

FELIPE TOBAR

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EDUCATION

PhD in signal processing, Imperial College London	2010-2014
MSc in control systems, Universidad de Chile	2008-2010
Exchange MSc student, University of British Columbia	2008
BSc in electrical engineering, Universidad de Chile	2003-2007

EMPLOYMENT

Principal Affiliations

- *Senior Lecturer in Machine Learning.* Dept. of Mathematics & I-X, Imperial College London from 10/2024
- *Associate Professor.* Initiative for Data & AI, Universidad de Chile 6/2021 - 9/2024
- *Assistant Professor.* Dept. of Mathematical Engineering, Universidad de Chile 10/2018 - 5/2021
- *ANID-CMM¹ Research Fellow.* Universidad de Chile 9/2015 - 9/2018
- *Research Associate.* Machine Learning Group, University of Cambridge 8/2014 - 8/2015

Secondary Affiliations

- *Researcher.* Center for Electrical and Electronic Engineering, Universidad Santa María 3/2020 - now
- *Researcher.* Center for Mathematical Modeling, Universidad de Chile 10/2018 - now

RESEARCH VISITS

Dept. of Statistics, University of Oxford	18/11/2022 - 28/11/2022
Signal and Comms. Group, Institut de Recherche en Informatique de Toulouse	1/1/2022 - 1/3/2022
Dept. of Electrical and Computer Engineering, Stony Brook University	9/7/2017 - 24/7/2017

GRANTS (AS PI ONLY)

- 8) **Google's AI for Social Good (PI, 3/2023 - Mar. 2024, USD30K)**
An ML approach to understand marine mammals in LatAm and the Caribbean: the case of the manatee
- 7) **Google Award for Inclusion Research (PI, Dec. 2022 - Nov. 2023, USD35K)**
Data Science at the service of gender equality in STEM education: A case study at Universidad de Chile's School of Engineering
- 6) **Google Latin American Research Award (PI, Feb. 2022 - Jan. 2023, USD17K)**
EEG Seizure Detectors: Towards Generalization & Interpretability
- 5) **Fondecyt² Regular (PI, April. 2021 - April. 2025, CLP133M [USD182K])**
Advances on generative models for statistical machine learning: Theory and practice
- 4) **Google Latin American Research Award (PI, Dec. 2020 - Nov. 2021, USD17K)**
Detection of neonatal seizures from EEG: A continual & multi-channel approach
- 3) **Fondecyt Initiation into Research (PI, Nov. 2017 - Oct. 2021, CLP83M [USD134K])**
On the relationship between Gaussian process regression and spectral estimation
- 2) **ANID-PAI Research Fellowship (PI, Aug. 2015 - Jul. 2017, CLP86M [USD127K])**
Machine learning meets signal processing: multivariate adaptive estimation
- 1) **ANID Becas-Chile Scholarship (2010-2014)**
Full financial support to undertake doctorate studies in the United Kingdom.

PAPER AWARDS AND RECOGNITIONS

¹Chilean Agency for Research and Development.

²National Fund for Scientific and Technological Development, Chilean Government.

- 2018: Spotlight recognition.** F. Tobar, Bayesian nonparametric spectral estimation, *NeurIPS*.
- 2017: Best paper award.** I. Castro, C. Silva and F. Tobar, Initialising kernel adaptive filters via probabilistic inference. *IEEE Digital Signal Processing Conference*
- 2017: Best paper award.** D. Cabrera, F. Sancho and F. Tobar, Combining reservoir computing and variational inference for efficient one-class learning on dynamical systems. *International Conference on Sensing, Diagnostics, Prognostics, and Control*.
- 2015: Best paper award.** F. Tobar, T. Bui, and R. Turner, Design of covariance functions using inter-domain inducing variables. *NeurIPS Time Series Workshop*.
- 2015: Spotlight recognition.** F. Tobar, T. Bui, and R. Turner, Learning stationary time series using Gaussian processes with nonparametric kernels, *NeurIPS*.

