

Eklavya Sarkar

AI/ML Postdoctoral Researcher

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Nationality: Swiss



Research Interests

Speech Processing, Bioacoustics, Computer Vision, Self-Supervised Learning.

Work Experience

- 2025–Present **Postdoctoral Researcher, Earth Species Project.**
Supervisor: Dr. Olivier Pietquin & Dr. Matthieu Geist, Chief and Principal Scientists.
○ Designing, implementing, and optimizing foundation models for bioacoustics research.
- 2021–25 **Research Assistant (PhD), Idiap Research Institute, EPFL, CH**
(4 years) Supervisor: Dr. Mathew Magimai Doss, Senior Researcher, Speech and Audio Processing.
○ Led interdisciplinary research bridging deep learning, speech processing, and bioacoustics, with a focus on transferability of speech models for decoding non-human communication.
○ Published multiple first-author, peer-reviewed papers in top machine learning conferences and journals, including ICASSP and Interspeech, accumulating 130+ citations.
○ *Research areas:* Self-supervised learning, foundation models, fine-tuning, audio processing, bioacoustics, voice activity detection, call-type classification, discrete acoustic tokens.
- 2020 – 21 **Research Intern, Idiap Research Institute, Martigny, CH**
(10 months) Supervisor: Dr. Sébastien Marcel, Senior Researcher, Biometrics Security and Privacy.
○ Designed and implemented novel generative models by adding losses to StyleGAN2.
○ Investigated vulnerabilities of modern facial recognition systems against deepfake attacks.
- 2017 **Research Intern, CERN, Geneva, CH**
(3 months) Supervisor: Dr. Archana Sharma, Principal Scientist, CMS Experiment.
○ Refined production code efficiency by completing pull requests on data acquisition tools.
○ Contributed to open-source data acquisition tools and radiation physics R&D experiments.

Education

- 2021–Present **PhD Machine Learning, Ecole Polytechnique Fédérale de Lausanne, CH, (5.2/6.0).**
- 2018 – 19 **MSc Data Science, University of Bath, UK, Distinction.**
- 2015 – 18 **BSc Computer Science, University of Liverpool, UK, Distinction.**

Publications

- NeurIPS 2025 **Sarkar, E., Magimai-Doss, M., Towards Leveraging Sequential Structure in Animal Vocalizations. AI for Non-Human Animal Communication Workshop.**
- ICASSP 2025 **Sarkar, E., Magimai-Doss, M., Comparing Self-Supervised Learning Models Pre-Trained on Human Speech and Animal Vocalizations for Bioacoustics Processing.**

- Bioacoustics **Sarkar, E.**, K. Wierucka, A. B. Bosshard, J. M. Burkart, Magimai-Doss, M., *On Feature Representation for Marmoset Vocal Communication Analysis*.
2025
- Interspeech **Sarkar, E.**, Magimai-Doss, M., *On the utility of Speech and Audio Foundation Models for Animal Call Analysis.*, 4th International Workshop on VIHAR.
2024
- Interspeech Ben Mahmoud, I., **Sarkar, E.**, Manser, M., Magimai-Doss, M., *Feature Representations for Automatic Meerkat Vocalization Classification.*, 4th International Workshop on VIHAR.
2024
- Interspeech **Sarkar, E.**, Magimai-Doss, M., *Can Self-Supervised Neural Representations Pre-Trained on Human Speech distinguish Animal Callers?*
2023
- Interspeech **Sarkar, E.**, Prasad, R., Magimai-Doss, M., *Unsupervised Voice Activity Detection by Modeling Source and System Information using Zero Frequency Filtering*.
2022
- ICASSP **Sarkar, E.**, Korshunov, P., Colbois, L. and Marcel, S., *Are GAN-based Morphs Threatening Face Recognition?*
2022

Thesis

- Ph.D. Transferability of Learnt Speech Representations for Decoding Non-Human Vocal Communication.
- M.Sc. Optimising Facial Information Extraction and Processing using Deep Learning.
Grade: Distinction.
- B.Sc. Unsupervised Machine Learning: Kohonen Self-Organizing Maps.
Grade: Distinction (90%).

Leadership Experience

- 2022–24 **Organizer**, *Perspectives on AI Symposium Series*, Idiap Research Institute.
○ Participated in organization: finding sponsors, budgeting, designing the event website.
- 2017–18 **President**, *Students Residence Society*, University of Liverpool.
○ Elected President of a student residence by ballot vote majority to represent 270 students.
○ Led ten member committee, generated team vision, chaired meetings, managed events.

Academic Duties and Mentorship

- Fall '21-24 **Lead Teaching Assistant**, Master in Artificial Intelligence, UniDistance Suisse.
○ Led TAs to grade assignments, exams, & provide critical feedback for a 4 ETCS module.
Reviewer, IEEE Signal Processing Letters, IEEE Transactions on Technology and Society.

Awards

- Aug 2020 **International Create Challenge**, 3rd Prize, AI-Hackathon. Adversarial Attacks Detection.

Programming Skills

- Languages Python, Java, Javascript, PHP, SQL, C++, C#, \TeX , HTML, CSS.
- Frameworks Hydra, PyTorch, Lightning, Optuna, Keras, SkLearn, D3.js.
- Misc. Git, Unix, W&B, Mamba/Conda, SGE, Jupyter, Kaggle, Colab, xCode, Eclipse.

Languages

Fluent: English, French, Hindi. Intermediate: German.