

## BENJAMIN O'BRIEN, Ph.D

Digital Signal Processing - Data scientist

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### SKILLS

Programming : Matlab, Python, R, Unix, C/C++

Digital signal processing : acoustic, kinematic, ECG, fNIRS

Audio processing : Max/MSP, Speech Brain, SuperCollider, Praat, DAWs

Motion Capture Systems : CodaMotion, Qualysis, Rotor

Languages : English (native), French (fluent)

### PROFESSIONAL EXPERIENCE

**Research Engineer**, Laboratoire Informatique d'Avignon, Avignon Université

Apr. 2022 - Present

- **Explicit Voice Attributes** (ANR-18-CE23-0018) in collaboration with Orange Telecom, IRCAM  
Develop methods to explain vectors generated by speech recognition models (ANN): identify and correlate vector dimensions with acoustic features associated with the voice and set them as parameters for synthesis (Python: Pytorch, SpeechBrain; R).
- **SkyPhysIA** (Readynov2021 : CP/2021-OCT/10.04) in collaboration with Semaxone (biosignal startup)  
Develop methods to analyze and apply machine learning procedures to acoustic and biometric signals (ECG, fNIRS) for the purposes of modeling cognitive and behavioral changes (stress, hypoxia) in pilots (Matlab; Python; R).

**Research Engineer**, Aix-Marseille Université, CNRS, LPL

Jan. 2020 - Mar. 2022

- **VoicePersonae** (ANR-18-CE23-0018) in collaboration with EuroCom, National Institute of Informatics (JP)  
Perceptual evaluation of anonymized speech for the purposes of developing cyber-security tools and evaluation methods (Matlab; Pratt, Python; R).
- **VoxCrim** (ANR-17-CE39-0016) in collaboration with Service National de Police Scientifique  
Evaluate the effects of continuous modifications of speech characteristics and task design on automatic (deep learning models) and perceptual performance for the purposes of forensics speech (Matlab; Praat; Python, R).

**Research Engineer**, société Protisvalor Méditerranée

Apr. - Nov. 2019

#### PEPS projet

Develop augmented-reality protocols to provide real-time auditory feedback based on the pedal stroke and study the effects on expert cyclist performance (Delysys; Matlab; Max/MSP; Qualysis).

**Research Engineer**, Aix-Marseille Université, CNRS, ISM

Oct. 2017 - Dec. 2018

**SoniMove** (ANR-14-CE24-0018) in collaboration with Stellantis (PSA)

Develop augmented-reality protocols to provide real-time auditory feedback based on golf putting and swing strokes, and study the effects of sound on novice and expert golfer performance (CodaMotion; Matlab, Max/MSP; Qualysis).

**Doctoral Fellow**, University of Florida

Aug. 2010 - June 2015

Develop scripts for automatic analysis and sound synthesis for creative use (C/C++; SuperCollider; Max/MSP).

### EDUCATION

**Masters in Acoustics**

Sept. 2016 - 2017

Aix-Marseille Université, Marseille, France

**Ph.D in Music Composition**

Aug. 2010 - Aug. 2015

University of Florida, Gainesville, Florida, USA

**Bachelors in Mathematics**

Sept. 2002 - May 2006

University of Virginia, Charlottesville, Virginia, USA