Lorène Jeantet

Postdoctoral fellow in Machine Learning for Ecology
Computer Scientist for Wildlife Monitoring
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RESEARCH INTERESTS

I am a data scientist with a broad interest in remote monitoring of wildlife (acoustic, imaging, accelerometer). Specialized in signal processing, I developed a method to automatically identify behavior of sea turtle from bio-loggers based on deep learning. I am convinced that mathematics and new technologies are valuable tools to improve our knowledge on biodiversity and thus better protect it.

EDUCATION

2022 **Postdoc in machine learning for ecology**
African Institute for Mathematical Sciences – AIMS South Africa
Stellenbosch University.

2021 **PhD in behavioral ecology**
DEPE-IPHC - CNRS - University of Strasbourg, France.

2016 EuRopean Action Scheme for the Mobility of University Students (ERASMUS); Specialization in animal sciences – University of Wageningnen, Netherland.

2016 **Master's Degree in Engineering** – Ecole Nationale Supérieure Agronomique de Toulouse, France.

2013 Biology, chemistry, physics and earth sciences preparatory class (BCPST) – Lycée du Parc, Lyon, France.

RESEARCH EXPERIENCES

2018-2021 **Ph.D Student:** Automatic identification of behaviors from bio-loggers: a solution to improve knowledge on sea turtle ecology?
PI: Chevallier Damien. DEPE-IPHC - CNRS - University of Strasbourg, France.

2017 **Volunteer Research Assistant**: Reticulum-mitochondria interactions of pancreatic beta cells subjected to metabolic disturbances of diabetic pathologies, PI: Anne-Marie Madec. INSERM 1060-CaRMeN, Lyon, France

2016 **Research Assistant:** Behavioral study of the sea turtle from accelerometric data. PI: Damien Chevallier. DEPE-IPHC - CNRS, Strasbourg, France.

2015 **Research Assistant:** Understanding the influence of abiotic and biotic factors of Lyme disease ecology to predict the future distribution and spread of disease in Ontario. PI: Katie Clow, Claire Jardin, Ontario Veterinary College, University of Guelph, Canada.

2015 **Research Assistant:** Health assessment of wild turkeys in Ontario. PI: Amanda MacDonald, Claire Jardin, Ontario Veterinary College, University of Guelph, Canada

2014 **Co-Investigator:** field survey on the impact of the Montagne des Pyrénées (pedigree dog) on sheep breeding. PI: La Pastorale Pyrénéenne, Saint Gaudens, France

GRANTS & AWARDS

2022 **Thesis Prize Prix Albert Schweitzer – Chapitre de St Thomas**
2021 Best Student Presentation at the 7th Bio-logging science symposium
2021 **France Grilles 2021 : ANTIDOT project**.
Financing of computing resources and Cloud storage of the SCIGNE platform
2020 **L'Oréal – UNECSO: For Women In Science - French Young Talents** (€15,000)
2018 **French Space Agency (CNES) Graduate Fellowship**
Automatic identification of behaviors from bio-loggers: a solution to improve knowledge on sea turtle ecology?

PUBLICATIONS

Lelong, P., Besnard, A., Girondot, M., Habold, C., Priam, F., Giraudeau, M., le Loc'h, G., le Loc'h, A., Fournier, P., Fournier-Chambrillon, C., Fort J., Bustamante, P., Dupont, S. M., Vincze, O., Page A., Gros-Desormeaux, J.-R., Martin, J., Bourgeois, O., Lepori, M., Régis, S., Lecerf, N., Lefebvre, F., Aubert, N., Frouin, C., Flora, F., Pimentel, E., Passalboni A., **Jeantet, L**. et al. (2025). Fibropapillomatosis dynamics, severity and demographic effect in caribbean green turtles. EcoHealth. Doi : 0.1007/s10393-025-01701-5.

