Carles Tardío Pi

Résumé

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Education

- **PhD Music Technology; Universidad Nacional Autónoma de México, UNAM** México City, MX
  CONACYT National Grant. *2016 – 2020*
  thesis: *"Emergent Temporal Morphologies within Sonic Domains"*(Dir.: Pablo Padilla-IIMAS-UNAM).
- **Msc Cognitive Systems and Interactive Media; Universitat Pompeu Fabra, UPF** Barcelona, SP
  La Pedrera - Caixa Catalunya Exc. Grant. *2013 – 2014*
  thesis: *"Dynamic Control System for Sonic Interaction Based on Human Physiology"*(Dir.: Sergi Jordà).
- **Universidad Nacional Autónoma de México, UNAM** México City, MX
  Physics Research PostGraduate Practices; Banco Santander Grant. *2010 – 2011*
- **Università degli Studi di Pisa, UNIPI** Pisa, IT
  Physics Exchange Programme; ERASMUS-SOCRATES EU Grant. *2008 – 2009*
- **Bsc Physics; Universitat Autònoma de Barcelona, UAB** Bellaterra, SP
  Theoretical Physics Branch. *2004 – 2010*
  thesis: *"Finite Time Thermodynamics* & *Curzon-Ahlborn Cycles "*(Dir.: Antonio Olivares, ICM-CSIC.).

Academic Experience

- **Evolutionary Systems Biology Lab, Center for Genomic Sciences, CCG-UNAM** Cuernavaca, MX
  Posdoctoral Researcher, DGAPA-UNAM Fellowship *May 2024 -*
  - **CTIC Project**: Consejo Técnico de la Investigación Científica UNAM
- **Applied Mathematics and Systems Research Institute, IIMAS-UNAM** Mérida, MX
  Posdoctoral Researcher, CONACYT Fellowship *Aug 2022 - Aug 2023*
  - **CONACYT Project, Clave-217367**: "Unconventional mathematical and computational models in biology."
- **Peña-Miller Lab, Center for Genomic Sciences, CCG-UNAM** Cuernavaca, MX
  Posdoctoral Research Stay CONACYT Fellowship, Synthetic and Systems Biology Laboratory *Feb 2021 - Apr 2022*
  - **CONACYT Project CB A1-S-32164.**: "Plasmids, genetic variability and microbial evolution within spatially explicit environments."
  - "**Sistemas Dinámicos**" **Course** : Teaching at Genomic Sciences Bachelor's Degree, LCG-UNAM.
  - "**Introduction to Mathematical Biology**" **Course**: Teaching at Biomedical Sciences Doctorate Degree, UNAM.
- **Department of Ecology, P. Catholic University of Chile** Santiago, CL
  Research Stay - CONACYT Int. Movility Grant *Nov 2019 - Feb 2020*
  - **Keymer Lab - to study the physics and evolution of biological complexity**: Research project on virtual ecologies and biotic games.
- **Center for Genomic Sciences, CCG-UNAM** Cuernavaca, MX
  Research Stay *Aug 2018 - Sept 2019*
  - **Peña-Miller Lab - Systems and Synthetic Biology Department**: Study of the role of sound in bacterial linguistic communications during morphogenetic self-organization.
  - **Acoustics and Vibrations Dep., Instituto de Ciencias Aplicadas y Tecnología, ICAT-UNAM**: Experimental detection of acoustic emisions in *Paenibacillus Sp.* bacterial colonies during morphotype transitions using ultra low-noise microphones and accelerometers in an anechoic chamber.
- **Fitzilliam College, Cambridge University** Cambridge, UK
  Research Stay - PAPIT-UNAM Grant *Aug 2017 - Sept 2017*

- "**Formal Methods in Musicology**" **Programme**: Development of mathematical models for biocomputational sound technologies. Research Stay under Dr. Knight and Dr. Padilla supervision.

- **Centro de Ciencias de la Complejidad, C3-UNAM** Cdmx, MX
  Research Associate *Nov 2016 - Present*
  - "**Science, Art** & **Complexity**" **Programme**: Research Associate within "Speculatiave Communications" Project. Construction of DIY low cost biotracking microscopes using RaspberryPi and OpenCV software.
  - "**Art, Science** & **Technology in a Complexity Framework**" **Seminar**: Co-organizer. Work of study of emergence and self-organization concepts within the sonic domain.

- **GIGA-AffectiveLab, University of Zaragoza, Etopia - Art and Tech. Center** Zaragoza, SP
  Research Associate *Gen 2016 - Aug 2016*
  - "**Immertable**" **Project**: Research, design and development of a tangible interactive interface for music expression.