PARTICIPATION IN RESEARCH PROJECTS

Collaborative funded projects

- **2021 - 2023.** Co-PI, *Towards a sustainable artificial intelligence*. INRIA Équipes Associées.
- **2019 - 2020.** Supervisor, *Novel ML methods using optimal transport*. Fondecyt Postdoc (PI: Elsa Cazelles)
- **Since 3/2020.** Researcher, *Advanced Centre for Electrical and Electronic Engineering*. ANID-Basal
- **12/2017 - 12/2018.** Researcher, *AI for everyone: benefiting from and building trust in AI*. Google-APRU
- **Since 9/2015.** Researcher, *Center for Mathematical Modeling*. ANID-Basal

Industrial Cooperation

- **12/2019 - 12/2020.** PI, *Detection of operational risk in mining from video recordings*. PSI-net & Codelco.
- **8/2017 - 9/2017.** PI, *Forecasting costs and profit in small companies*. BancoEstado.
- **6/2016 - 4/2018.** Researcher, *Classification of minerals from hyperspectral images*. Innovaxxió & AMTC.
- **8/2016 - 4/2017.** Researcher, *Demand forecasting on higher-education courses*. Uplanner.
- **1/2017 - 3/2019.** PI, *Detecting whale vocalisations from submarine audio recordings*. Fundación MERI.
- **10/2016 - 6/2017.** Researcher, *Prediction of risk probability in insurance companies*. Mutual de Seguridad.

TEACHING EXPERIENCE

Lecturer, Universidad de Chile (all courses designed by me, except that with *)

1) Master of Data Science

- *Deep Generative Models*. Students: 21(2023).
- *Machine Learning*. Students: 27(2022), 58(2023), 55(2024).
- *Statistics*. Students: 22(2022).
- *Advanced Machine Learning*. Students: 15(2022).

2) Department of Mathematical Engineering

- *Machine Learning*. Students: 83(2021), 86(2020), 78(2019), 57(2018), 34(2017), 32(2016).
- *Statistics*. Students: 48(2020), 43(2019).
- *Advanced Machine Learning*. Students: 20(2020), 7(2018), 8(2016).
- * *Probability and Statistics*. Students: 47(2021).

3) Continuing Education

- *Intro to AI*. Diploma on AI and Law, School of Law, Universidad de Chile. Sept., 2022 (9hrs)
- *Advanced Machine Learning*. Analytics division, BancoEstado. Oct. 2019 - Jan. 2020 (30hrs)
- *Scientific Programming*. Statistics division, ECLAC Chile, United Nations. Aug. 2018 (18hrs)
- *Introduction to Machine Learning*. Statistics division, ECLAC Chile, United Nations. Aug. 2017 (18hrs)

Teaching Assistant

- 1) **University of Cambridge, Dept of Engineering.** Machine Learning (2015)
- 2) **Imperial College London, Elec Eng Dept** Spectral Estimation and Adaptive Signal Processing (2011-2014), Advanced Signal Processing (2011-2014), Mechatronics (2010-2011), Digital Signal Processing (2010-2011), Real-time Digital Signal Processing (2010-2012), Electrical Engineering Second Year Laboratory (2011-2012), and Communications and Signal Processing MSc Lab (2011-2012)

PRODUCTION OF PEDAGOGICAL MATERIAL

- **Machine Learning:** [Lecture notes](#) (138 pages), [demos](#) (18 Jupyter Notebooks), and [slides](#) (19 lectures).
– github.com/GAMES-UChile/Curso-Aprendizaje-de-Maquinas
- **Statistics:** [Lecture notes](#) (118 pages), and [demos](#) (4 Jupyter Notebooks).

