Pulse clarity metrics developed from a deep learning beat tracking model. Proc. of the 22nd Int. Society for Music Information Retrieval Conf., Online, 2021. Paper describing metrics of pulse clarity obtained from modifications to a neural-network based beat tracking model.

Miguel, M.A., Riera, P., and Fernandez Slezak, D. (2021) A simple and cheap setup for timing tapping responses synchronized to auditory stimuli. Behav Res. https://doi.org/10.3758/s13428-021-01653-y Paper describing an experimental setup for capturing timing of tapping responses synchronized against auditory stimuli. The setup requires minimal programming skills and uses unexpensive equipment.

Miguel, M.A., Sigman, M. and Fernandez Slezak, D. (2020) From beat tracking to beat expectation: Cognitive-based beat tracking for capturing pulse clarity through time. PLoS ONE 15(11): e0242207. https://doi.org/10.1371/journal.pone.0242207 Paper presenting a model of beat tracking adapted to produce a metric of pulse-clarity over time.

In Prep

Grammar-based modeling of rhythmic perception Paper describing a model of beat and meter expectation using grammar-based bayesian inference. To be presented in *Music Cognition Journal*.

Teaching Experience

Teaching Fellow, Algorithms and Data Structures II, *University of Buenos Aires* April 2016 - present

Teaching Assistant, Algorithms and Data Structures II, *University of Buenos Aires* March 2011 - July 2012

Industry Experience

Technical Consultant, *MateMarote Project (Online Educational Games)* June 2017 - present
Data Scientist, *Avenida.com* January 2016 - March 2016
Software Engineer, *MateMarote Project (Online Educational Games)* April 2015 - December 2015
Software Engineer Intern, *Google.com* January 2014 - April 2014
Java Programmer, *Despegar.com* August 2012 - December 2013
Jr. Java Programmer (J2ME / Blackberry), *SenseByte* January 2009 - January 2010

Mentoring

Lucas Somacal, Mentor of undergraduate research internship: Exploration of music style transfer techniques based on VAE's latent spaces from symbolic music data 2021

Nicolás Pironio, Mentor of undergraduate research internship: Analysis of the behaviour of a deep-learning beat tracking model to estimate pulse clarity 2020

Conferences, Schools

Posters

Miguel, M.A, Fernandez Slezak, D. International Conference of Students of Systematic Musicology 21, Online and Aahrus, Denmark, 2021 (DOI 10.17605/OSF.IO/5WRS3) Poster presenting a methodology from gathering a beat distribution from free tapping data.

Miguel, M.A, Sigman, M., Fernandez Slezak, D. Neuromusic VII, Online and Aahrus, Denmark, 2021. Poster describing an updated evaluation of our beat expectation model's measure of pulse clarity considering new data and constrating models.

Pironio, N., Fernandez Slezak, D., **Miguel M.A.**. Rhythm Perception and Production Workshop 2021, Online and Oslo, Norway, 2021 (DOI 10.17605/OSF.IO/SDQ5P) Poster preseting the evaluation of pulse clarity models on multiple datasets.

Pironio, N., Fernandez Slezak, D., **Miguel M.A.**. 16th International Conference on Music Perception and Cognition, Online 2021 Poster presenting metrics of pulse clarity obtained from modifications to a neural-network based beat tracking model.

Miguel, M.A, Sigman, M., Fernandez Slezak, D. Biannual meeting of the Society of Music Perception and Cognition 2019, New York, USA (DOI 10.17605/OSF.IO/7SQAW). Poster describing a novel experimental setup that extends on previous methods allowing exploration of subjective tacti on top of pulse clarity.

Miguel, M.A, Sigman, M., Fernandez Slezak, D. Biannual meeting of the Society of Music Perception and Cognition 2019, New York, USA (DOI 10.17605/OSF.IO/FGVB2). Poster describing how our beat expectation model's measure of pulse clarity relates with pulse clarity extracted from empirical data.

Schools

Assistance to KHIPU 2019. University of the Republic, Montevideo, Uruguay

Assistance to Machine Learning Summer School (MLSS 2018). Torcuato Di Tella University, Buenos Aires, Argentina

Assistance and volunteering at International Joint Conference in Artificial Intelligence 2015. Buenos Aires, Argentina

Other publications

Belloli, L. **Miguel, M.A.**, Goldin, A.P. (2016) Mate Marote: a BigData platform for massive scale educational interventions. 45-JAIIO, 2016, Buenos Aires, Argentina (ISSN: 2451-7569, p107-114). Paper describing a web platform that hosts and collects data from educational games.