- **SPECS Lab, Inst. for BioEngineering, U. Pompeu Fabra, Dr. Paul Verschure** Barcelona, SP
  Research Assistant *Aug 2014 - Aug 2015*
  - "**Complexity Measures of Consciousness**" **Project**: Research on Integrated Information Theory and human brain connectivity networks with Dr. Xerxes Arsiwalla.
  - "**Brain X3**" **Project**: Research and sonification design on a large-scale simulation of the Hagmann Connectome network with real-time interaction in an immersive a/v environment. CDAC (FP7, ERC grant, 341196)
  - "**Belsen**" **Project**: Sonification design of an augmented reality app on digital heritage about Bergen-Belsen concentration camp. CEEDS (FP7, ICT Future and Emerging Technologies, 258749)
  - "**Systems, Design, Integration and Control**" : Adjunct Professor of Dr. Armin Duff at CSIM-Master Degree.

- **Music Technology Group, University Pompeu Fabra, Dr. Sergi Jordà** Barcelona, SP
  Master Student Assistant *Gen 2014 - Jun 2014*
  - "**Brain Reactable**" **Project**: Master Thesis project on "Dynamic Control System for Sonic Interaction Based on Human Physiology".

Articles

- Alonso-del Valle, Aida, Laura Toribio-Celestino, Anna Quirant, Carles Tardio Pi, Javier DelaFuente, Rafael Canton, Eduardo PC Rocha, Carles Ubeda, Rafael Peña-Miller, and Alvaro San Millan. **Antimicrobial resistance level and conjugation permissiveness shape plasmid distribution in clinical enterobacteria.** Proceedings of the National Academy of Sciences 120, no. 51 (2023): e2314135120.

- Pi, Carles Tardío, Daniela Reyes-González, Andrea Fernández-Duque, Ayari Fuentes-Hernández, Fernando Santos-Escobar, and Rafael Peña-Miller. **BAFFLE: A 3D printable device for macroscopic quantification of fluorescent bacteria in space and time.** Journal of Open Hardware 6, no. 1 (2022): 5.

- Pi, Carles Tardío, Jorge Castillo Medina, and Pablo Padilla Longoria. **Synchronization Fronts in a Spatially Extended System of Hybrid Rayleigh-van der Pol Oscillators.** arXiv preprint arXiv:2208.09119 (2022).

- Lozano, A., García, L., López, P., Anguiano, E., Rebolledo, F., Pi, C. T., ... Bobadilla, M. P. **Art perspectives on coevolution and biodiversity, the hybrid microbial-AI organisms of Codex Virtualis Genesis.** Proceedings of Politics of the Machines - Rogue Research (2021).

Other Research Ouputs

- Member of: **National System of Researchers**, SNI-CONACYT (Nivel Candidato, 2023).
- Member of: **Red Mexicana de Biología y Matemáticas** (RedMexBioMate) .
- Member of: **Rebelión Científica México** (Scientist Rebelion Abya Yala Group) .
- Coorganizer of: **Segundo Encuentro de Biología Matemática y Métodos No Arquimedianos**. ArQuibio22, Mérida, Nov. 2022; CIMAT, IIMAS UNAM-Yucatán.
- Member: **Open Hardware Makers**, Science Edition - BAFFLE Project (Dec. 2022).
- Coorganizer of: **Hackatón Astronómico; Instituto de Astronomía-UNAM, Programa ACT-UNAM**, Noche de las Estrellas CU, 2019-2020.
- Collaborator at: **Interspecifics**, art-science-technology collective /S.E.T.I. x AI Residency at FutureLab, Ars Electronica, 2021 / Comunicaciones Especulativas 2018.
- Talks / Posters / Schools.: XXIV Escuela Nacional de Biofísica Molecular, U.Sonora, 2023 / 3er Encuentro de Probabilidad y Biología, Red Mexicana de Biología y Matemáticas, UNAM Morelos, 2023 / X Escuela de Probabilidad y Procesos Estocásticos, IM-UNAM, 2022 / XX Escuela de Otoño de Biología Matemática - XIV Encuentro Nacional de Biología Matemática, CIMAT SMM UNAM, 2018.

Languages

- **Catalan, Spanish**: Mother Language
- **English**: CAE, C1 Advanced, Cambridge
- **Italian**: CILS Due, B2, CLI-Unipi
- **Deutsch**: A1 , Idiomes-UAB

Programming Skills

- **Languages**: Python, Matlab, R, C++, SQL **Hardware**: Arduino/Atmel, Phidgets, Raspberry Pi/ARM
- **OS**: Linux, MacOS **AV Programming Env's**: SC, PD, MAX/MSP, Faust, Processing, OF, Unity3D
- **Packages**: NumPy, SciPy, Pandas, OpenCV, ScraPy, BeautifulSoup, Statsmodels, Matplotlib, Plotly, PyQt.
- **ML**: Weka, TensorFlow, SciKit-Learn, PyTorch, Colab setup.

External Links

https://carlestapi.hotglue.me

https://github.com/carlestapi

https://www.instagram.com/recolectivo$_d e_i rrealidad$

https://soundcloud.com/mu-stela

https://twitter.com/carlestapi

https://www.linkedin.com/in/carlestapi

https://www.naturalista.mx/people/carlestapi