Maucourt, L., Charrier, I., Huetz, C. Aubert N., Bourgeois O., **Jeantet L.** et al. (2025). Description of the behavioural contexts of underwater sound production in juvenile green turtles *Chelonia mydas*. Behavioral Ecology and Sociobiology. Doi:10.1007/s00265-025-03561-z

Jeantet L., Zondo K., Delvenne C., Martin J., Chevallier D., Dufourq E. (2024). Automatic identification of the endangered Hawksbill sea turtle behavior using deep learning and cross-species transfer learning. Journal of Experiment Biology. Doi: 10.1242/jeb.249232

Hoffman B., Cusimano M., Baglione V., Canestrari D., Chevallier D., DeSantis D.L., **Jeantet L. et al.** (2024). A benchmark for computational analysis of animal behavior, using animal-borne tags. Movement Ecology. Doi: 10.1186/s40462-024-00511-8

Chevallier D., Maucourt L., Charrier I., Lelong P., Le Gall Y., Menut E., Wallace B., Delvenne C., Vincze O., **Jeantet L**. et al. (2024). The response of sea turtles to vocalizations opens new perspectives to reduce their bycatch. Scientific reports. Doi: 10.1038/s41598-024-67501-z

Herbst C., **Jeantet L.,** Dufourq E. (2024) Empirical Evaluation of Variational Autoencoders and Denoising Diffusion Models for Data Augmentation in Bioacoustics Classification. South African Computer Science and Information Systems Research Trends. Doi: 10.1007/978-3-031-64881-6_3

Schoombie S., **Jeantet L**., Chimienti M., Sutton G.J., Pistorius P.A., Dufourq E., Lowther A.D., and Oosthuizen W.C. (2024). Identifying prey capture events of a free-ranging marine predator using bio-logger data and deep learning. Royal Society Open Science. Doi: 10.1098/rsos.240271

Lelong, P., Besnard, A., Girondot, M., Habold, C., Priam, F., Giraudeau, M., le Loc'h, G., le Loc'h, A., Fournier, P., Fournier-Chambrillon, C., Bustamante, P., Dupont, S. M., Vincze, O., Gros-Desormeaux, J.-R., Martin, J., Bourgeois, O., Lepori, M., Régis, S., Lecerf, N., Lefebvre, F., Aubert, N., Frouin, C., Flora, F., Pimentel, E., Pimentel, M., Siegwalt, F., **Jeantet, L**. et al. (2024). Demography of endangered juvenile green turtles in face of environmental changes: 10 years of capture-mark-recapture efforts in Martinique. Biological Conservation, Doi: 10.1016/j.biocon.2024.110471

Batist, C. H., Dufourq, E., **Jeantet, L.,** Razafindraibe, M. N., Randriamanantena, F., & Baden, A. L. (2024). An integrated passive acoustic monitoring and deep learning pipeline for black-and-white ruffed lemurs (Varecia variegata) in Ranomafana National Park, Madagascar. American Journal of Primatology, Doi: 10.1002/ajp.23599

Jeantet L., Dufourq E. (2023) Improving deep learning acoustic classifiers with contextual information for wildlife monitoring. Ecological Informatics. Doi: 10.1016/j.ecoinf.2023.102256

Roost T., Schies JA., Girondot M., Robin JP., Lelong P., Martin J., Siegwalt F., **Jeantet L**. et al. (2022) Fibropapillomatosis Prevalence and Distribution in Immature Green Turtles (Chelonia mydas) in Martinique Island (Lesser Antilles). Ecohealth. Doi: 10.1007/s10393-022-01601-y

Jeantet L. et al. (2022) Estimation of the maternal investment of sea turtles by automatic identification of nesting behaviour and number of eggs laid from a tri-axial accelerometer. Animals. Doi: 10.3390/ani12040520

Siegwalt F., **Jeantet L**. et al. (2022) Food selection and habitat use patterns of immature green turtles (*Chelonia mydas*) on Caribbean seagrass beds dominated by the alien species *Halophila stipulacea*. Global Ecology and Conservation. Doi: 10.1016/j.gecco.2022.e02169

Charrier I. **Jeantet L.** et al. (2022) First evidence of underwater vocal production in marine turtle: New perspectives to improve knowledge about their ecology. Endangered Species. Doi: 10.3354/esr01185

Jeantet L. et al. (2021) Fully Convolutional Neural Network: a powerful tool to infer the behaviours from multi-sensor data. Ecological Modelling. Doi: 10.1016/j.ecolmodel.2021.109555

