

Diego Di Carlo

Postdoctoral researcher in machine learning for audio processing

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👤 Chutlhu

Current research interests



- Machine Learning
 - Deep learning, physics-informed machine learning
 - Non-linear regression, interpolation/up-sampling/super-resolution.
 - Generative and statistical machine learning (deep Bayesian models).
- Acoustics and Audio signal processing
 - Sound source localization, separation, speech enhancement, and ASR.
 - Room acoustics and sound field reconstruction.
 - Augmented Listening and Mixed Reality (Hololens2 and smart-glasses).
- And more ...
 - Music Information Retrieval and Digital Audio Effects.
 - Point Cloud processing and 3D (Neural) Rendering.
 - Reproducible research (experiment orchestration and pipelines).

Work experience



- Sep 2022 - present **Post-doc in Audio Signal Processing**, RIKEN AIP, Kyoto, Japan ✈
Physics-informed neural network, speech enhancement, audio-visual mixed reality.
Supervised by K. Yoshii.
- Jul 2023 - Aug 2023 **Visiting researcher**, ADASP group (S2A, LTCl) at Télécom Paris, Paris, France ✈
Statistical signal processing, spatial measures, heavy-tail distribution.
Mobility grant: KAKENHI project (JSPS).
collaboration with Mathieu Fontaine.
- May 2021 - Jul 2022 **Post-doc in Physics-informed Deep Learning**, Univ. of Rennes 2, UMR 6554, France
Physics-informed NNs, soft and hard constraints, super-resolution, turbulent flows, PDEs.
Project: *CominLabs DynaLearn (2020–2024)*
Supervised by T. Corpetti and N. Courty.
- Nov 2019 - Jan 2020 **Visiting PhD student**, Faculty of Engineering Bar-Ilan University, Tel Aviv, Israel ✈
Development of echo-aware signal processing methods and recording real data
Mobility grant: Rennes Metropole.
Supervised by S. Gannot.
- Nov 2016 - Feb 2017 **Research internship**, *Multispeech team at Inria*, Nancy, France
Gaussian process applied to interference reduction in live recording.
Supervisor: A. Liutkus. – Erasmus Traineeship Exchange Program
- 2014 - 2016 **R&D external consultant**, *Zamperla s.r.l.*, Vicenza, Italy
Virtual reality on amusements rides and PC-to-PLC communication. www.zamperla.com.

Education



- Oct 2017 - Dec 2020 **Ph.D in Audio Signal Processing**, University of Rennes 1, Rennes, France ✈
Thesis title: *Echo-aware signal processing for audio scene analysis* ☑
Supervised by A. Deleforge and N. Bertin.
- Feb 2016 - Jul 2017 **Master in Sound and Music Computing**, Aalborg Univ., Copenhagen, Denmark ✈
Erasmus for Study Exchange Program.
- Oct 2014 - Jul 2017 **Master's degree in Computer Engineering**, University of Padova, Italy, grade 108/110
Thesis title: *Gaussian Framework for Interference Reduction in Live Recordings.*
Supervised by A. Liutkus and N. Orio
- Oct 2008 - Jun 2014 **Bachelor's degree in Information Engineering**, *University of Padova*, grade 99/110
Thesis title: *Sequential Feature Selection: Algorithms And Applications for Audio Information Retrieval.*
Supervised by A. Rodá

The icon ✈ denotes geographical mobility (with respect to current or previous affiliation).

Teaching Experience



- Oct 2020 - Nov 2020 **Module VAI "Vocal and Acoustic Interactions (10h)**, M2 level, Univ. Rennes 1, France
Audio Signal Processing, Auditory Scene Analysis (Spatialization, Localization, Separation)
6 hours lecture, 4 hours laboratory, and evaluation exam.
- Oct 2019 - Nov 2019 **Module VAI "Vocal and Acoustic Interactions (8h)**, M2 Level, Univ. Rennes 1, France
Audio Signal Processing, Auditory Scene Analysis (Spatialization, Localization, Separation)
4 hours lecture and 4 hours laboratory

Grants and awards



- Apr 2023 - Mar 2026 **Grants-in-Aid for Scientific Research (KAKENHI) –Early-Career Scientists**
Grant No. 23K16912 [↗](#) from JSPS, the Japan Society for the Promotion of Science
Grant: 4.550.000 Yen gross (about 28.000 Euro)
- Oct 2017 - Dec 2020 **Rennes Metropoles: Mobilité internationale sortante**
from the Collège doctorale de Bretagne [↗](#)
Grant: 2.400 Euro
- Nov 2018 **Main prize from Microsoft for the “best use of AI”**
Our project RAPPLE [↗](#) won the Abbey Road Red Hackathon [↗](#)
Award: 5 Xbox
- Oct 2017 - Dec 2020 **CORDIS Grant**
from INRIA, the French National Institute for Research in Computer Science and Automation
Grant: covering 3 years of salary in France
- Oct 2015 - Jul 2016 **Winner of the Oticon Audio Explorer 2017 edition**
from Oticon, Denmark.
Award: trip to New York for 3 days.

Computer skills



- Languages Main: Python. Basic knowledge: Bash, C/C++, Java, MatLab, HTML.
- Frameworks JAX, Pytorch, Asteroid (Speech Enhancement), Pyroomacoustics (Acoustic simulation).
- Scientific writing L^AT_EX, Beamer, TikZ, BibTeX.
- Tools and IDE Jupyter Notebooks, Tensorboard; Git and Github; VSCode.
- OS and programs Linux, Windows, MacOS. Distributed computing and pipelines (Slurm, Netxflow).
- DAW and Music Ableton, Reaper, Audacity, PureData.

Languages



- Fluent Italian (native), English (TOEFL iBT: 82).
- Beginner French, Japanese.

Personal interest



- Music *Play (fretted and fretless) bass and double bass.*
 Compose and perform electronic music with laptop and controllers.
 Death-black metal, jazz, hip hop, grind-core, post, drone, prog, dubstep, EDM [↗](#) .
- Computer *Linux configuration and customization, I3.*
 Playing MMORPG, Warcraft III, Factorio.
 DIY mechanical split keyboard, QMK
- Equally important *Food, cooking, and sashimi*
 Technical, nonsensical, and cosmic horror narrative
 Lagetto di Fié, Dolomites, Frobenious beach, Daikoku-湯 sento.