- github.com/GAMES-UChile/Curso-Estadistica
- **Videolectures:** Probability 2021 (25 videos), Machine Learning 2021 (26 videos) and 2020 (15 videos)
- youtube.com/@games-uchile2558/playlists

LEADERSHIP AND MANAGEMENT

At Universidad de Chile

- **Mar. 2022 - Aug. 2024: Director, Initiative for Data & Artificial Intelligence (IDIA).** As its first Director, I established IDIA with the mission to foster and disseminate fundamental and applied research in Data Science and AI at Universidad de Chile. To this end, I strengthened the collaboration with other units at the university, organised regular seminars and public events, and participated in AI forums with public entities.
- **Mar. 2020-Mar. 2022: Coordinator, MSc in Data Science (MDS).** Between 2017 and 2020 I was part of the team that designed and proposed the MDS at Universidad de Chile, and I led that team since 2019. In 2020 the programme was approved and I became its first Coordinator, from this position I was responsible of initiating the operations of MDS to receive the first cohort from admission to graduation.
- **2018-2020: Co-Lead, Data Science unit at Center for Mathematical Modeling (CMM-Data).** I joined CMM in 2015 as a Researcher working on theoretical and applied projects, the latter usually with partners from the industrial or public sectors. In 2018 I took the lead (jointly with Prof. Daniel Remenik) of CMM-Data, we were in charge of finding new collaboration opportunities, assemble the teams of data scientists and monitor the correct execution of the projects within the Unit.

OTHER PROFESSIONAL ACTIVITIES

Seminars and schools (principal organiser)

- **2023: *XX IEEE Summer School on Computational Intelligence.*** Hosted at U. de Chile: 5 sponsors, 18 speakers, 160 attendees, 40 poster presentations.
- **2022-2023: *IDIA Research Talks.*** Bi-weekly seminar at the Initiative for Data & AI. (18 talks)
- **2021: *Data Science Seminar at U. de Chile's School of Engineering.*** Series of research talks to builds synergies among academics in the School (9 talks)
- **2021: *AC3E-CMM seminars: Data and Artificial Intelligence.*** Joint seminars of centres CMM and AC3E, co-organised with Dr. Jorge Silva (6 talks)
- **2016-2018: *Seminar of the group of machine learning and time series*** This is the seminar I created when I joined U. de Chile (19 talks)

Editorial work

- **2025: *Chair, Special track on AI+Arts,*** International Joint Conference on Neural Networks
- **2024: *Subject Chair,*** Elsevier Signal Processing
- **2022: *Associate Editor,*** IEEE Transactions of Neural Networks and Learning Systems
- **2021: *Member,*** ANID-Fondecyt Study Group. To recruit reviewers and assess grant reports.
- **2021: *Topic Chair,*** The IEEE Latin American Conference on Computational Intelligence

Reviewer

- **Journals:** Journal of Machine Learning Research, Transactions of Machine Learning Research, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Signal Processing, IEEE Transactions on Neural Networks and Learning Systems, Springer Machine Learning, Neurocomputing
- **Conferences:** Neural Information Processing Systems (NeurIPS), International Conference on Machine Learning (ICML), The AAAI Conference on Artificial Intelligence, Conference on Uncertainty in Artificial Intelligence (UAI), IEEE Machine Learning for Signal Processing (MLSP), IEEE International Conference in Acoustics and Statistical Signal Processing (ICASSP), International Conference on Learning Representations (ICLR), International Conference on Artificial Intelligence and Statistics (AISTATS)

SELECTED TALKS (SINCE 2020)

- **2 Dec 2024: Statistical ML Group, Dept. of Statistical Science, University College London.** Gaussian processes, optimal transport and diffusion models: contributions and open questions
- **13 Nov 2024: INSA Rouen Normandie, France.** On the spectral representation of Gaussian processes: design, training and inference.

