Diego DI CARLO

Ph.D. Thesis

26 Av. du 41ème Régt d'Infanterie
35000 Rennes, France
+33 769576152
diego.di-carlo@inria.fr
born in 1989, Italy

Scientific background and research interest

Machine Learning

- *Regression and classification*
- *Deep learning: physic-based and virtually supervied approach*
- *Optimization and Bayesian modeling*
- *Latent variable models and Non-negative matrix factorization*

Echo-aware Auditory Scene Analysis

- *Acoustic Echo Retrieval*
- *Room impulse response and Simulators*
- *Room geometry reconstruction*
- *Echo-awere speech enhancement*

Audio inverse problem

Audio signal processing

- *Sound source localization and microphone calibration*
- *Sound source enhancement and de-reverberation*
- *Convolutive and probabilistic mixing models*

Collaborations and achievements

Personal projects

- *Winner of the Abbey Roads®Hackthon 2019*

PhD-related projects

- *Sound Source Localization with Honda®*
- *Sound Source Separation with Dolby®*
- *Developer for the IEEE®'s SPCup19 Challenge*

Education and Training

October 2017 – current — **Ph.D**, *Hunting Echoes for Auditory Scene Analysis*, INRIA, Rennes, France.
Acoustic echo retrieval and its application for audio inverse problem with learning-based methods.
Supervisors: Antoine Deleforge and Nancy Bertin.

2016 — **Master in Sound and Music Computing**, *Erasmus exchange program*, Aalborg University (Copenhagen), Denmark.
Music information retrieval, spatial audio (WFS), physical modeling, VR/AR and NIME.

2014–2017 — **Master degree in Computer Engineering**, University of Padova, Italy, grade 108/110.
Digital signal processing, information and probability theory, computer science and architecture.
Thesis title: *Guassian Framework for Interference Reduction in Live Recordings.*

2008–2014 — **Bachelor degree in Information Engineering**, *University of Padova*, grade 99/110.
Signal processing, computer science, calculus, electronics and telecommunication.
Thesis title: *Sequential Feature Selection: Algorithms And Applications For Audio Information Retrieval*

2008–2010 — **Classical Double Bass with German bow**, *Conservatory of Vicenza "Arrigo Pedrollo"*.

Work experience

2016–2017 **Research internship**, *Multispeech team - Inria*, Nancy, France.
Gaussian process applied to interference reduction in live recording and its Python implementation.
Supervisor: Antoine Liutkus.

2014–2016 **R&D Engineer**, *Zamperla s.r.l*, Vicenza, Italy.
Virtual reality on amusements rides and PC-to-PLC communication. - `www.zamperla.com`.

Publications

2020 *Blaster: an off-grid Method for Blind and Regularized Acoustic Echoes Retrieval*, D. Di Carlo, A. Deleforge and N. Bertin. ICASSP 2020.

2019 *Audio-Based Search and Rescue With a Drone: Highlights From the IEEE Signal Processing Cup 2019 Student Competition*, A. Deleforge, D. Di Carlo, M. Strauss, R. Serizel and L. Marcenaro. IEEE Signal Processing Magazine, 2019.

2019 *Mirage: 2D Source Localization using Microphone Pair Augmentation with Echoes* , D. Di Carlo, A. Deleforge and N. Bertin. ICASSP 2019.

2018 *Evaluation of an open-source implementation of the SRP-PHAT algorithm within the 2018 LOCATA challenge.*, R. Lebarbenchon, E. Camberlein, D. Di Carlo, C. Gaultier, A. Deleforge and N. Bertin. IWAENC 2018.

2018 *Interference reduction on full-length live recordings*, D. Di Carlo, A. Liutkus and K. Déguernel. ICASSP 2018.

2018 *Separake: Source Separation with a Little Help From Echoes*, R. Scheibler, D. Di Carlo, A. Deleforge and I. Dokmanic. ICASSP 2018.

2017 *Gaussian framework for interference reduction in live recordings*, D. Di Carlo, K. Déguernel and A. Liutkus. AES - conference on Semantic Audio 2017.

2014 *Automatic music "listening" for automatic music performance: a grandpiano dynamics classifier*, D. Di Carlo and A. Rodà. SAMP 2014.

Languages

Italian **Fluent**, *Native*.

English **Fluent**, *TOEFL iBT: 82*.

French **Conversational**.

Computer skills and competences

Languages Python, MatLab, Java, Android, PureData, Processing, C++, Arduino.

Scientific writing LaTeX, BibTeX, Overleaf.

IDE, Editor and Tools Jupyter Notebooks, Numpy, Pytorch, Matlab, Weka. VSCode Sublime, Atom, Vim, Unity. Git and Continuos Integration (Github, GitLab).

OS and programs Linux, OAR cluster, Windows, Office suite, Prezi, Gimp.

DAW and Music Tools Ableton, Sonic Visualizer, Reaper, Audacity, Renoise.

Personal insterest

Music
- *Compose and performing electronic music with controller and audio device.*
- *Play bass and doublebass from age of 15.*
- *Several music projects of jazz, pop, hip hop, rock, death-black metal, grind-core, post, prog, dubstep, EDM and IDM.*

Computer
- *Linux configuration and customization.*
- *Playing MMORPG.*
- *Contributing to open-source code.*

Hobby
- *DIY footpedal effect.*
- *Technical, narrative and horrible books.*
- *Mountain, snowboarding and sunsets.*