Siegwalt F., Benhamou S., Girondot M., **Jeantet L**. et al (2020) High fidelity of sea turtles to their foraging grounds revealed by satellite tracking and capture-mark-recapture: New insights for the establishment of key marine conservation areas. Biological Conservation. Doi: 10.1016/j.biocon.2020.108742

Debache I., **Jeantet L.**, Chevallier D., Bergouignan A., Sueur C. (2020) A lean and performant hierarchical model for human activity recognition using body-mounted sensors. Sensors. Doi: 10.3390/s20113090

Jeantet L. et al. (2020). Behavioural inference from signal processing using animal-borne multi-sensor loggers: a novel solution to extend the knowledge of sea turtle ecology. Royal Society Open Science. Doi: 10.1098/rsos.200139

Bonola M., Girondot M., Robin JP., Martin J., Siegwalt F., **Jeantet** L. et al. (2019) Fine scale geographic residence and annual primary production drive body condition of wild immature green turtles (Chelonia mydas) in Martinique Island (Lesser Antilles). Biology Open. Doi: 0.1242/bio.048058

Jeantet L. et al. (2018). Combines used of two supervised algorithms to model sea turtle behaviors from tri-axial acceleration data. Journal of Experimental Biology. Doi: 10.1242/jeb.177378

ORAL COMMUNICATIONS

Jeantet L. – **Januray 2025 :** Deep learning and bioacoustics. Workshop. Bioacoustics Winter School, University of St-Etienne, France.

Van den Berg M., **Jeantet L.,** Dufourq E. – **October 2024**: Posture Estimation for the Endangered African Penguin. Poster. AI Expo Africa 2024, Johannesburg, South Africa.

Jeantet L., Fundel F., Howard A., Taylor P., Dufourq E. – **September 2024** : Unlocking the potentital of unlabeled data in automatic bast vocalization classification form deep learning models. Oral. The 4th African Bioacoustics Community Conference, Cape Town, South Africa.

Van den Berg M., **Jeantet L.,** Dufourq E. – **July 2024**: Posture Estimation for the Endangered African Penguin. Poster. Deep learning IndabaX, University of the Witwatersrand, South Africa.

Herbst C., **Jeantet L**., Dufourq E. – **July 2024**: Empirical Evaluation of Variational Autoencoders and Denoising Diffusion Models for Data Augmentation in Bioacoustics Classification. Oral. 45th Annual Conference, SAICSIT 2024, Gqeberha, South Africa.

Cakir U., **Jeantet L**., Lontsi J., Dufourq E. – **May 2024:** Evolutionary spectrogram optimization. Poster. The 12th International Conference on Learning Representations (ICLR), Workshop on Machine Learning for Remote Sensing, Vienna, Austria.

Jeantet L. – **November 2023:** Exploring the power of deep learning for wildlife monitoring. Oral. EarthRanger User Conference 2023, Cape Town, South Africa.

Jeantet L. – **June 2023:** Deep learning in Bioacoustic. Workshop. 1st Emerging Bioacoustians' Days, St Etienne, France.

Jeantet L., Dufourq E. – **May 2023:** Enhancing acoustic classification using Meta-data. Oral. The 11th International Conference on Learning Representations (ICLR), Workshop on Machine Learning for Remote Sensing, Kigali, Rwanda.

Jeantet L., Vigon V., Geiger S., Chevallier D. – **Novembre 2022** : Réseau de neurones entièrement convolutif : une nouvelle méthode pour identifier automatiquement les comportements des tortues marines à partir de bio-loggers. Oral. 4eme Colloque du Groupe Tortues Marines France. La Grande-Motte, France.

Jeantet L., Dufourq E. – **October 2022:** Improving automatic detection of Hainain gibbon calls by adding spatio-temporal information to deep neural networks. Oral, The 3rd African Bioacoustics Community Conference, Skukuza, Kruger National Park, South Africa.

Jeantet L. – **June 2022** : Deep learning: computer science for wildlife monitoring. Oral. National Institute for Theoretical and Computational Sciences Colloquium. Virtual Meeting, Stellenbosch, South Africa.

Jeantet L., Vigon V., Geiger S., Chevallier D.– **October 2021**: Fully Convolutional Neural Network: a solution to infer animal behaviors from multi-sensor data. Oral. 7th Bio-logging science symposium. Virtual Meeting, Honolulu, Hawaii.