- **22 Sept 2024: IEEE International Workshop on Machine Learning for Signal Processing, London**
Optimal Transport for Signal Processing (Conference) ([Github](#))
- **15 Jun 2023: Learning, Computation, and Control Seminar. Imperial College London.**
Bayesian Learning with Wasserstein Barycenters ([Online](#))
- **19 Jan 2023: Uncertainty Quantification Seminar. Paris-Saclay.**
Computationally-efficient initialisation of GPs: The generalised variogram method. ([Online](#))
- **22 Nov 2022: Machine Learning Group. University of Cambridge.**
Gaussian processes, Fourier kernels and optimal transport.
- **30 Mar 2022: Causal Inference and Missing Data Group. Inria.**
Gaussian processes, missing data, and optimal transport. ([Online](#))
- **29 Mar 2022: DataLearning Group. Imperial College London.**
Gaussian processes, missing data, and optimal transport. ([Online](#))
- **18 Jan 2022: Institut de Recherche en Informatique de Toulouse.**
A Tutorial on Gaussian processes.
- **6 Dec 2021: Tutorial. Conference on Neural Information Processing Systems.**
The Art of Gaussian Processes: Classical and Contemporary. ([Online](#))
- **14 Sept 2021: Gaussian Process Summer School.**
Multioutput Gaussian Processes. ([Online](#))

SOFTWARE

In 2020, I started the project *The Multi-Output Gaussian Process Toolkit (MOGPTK)* for multioutput time series analysis aimed at researchers and data scientists. MOGPTK features implementations of my own contributions as well as that of others about approximate inference, kernels, sparse approximations and non-Gaussian likelihoods. The project has been funded by Google and Chile's research agency (ANID), and has an active community on GitHub. The toolkit's publication and repository are:

- T. de Wolff, A. Cuevas, F. Tobar (2021), MOGPTK: The multi-output Gaussian process toolkit, *Neurocomputing*, vol. 424, p. 49 - 53.
- github.com/GAMES-UChile/mogptk

OUTREACH

Talks

- **27 Sept 2024. *Aligned algorithms: Understanding and addressing the challenge.*** UNESCO Artificial Intelligence for Information Accessibility Conference. [[Video Link](#)]
- **10 Sept 2024. *Photography in the Age of Generative AI.*** Sostener la imagen. Fiebre y Ensembles. [[Video Link](#), [Spanish](#)]
- **17 July 2024. *Photography in the Age of Generative AI.*** No hay sujeto sin imagen, Centro Cultural de España en Santiago, Chile. [[Video Link](#), [Spanish](#)]
- **14 May 2024. *AI and Data Science at U. de Chile.*** Día Nacional de la Ingeniería, Instituto de Ciencias de la Ingeniería, Universidad O'Higgins, Rancagua, Chile.
- **3 May 2024. *What AI skills do we need to develop today?*** Inaugural talk for the PhD programme in Artificial Intelligence, Cruch Biobio-Nuble. [[Video Link](#)]
- **18 Jan 2024. *How difficult is to align AI to human criteria?*** Congreso Futuro, Chile. [[Video Link](#)]
NB: Congreso Futuro is the most prestigious scientific dissemination event in the country, it is organised by Chile's Senate and has nationwide impact.
Media coverage: [Canal 13](#), [Radio Cooperativa](#), [CMM](#).
- **28 Nov 2023. *Artificial Intelligence: Past, present and future.*** Graduate workshop, Universidad de Chile.
- **24 Nov 2023. *Experiences from educating data scientists.*** Workshop for Continuing Education ([Online](#))
- **16 Oct 2020. *Data Science projects at the Center for Mathematical Modeling.*** Entel Telecom, Chile
- **16 Sept 2021. *Alumni talk: What do I do as a PhD in EEE?*** EEE Dept., Imperial College London
- **8 Oct 2020. *An Electrical Engineer in the Academia.*** Student forum, U de Chile

Participation in discussion panels

- **Nov 2023. *Updating the National Policy for AI,*** Member of Expert Committee. Chilean Congress.
- **23 Aug 2023. *Views over AI regulatory project,*** Chilean Congress. [Online](#)
- **23 Oct 2023. *Human-centred AI.*** Round table, Forum of AI in LatAm.
- **13 Jun 2023. *AI and the State*** Round table, UNESCO Forum on AI.
- **10 Nov 2021. *The role of AI in the new constitution.*** Universidad de Chile [Online](#)
- **26 Nov 2020. *Data Science: Industry and Academia.*** Discussion panel, Universidad de Chile.

