

901103 - Biodiversity and Biooptics of Zooplankton

Week 51

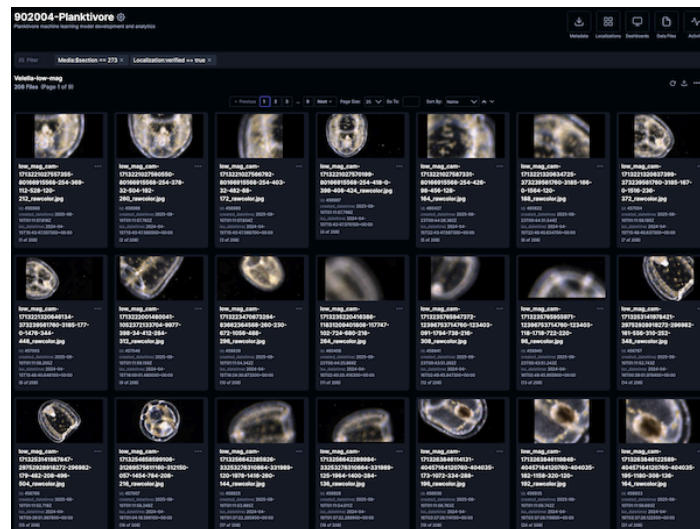
1. Danelle Cline
 - a. Trained RF-DETR models with single-class and multi-class for comparison. 0.95 mAP@0.5 best with single-class cteno sp. A.

Week 48

1. Danelle Cline
 - a. Trained RF-DETR large model. 0.91 mAP@50 for target species Ctenophora sp. A

Week 35

1. Danelle Cline
 - a. Finish data mining the Planktivore 2025-2025 low-magnification dataset using a REDIS Vector Database service with a Vision Transformer (ViTs) model. Starting with only 10 examples of Velella, we found ~200 in a collection of millions. We will be using this same approach to mine for rare (long-tail) taxa in the Planktivore high-magnification dataset.



b.

Week 32

1. Danelle Cline

- a. Refactoring to merge planktivore low and high magnification configurations for VSS (vector database system for vector similarity search) into compose stack with other projects
- b. Populated low mag augmented exemplar for searching velella medusae on single mission to test. CENCOOS team to finish preparing all planktivore low-magnification data for processing soon..

Week 28

- 1. Danelle Cline
 - a. VSS service is enabled with multi-GPUs and ready to run in bulk on plankton archives.

Week 27

- 1. Danelle Cline
 - a. Performance improvements to FastAPI to vector database to improve similarity search with VSS on large collections.

Week 26

- 1. Danelle Cline
 - a. Performance improvements to Vector Search System (VSS) vector database for scalability to search for vellela in archives

Week 19

- 1. Danelle Cline
 - a. Continued running data mining pipeline for cteno. Expedition data query and thalassa access seem very slow and data migrations to thalassa are disruptive. Some contention on GPU machine doris doing the work with other projects that need GPU compute.
 - b. Discussion about proposal

Week 17

- 1. Danelle Cline
 - a. Processed four years Ventana/DocR dives with strided Ctenophora sp. A pipeline. Next steps are to cluster and get feedback on performance. .

Week 14

- 1. Danelle Cline
 - a. Trained ViTs model with 500+ added Ctenophora sp. A training images mined from video tracking pipeline run on 900+ hours of Haddock dives + remapping of concepts. Balanced accuracy improved from .80 to .88 !!

- b. Modified optimized tracking pipeline for strided inference in preparation for running longer time series.
 - c. Continued exploration on using k8 for scaling.
- 2. Duane Edgington
 - a. Team meeting, discussion with Steve H. and Danelle C.

Week 12

- 1. Danelle Cline
 - a. Evaluating Argo as a way to orchestrate machine learning workflows and updated [ai documentation](#).

Week 10

- 1. Danelle Cline
 - a. Tator upgrade
 - b. ARGO Kubernetes sandbox.
- 2. Duane Edgington
 - a. Pipeline and planning discussion with Danelle C.

Week 6

- 1. Danelle Cline
 - a. Retrained M3 ViTS classification model with better focal loss. .90 top-1 balanced accuracy, 647 classes.

Week 5

- 1. Danelle Cline
 - a. Refactored fastapi-tator. This refactor included some improvements to allow bulk deletion/modifications of video and image annotations.
 - b. Update docs <https://docs.mbari.org/internal/ai/data/> and <https://docs.mbari.org/internal/ai/>

Week 3

- 1. Danelle Cline
 - a. Drafting summary of 951 hours video processed through CoTracker3

Week 2

- 1. Duane Edgington
 - a. Discuss [WebUOT-1M](#) (NeurIPS 2024) and OKTrack