Jeantet L., Chevallier D. – **September 2021**: Automatic identification of immature green turtle behavior from accelerometer reveals key marine conservation areas in the Caribbean. Sea turtle Talks by International Sea Turtle Society. Virtual Meeting on Twitter

Jeantet L., Chevallier D. – **June 2021**: 6th Workshop of National Action Plan for the Marine Turtles of French Guyana.

Jeantet L. – **November 2020**: 'Imaginecology' : Workshop on Deep Learning for image and sound processing and analysis in ecology. GRD Ecologie Statistique.

Jeantet L., Chevallier D. – **November 2019:** Behavioural inference from signal processing using animal-borne multi-sensor loggers: a novel solution to improve the knowledge on ecology of sea turtle. Oral & Poster. 19e journées CNES jeunes chercheurs. Toulouse, France

Jeantet L., Chevallier D. – **March 2019:** Automatic identification of free-ranging green turtle behaviors by supervised learning algorithms from combined acceleration-depth data. Oral. 39th Annual Sea Turtle Symposium. Charleston USA

Jeantet L., Chevallier D. – **October 2018**: Stratégies alimentaires et optimisation du comportement de plongée chez les tortues marines en lien avec les conditions océanographiques. Oral. 3eme Colloque du Groupe Tortues Marines France. La Rochelle France

Jeantet L., Chevallier D. – **July 2018:** Food strategy and diving behaviour optimization of sea turtle. Oral. Behaviour, Evolution, Ecology and Physiology Seminar. Strasbourg France

TEACHING & MENTORING

Teaching

August/ September 2024

Master of Science, Data Science for Industry (10h), Department of Statistical Sciences, University of Cape Town, South Africa.

February 2023

AI for Science Master's, Deep learning for Ecology (5h), African Institute for Mathematical Science, South Africa. https://sites.google.com/aims.ac.za/dl4ecology-course/

2018-2020 Undergraduate Level Courses, Statistics (25hrs to 64h/year), Department of Statistics, University of Strasbourg, France.

Workshop

February 2025 - 3 days (4 hours/day)

Deep learning for Wildlife monitoring. AIMS RIC, Kigali Rwanda

January 2025 – 2 hours

Deep learning and bioacoustics. Bioacoustics Winter School, University of St-Etienne, France.

June 2023 – 1 hour

Deep learning in Bioacoustic. 1st Emerging Bioacoustians' Days, St Etienne, France.

Supervising and Co-supervising

2023/2025 **Charles Herbst** (Research Master of Industrial Engineering, Stellenbosch University); An investigation of generative data augmentation for bioacoustics classification. Co-supervisor: Emmanuel Dufourq (AIMS South Africa/ University of Stellenbosch).

2024 **Voara Miandrisoa (**AI for Science Master's, AIMS South Africa); Exploring deep learning model architectures for automatic behavior identification using accelerometer. Co-supervisor: Emmanuel Dufourq (AIMS South Africa/ University of Stellenbosch).

2022/2023 **Dean BlackBurn** (Master of Industrial Engineering, Stellenbosch University) Convolutional neural network filter selection using genetic algorithms. Co-supervisor: Emmanuel Dufourq (AIMS South Africa/ University of Stellenbosch).

2023 **Kukhanya Zondo** (Structured Master degree, AIMS South Africa); Transfer Learning on Accelerometry Data for Endangered Sea Turtle Conservation. Co-supervisor: Emmanuel Dufourq (AIMS South Africa/ University of Stellenbosch).

2022 **Abraham Chakawa** (Structured Master degree, AIMS South Africa); Enhancing Bioacoustic Classifiers via Meta-data. Co-supervisor: Emmanuel Dufourq (AIMS South Africa/ University of Stellenbosch).

Denzel Spencer Ngwenya (Structured master degree, AIMS South Africa); Learning to Listen: Unsupervised Audio Classification. Co-supervisor: Emmanuel Dufourq (AIMS South Africa/ University of Stellenbosch).

2021 **Victor Larmet (**DUT Informatique, Strasbourg**)**; development of a WEB interface for automatic processing of signals from bio-loggers deployed on marine turtles. Co-supervisors: Damien Chevallier (IPHC –CNRS), Sebastien Geiger (IPHC –CNRS).