SUPERVISION AT IMPERIAL COLLEGE LONDON (FROM 2024)

PhD Students

- **[ongoing]** Camilo Carvajal (Maths): Diffusion models

SUPERVISION AT UNIVERSIDAD DE CHILE (2016-2024)

Postdoc

- **2018-2020.** Elsa Cazelles: Optimal Transport and Signal Processing

PhD Students

- **[ongoing]** Benjamín Pizarro: Machine learning for medical images (co-supervised)
- **2016-2020.** Gonzalo Ríos: Contributions to Bayesian machine learning via transport maps

MSc students One-year MSc research in Data Science (DS), Math. Modelling (MM) or Elec. Eng. (EE).

- **[ongoing]** Augusto Tagle (DS): Diffusion models for reinforcement learning
- **[ongoing]** Fernando Fetis (DS): Schrödinger bridges for generative modelling
- **2024.** Cristóbal Alcázar (DS): Guidance in diffusion models
- **2024.** Camila Bergasa (DS): Data repair for fairness via optimal transport
- **2024.** Joaquín Barceló (DS): Reinforcement-learning-driven continual learning for diffusion models
- **2024.** Stefano Schiappacasse (DS): Detection of manatees from submarine acoustic recordings
- **2024.** Camilo Carvajal (DS): Safe sampling in diffusion models
- **2024.** Diego Cortéz (DS): Identifying robustness to acidity using machine learning for genomics
- **2024.** Gianina Salomó (DS): Ensuring inclusive language generation using language models
- **2024.** Tomás Valencia (MM): Optimal weak transport barycenters for machine learning
- **2023.** David Molina (MM): SGD-inspired prior distributions for Bayesian deep learning
- **2023.** Bruno Moreno (DS): NN training by selecting mini-batches with determinantal point processes
- **2023.** Sebastián López (MM): Bayesian spectral estimation & extensions of the neural tangent kernel
- **2023.** Diego Canales (DS): Reducing inference times in audio effects modelling through knowledge distillation
- **2022.** Jou-Hui Ho (EE): Greedy online change point detection
- **2021.** Matías Altamirano (MM): Nonstationary multi-output GPs via harmonizable spectral mixtures
- **2021.** Cristóbal Valenzuela (MM): Band-limited Functions in Machine Learning
- **2020.** Alejandro Cuevas (MM): Multioutput GP toolkit with sparse formulation for spectral kernels
- **2020.** Mauricio Campos (MM): ML-driven analysis of hyperspectral geological images
- **2019.** Lerko Araya (EE): A modern approach to probabilistic spectral estimation
- **2018.** Iván Castro (EE): Non-linear predictors for time series with improved kernel adaptive filters
- **2017.** Gabriel Parra (MM): Spectral Mixture Kernels for Multi-Output Gaussian Processes

Research Assistants

- **2019-2021.** Taco de Wolff: The MOGP toolbox. (Now Data Scientist, Inria Chile)
- **2018-2019.** Bryan Sagredo: Analysis of submarine audio. (Now Software Engineer at Meta, US)
- **2018-2019.** Arnaud Robert: Wasserstein distance for time series. (Now PhD student, Imperial College DoC)

