Machine Learning in Marine Bioacoustics

- Cost reduction to Passive Acoustic Monitoring (PAM) systems is changing the way marine research is done
- Massive amounts of data are being generated
  - Easily exceeds our capacity for manual analysis

Machine Learning (ML) can help us solve this problem
Why ML for Passive Acoustic Monitoring?

- **Real-time or near real-time detection** of marine mammals are needed to **protect endangered species**.

- **Robust automated ML-based monitoring systems** are needed to **improve the performance of detection software**.

- **Trained ML models** are easily scalable. Performance also **increases with more training data**, making it viable for Big Data from numerous PAM systems.
Use of Machine Learning in Ocean Science

- A multi-disciplinary team is essential in building a curated dataset to train ML models.

**False Positives are currently the biggest challenge:** Negative examples predicted incorrectly as positive.

- Goal is to develop a Machine learning system that is able to support marine researches, NGOs and conservationists.
References

- Ketos - Underwater acoustic detection and classification with deep neural networks. [https://docs.meridian.cs.dal.ca/ketos/](https://docs.meridian.cs.dal.ca/ketos/)