2020 **Vadym Hadetskyi** (MS Deep Learning and Signal Processing, University of Strasbourg): development of an interface for video analysis and algorithm to automatically measure reproductive output of sea turtles from accelerometer, Co-supervisors: Damien Chevallier (IPHC –CNRS), Vincent Vigon (University of Strasbourg).

FIELDWORK EXPERIENCES

Tagging of adult female sea turtles (green and leatherback turtles) – French Guyana, France

Nocturnal beach patrols (7h duration), measurements (length, width), eggs counting, behavioural monitoring

Tagging of juvenile green turtles – Martinique, France
Turtle capture at-sea, measurements (length, width), tagging (flipper, on-borne camera, bio-logger)

Animal dissection – Ontario, Canada
Dissection and sampling of different organs of mammals and birds (wild turkey, chipmunk, beaver)

Tick dragging – Ontario, Canada
Follow a strict protocol (duration 3h) to test the presence and number of ticks carrying lyme disease

SKILLS

Deep learning and Signal processing
Programming in R, Python (TensorFlow, Keras), Jupyter, Github,
Languages French (native), English fluent (B2)

FORMAL TRAININGS & CAREER DEVELOPMENT

2023	**The Machine Learning Summer School** , Stellenbosch University, South Africa.
2021	Rescue in hostile and/or isolated environments, CNRS, Aix-en-Provence, France
2021	Media Training, L'OREAL, Paris, France
2020-2021	**Noctural Bird Monitoring**: collaborative project for automatic identification of nocturnal bird calls (https://gitlab.com/nbm.challenge/nbm-nocturnal-bird-migration).
2019-2021	Representative of the doctoral students of the Department of Ecology, Physiology and Ethology from the Institut Pluridisciplinaire Hubert Curien (IPHC).
2021	**Bioaccoustic winter School**, ENES, ST Etienne, France
2019-2020	**Training 'Advanced signal processing - Deep learning' (52h)**, University of Strasbourg

SCIENTIFIC EDUCATION AN OUTREACH

2023	**Women in Mathematics and its Applications Research Day at AIMS :** This conference presented research in mathematics and its general applications by women in Africa and beyond. As a panel speaker, I could share my experience as a woman in research.
2022	**AIMS Gender in STEM Workshop: International Women in Mathematics Day** The event provides a platform for the AIMS female students to engage with inspiring mathematical scientists/role models in academia/industry. As speaker, I could share my career journeys and work/research with students.
2021	**Argonimaux** : presentation of satellite-relay Argos for sea turtles, workshop organized by Centre National d'Etude Spéciale (CNES) - Dôme de la biodiversité - IUCN World Conservation Congress, Marseille.
2018	**Kids' University** : presentation of the different methods of studying sea turtles for secondary school student, University of Strasbourg
2018	**Aire Marine Educative (AME)**: awareness days for primary and secondary school students in Martinique who participated in tagging of juvenile green turtles. CNRS and POEMM Association, Martinique.

REFEREES

Damien Chevallier
Researcher
UMR BOREA (Biologie des Organismes et Ecosystèmes Aquatiques), CNRS, Martinique, France

Vincent Vigon
Professor
UFR Math-Info, University of Strasbourg, France.

Gordon Kirby
Professor
Department of Biomedical Sciences, Vetenary College, University of Guelph, Ontario, Canada.

INTERVIEWS & PRESS RELEASE

L'OREAL-UNESCO Awards -2020

https://www.fondationloreal.com/sites/default/files/2020-1/2020%20Prix%20Jeunes%20Talents%20France.pdf

https://recherche.unistra.fr/actualites-recherche/actualites-de-la-recherche/un-prix-loreal-unesco-pour-mieux-proteger-les-tortues-marines