PUBLICATIONS

Journals

- [J25] J. Backhoff, J. Fontbona, G. Rios, and **F. Tobar**. “Stochastic gradient descent for barycenters in Wasserstein space”. In: *Journal of Applied Probability* (2024). [arXiv & Journal], pp. 1–29.
- [J24] J. F. Silva, **F. Tobar**, M. Vicuña, and Felipe. Cordova. “Studying the interplay between information loss and operation loss in representations for classification”. In: *Journal of Machine Learning Research* (2024). [arXiv], In press.
- [J23] **F. Tobar**, E. Cazelles, and T. de Wolff. “Computationally-efficient initialisation of GPs: The generalised variogram method”. In: *Transactions on Machine Learning Research* (2023). [arXiv] [OpenReview]. ISSN: 2835-8856.
- [J22] **F. Tobar**, A. Robert, and J. Silva. “Gaussian process deconvolution”. In: *Proceedings of the Royal Society A* 479 (2023). [PRSA], [arXiv], p. 20220648.
- [J21] T. Pérez-Jeldres et al. “Ethnicity influences phenotype and clinical outcomes: Comparing a South American with a North American inflammatory bowel disease cohort”. In: *Medicine* 101.36 (2022). [PDF].

- [J20] J. Backhoff-Veraguas, J. Fontbona, G. Rios, and **F. Tobar**. “Bayesian Learning with Wasserstein Barycenters”. In: *ESAIM: Probability and Statistics* 26 (2022). [DOI], pp. 436–472.
- [J19] V. Caro, J.-H. Ho, S. Witting, and **F. Tobar**. “Modelling neonatal EEG using multi-output Gaussian processes”. In: *IEEE Access* 10 (2022). [IEEEExplore (open access)], pp. 32912–32927.
- [J18] S. Covino, **F. Tobar**, and A. Treves. “Detecting the periodicity of highly irregularly sampled light-curves with Gaussian processes: the case of SDSSJ025214.67-002813.7”. In: *Monthly Notices of the Royal Astronomical Society* (Mar. 2022). [arXiv , MNRAS]. ISSN: 0035-8711.
- [J17] E. Cazelles, A. Robert, and **F. Tobar**. “The Wasserstein-Fourier distance for stationary time series”. In: *IEEE Transactions on Signal Processing* 69 (2021). [arXiv , IEEEExplore], pp. 709–721.
- [J16] **F. Tobar**, L. Araya-Hernández, P. Huijse, and P. M. Djurić. “Bayesian reconstruction of Fourier pairs”. In: *IEEE Transactions on Signal Processing* 69 (2021). [arXiv , IEEEExplore], pp. 73–87.
- [J15] **F. Tobar**, F. Bravo-Marquez, J. Dunstan, J. Fontbona, A. Maass, D. Remenik, and J. F. Silva. “Data science for engineers: A teaching ecosystem”. In: *IEEE Signal Processing Magazine* 38.3 (2021). [arXiv, IEEEExplore], pp. 144–153.
- [J14] **F. Tobar** and R. González. “On machine learning and the replacement of human labour: anti-Cartesianism versus Babbage’s path”. In: *AI & Society* (2021). [Springer].