Interview for Radio Catholique Française (RCF) Alsace , Les mathématiques, au secours de la sauvegarde des tortues marines (https://rcf.fr/actualite/le-grand-invite-alsace?episode=95101)

https://www.alsace.cnrs.fr/fr/cnrsinfo/fondation-loreal-lorene-jeantet-prix-jeunes-talents-france-pour-les-femmes-et-la-science

https://la1ere.francetvinfo.fr/six-jeunes-chercheuses-recompensees-par-le-prix-jeunes-talents-l-oreal-unesco-pour-leurs-travaux-dans-les-outre-mer-876632.html

https://france3-regions.francetvinfo.fr/grand-est/bas-rhin/strasbourg-0/deux-jeunes-strasbourgeoises-recompensees-leur-travaux-recherche-scientifique-1879646.html

https://www.martinique.franceantilles.fr/actualite/sciences-et-recherche/quatre-chercheuses-antillo-guyanaises-laureates-du-prix-jeunes-talents-l-oreal-unesco-561517.php

https://recherche.unistra.fr/actualites-recherche/actualites-de-la-recherche/un-prix-loreal-unesco-pour-mieux-proteger-les-tortues-marines

Martinique field (Sea turtle)

2019 https://viaatv.tv/journal-televise-viaatv-du-26102019/ (03:29)

https://la1ere.francetvinfo.fr/martinique/deplacements-tortues-marines-sont-suivis-martinique-balises-gps-592723.html

2018 https://www.martinique.franceantilles.fr/regions/sud/les-enfants-vont-a-la-rencontre-des-tortues-457500.php

https://www.martinique.franceantilles.fr/une/les-eleves-a-la-rencontre-des-tortues-aux-anses-d-arlet-491100.php

French Guyana field (Sea turtle) -2019

https://www.france.tv/france-2/journal-13h00/1012483-journal-13h00.html?fbclid=IwAR0OkPawVvENXyl4aKxnTrILo2VVz3I1tVzjRGB5a5bTfU4Qw8XGLQLZIJo (37:53)

https://www.france.tv/france-2/journal-13h00/1013187-journal-13h00.html (34:24)

https://www.francetvinfo.fr/replay-jt/france-2/13-heures/jt-de-13h-du-mardi-25-juin-2019_3477277.html?fbclid=IwAR1rp4-bebsuJkO2m6sNNeNrbg6rNrcZdZp-n-YWccGts0Y30b8y41BEAko (31'30)

Collaboration with GreenPeace France - French Guyana – 2019

https://www.greenpeace.fr/declin-des-tortues-symptome-du-mal-etre-des-oceans/

https://media.greenpeace.org/CS.aspx?VP3=SearchResult&ALID=27MZIFJ8WW66O#/SearchResult&ALID=27MZIFJ8WW66O&VBID=27MDQ5IZUCH7O&POPUPPN=3&POPUPIID=27MZIFJ8XAOSU

https://media.greenpeace.org/CS.aspx?VP3=SearchResult&ALID=27MZIFJ8WW66O

https://www.brut.media/fr/news/greenpeace-se-mobilise-pour-sauver-la-plus-grosse-tortue-au-monde-7560529b-5b2d-4149-9ac6-1fdb3023edfa?fbclid=IwAR0UDb5ozL39dGxX16aQP--nZcaV4txEWAt3ofMMdyEyXd73jRt1SuOUzng

Collaboration with Musée Océanographique de Monaco – Monaco - 2018

https://www.facebook.com/robertj.calcagno/videos/1693629900758386

https://france3-regions.francetvinfo.fr/provence-alpes-cote-d-azur/on-retrouve-camera-posee-tortue-rana-recherchee-musee-oceanographique-monaco-1498991.html?fbclid=IwAR3Sun_2V0_NeX_nNHCIbwqQuhqqX8sv4R5269B9bnQRVNvM8W2uQ70-c3s

https://www.nicematin.com/insolite/le-musee-oceanographique-et-le-cnrs-lancent-un-avis-de-recherche-pour-retrouver-la-camera-posee-sur-la-tortue-rana-240031?fbclid=IwAR3Q_AJqfL9aW-Pkrf-vBWuiPKm6ilZUkypiELNxwEeElW81loaxXrhmhIc

https://www.nicematin.com/belle-histoire/video-rana-la-tortue-du-musee-oceanographique-de-monaco-a-retrouve-la-mer-239410?fbclid=IwAR18jrLbKks1kUtF2FtsIes_4z431YdipEZ5rWOV_bkgeuHwXP6GntX9uPk