- [J13] T. de Wolff, A. Cuevas, and **F. Tobar**. “MOGPTK: The multi-output Gaussian process toolkit”. In: *Neurocomputing* 424 (2021). [arXiv , Science Direct], pp. 49–53.
- [J12] J. Dunstan, M. Aguirre, M. Bastías, C. Nau, T. A. Glass, and **F. Tobar**. “Predicting nationwide obesity from food sales using machine learning”. In: *Health Informatics J* 26.1 (2020). [SAGE], pp. 652–663.
- [J11] G. Rios and **F. Tobar**. “Compositionally-warped Gaussian processes”. In: *Neural Networks* 118 (2019). [arXiv , Science Direct], pp. 235–246.
- [J10] D. Cabrera, F. Sancho, M. Cerrada, R.-V. Sánchez, and **F. Tobar**. “Echo state network and variational autoencoder for efficient one-class learning on dynamical systems”. In: *Journal of Intelligent & Fuzzy Systems*. 34.6 (2018). [IOS Press], pp. 3799–3809.
- [J9] **F. Tobar**, I. Castro, J. Silva, and M. Orchard. “Improving battery voltage prediction in an electric bicycle using altitude measurements and kernel adaptive filters”. In: *Pattern Recognition Letters* 105 (2018). [Elsevier], pp. 200–206.
- [J8] B. Poblete, J. Guzman, J. Maldonado, and **F. Tobar**. “Robust detection of extreme events using Twitter: Worldwide earthquake monitoring”. In: *IEEE Transactions on Multimedia* 20.10 (2018). [IEEEExplore], pp. 2551–2561.
- [J7] **F. Tobar**, G. Rios, T. Valdivia, and P. Guerrero. “Recovering latent signals from a mixture of measurements using a Gaussian process prior”. In: *IEEE Signal Processing Letters* 24.2 (2017). [arXiv, IEEEExplore], pp. 231–235.
- [J6] **F. Tobar**, P. Djurić, and D. Mandic. “Unsupervised state-space modelling using reproducing kernels”. In: *IEEE Trans. on Signal Processing* 63.19 (2015). [IEEEExplore], pp. 5210–5221.
- [J5] **F. Tobar** and D. Mandic. “Design of positive-definite quaternion kernels”. In: *IEEE Signal Processing Letters* 22.11 (2015). [IEEEExplore], pp. 2117–2121.
- [J4] **F. Tobar**, S.-Y. Kung, and D. Mandic. “Multikernel least mean square algorithm”. In: *IEEE Trans. on Neural Networks and Learning Systems* 25.2 (2014). [IEEEExplore], pp. 265–277.
- [J3] **F. Tobar** and D. Mandic. “Quaternion reproducing kernel Hilbert spaces: Existence and uniqueness conditions”. In: *IEEE Trans. on Inf. Theory* 60.9 (2014). [IEEEExplore], pp. 5736–5749.
- [J2] **F. Tobar** and M. Orchard. “Study of financial systems volatility using suboptimal estimation algorithms”. In: *Studies in Informatics and Control* 21.1 (2012). [PDF], pp. 59–66.
- [J1] M. Orchard, **F. Tobar**, and G. Vachtsevanos. “Outer feedback correction loops in particle filtering-based prognostic algorithms: Statistical performance comparison”. In: *Studies in Informatics and Control* 18.4 (2009). [PDF], pp. 295–304.

Conference Proceedings (peer-reviewed only)

- [C29] S. Schiappacasse, T. de Wolff, Y. Henaut, R. Cervera, A. Charles, and **F. Tobar**. “Detection of manatee vocalisations using the audio spectrogram transformer”. In: *IEEE International Workshop on Machine Learning for Signal Processing (MLSP)*. [arXiv]. 2024, pp. 1–6.
- [C28] J.-H. Ho and **F. Tobar**. “Greedy online change point detection”. In: *IEEE International Workshop on Machine Learning for Signal Processing (MLSP)*. [IEEEExplore, arXiv]. 2023, pp. 1–6.
- [C27] M. Altamirano and **F. Tobar**. “Nonstationary multi-output Gaussian processes via harmonizable spectral mixtures”. In: *International Conference on Artificial Intelligence and Statistics*. [PDF]. 2022.
- [C26] J. Silva and **F. Tobar**. “On the interplay between information loss and operation loss in representations for classification”. In: *International Conference on Artificial Intelligence and Statistics*. [PDF]. 2022.
- [C25] E. Cazelles, **F. Tobar**, and J. Fontbona. “A novel notion of barycenter for probability distributions based on optimal weak mass transport”. In: *Advances on Neural Information Processing Systems*. [PDF]. 2021.

- [C24] A. Cuevas, S. López, D. Mandic, and **F. Tobar**. “Bayesian autoregressive spectral estimation”. In: *Proc. of IEEE LACCI*. [arXiv]. 2021.
- [C23] B. Sagredo, C. Español-Jiménez, and **F. Tobar**. “Detection of blue whale vocalisations using a temporal-domain convolutional neural network”. In: *Proc. of IEEE LACCI*. [arXiv]. 2021.
- [C22] T. de Wolff, A. Cuevas, and **F. Tobar**. “Gaussian process imputation of multiple financial series”. In: *Proc. of IEEE ICASSP*. [IEEEExplore, arXiv]. 2020, pp. 8444–8448.
- [C21] **F. Tobar**. “Band-limited Gaussian processes: The sinc kernel”. In: *Advances in Neural Information Processing Systems 32*. [PDF, arXiv]. Curran Associates, Inc., 2019, pp. 12749–12759.
- [C20] C. Valenzuela and **F. Tobar**. “Low-pass filtering as Bayesian inference”. In: *Proc. of IEEE ICASSP*. [IEEEExplore, arXiv]. 2019, pp. 3367–3371.
- [C19] **F. Tobar**. “Bayesian nonparametric spectral estimation”. In: *Advances in Neural Information Processing Systems 31*. (spotlight) [arXiv, PDF]. 2018, pp. 10148–10158.
- [C18] G. Rios and **F. Tobar**. “Learning non-Gaussian time series using the Box-Cox Gaussian process”. In: *Proc. of the International Joint Conference on Neural Networks*. [IEEEExplore, arXiv]. 2018, pp. 1–8.
- [C17] L. Araya-Hernández, J. Silva, A. Osses, and **F. Tobar**. “A Bayesian mixture-of-Gaussians model for astronomical observations in interferometry”. In: *Proc. of IEEE Chilecon*. [IEEEExplore]. 2017.
- [C16] D. Cabrera, F. Sancho, and **F. Tobar**. “Combining reservoir computing and variational inference for efficient one-class learning on dynamical systems”. In: *Proc. of the IEEE International Conference on Sensing, Diagnostics, Prognostics, and Control*. (best paper award) [IEEEExplore]. 2017.
- [C15] I. Castro, C. Silva, and **F. Tobar**. “Initialising kernel adaptive filters via probabilistic inference”. In: *Proc. of IEEE Digital Signal Processing Conference*. (best paper award) [arXiv, IEEEExplore]. 2017, pp. 1–5.
- [C14] A. Cuevas, A. Veragua, S. Español, G. Chiang, and **F. Tobar**. “Unsupervised blue whale call detection using multiple time-frequency features”. In: *Proc. of IEEE Chilecon*. [IEEEExplore]. 2017.
- [C13] **F. Tobar**. “Improving sparsity in kernel adaptive filters using a unit-norm dictionary”. In: *Proc. of IEEE Digital Signal Processing Conference*. [arXiv, IEEEExplore]. 2017, pp. 1–5.
- [C12] G. Parra and **F. Tobar**. “Spectral mixture kernels for multi-output Gaussian processes”. In: *Advances in Neural Information Processing Systems 30*. [PDF]. 2017, pp. 6681–6690.
- [C11] **F. Tobar** and R. Turner. “Modelling time series via automatic learning of basis functions”. In: *Proc. of the IEEE Sensor Array and Multichannel Signal Processing Workshop*. [IEEEExplore]. 2016, pp. 2209–2213.
- [C10] **F. Tobar**, T. Bui, and R. Turner. “Learning stationary time series using Gaussian processes with non-parametric kernels”. In: *Advances in Neural Information Processing Systems 28*. (spotlight) [PDF]. 2015, pp. 3483–3491.
- [C9] **F. Tobar** and R. Turner. “Modelling of complex signals using Gaussian processes”. In: *Proc. of IEEE ICASSP*. [IEEEExplore]. 2015, pp. 2209–2213.
- [C8] T. Thanthawarittisai, **F. Tobar**, A. Constantinides, and D. Mandic. “The widely linear quaternion recursive total least squares”. In: *Proc. of IEEE ICASSP*. [IEEEExplore]. 2015, pp. 3357–3361.
- [C7] **F. Tobar** and D. Mandic. “A particle filtering based kernel HMM predictor”. In: *Proc. of IEEE ICASSP*. [IEEEExplore]. 2014, pp. 8019–8023.
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