

# SEAi-MORE

## A ShEllfish BehAvior MOnitoRing DEvice

### Streamlit Web App Instructions

AI Is a Team Sport!!!

*'The Oly Shuckers'*



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PACIFIC  
SHELLFISH  
INSTITUTE

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# SEAi-MORE – INSTALLATION

- Download app: [SEAi-MORE GitHub repository](#)
- Download sample images ( $n = 100$ ): [OneDrive](#)
- Install [Streamlit](#)
- Open command prompt; change to directory that contains the app: SEAi-MORE\_OpenCV.py
- Run the app:  
`> streamlit run .\SEAi-MORE_OpenCV.py`
- Open web browser:  
`http://localhost:8501`

\* Full-resolution versions of the instructional videos included in this presentation are available on the SEAi-MORE GitHub Repository.



# SEAi-MORE – INSTALLATION

bssackmann / SEAi-MORE

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

main · 1 branch · 0 tags

Go to file Add file Code

About

No description, website, or topics provided.

Readme Apache-2.0 License

Releases

No releases published Create a new release

bssackmann Add files via upload 28cb2e0 23 hours ago 9 commits

html\_images Add files via upload yesterday

image\_acquisition Add files via upload 2 days ago

LICENSE Initial commit 4 days ago

README.md Initial commit 4 days ago

SEAi-MORE\_OpenCV.py Add files via upload 23 hours ago

SEAi-MORE\_OpenCV\_SampleImage Add files via upload 2 days ago

Change directories



Launch app



Open Browser



```
Anaconda Powershell Prompt (Anaconda3)
(base) PS C:\Users\bssackmann> cd .\Desktop\OpenCV_Files\
(base) PS C:\Users\bssackmann\Desktop\OpenCV_Files> streamlit run ./SEAi-MORE_OpenCV.py

You can now view your Streamlit app in your browser.

Local URL: http://localhost:8501
Network URL: http://192.168.30.6:8501
```

# SEAi-MORE – SAMPLE IMAGES ( $n = 100$ )

The image displays two side-by-side Windows File Explorer windows. Both windows show the path `OpenCV_Files > SEAI-MORE_OpenCV_SampleImages` in the address bar. The left window is set to 'List' view, showing 100 JPEG files with names starting with '1626137...' and sizes ranging from 2,290 KB to 2,371 KB. The right window is set to 'Picture Tools' view, showing a grid of 100 small thumbnail images of the same files. A red oval highlights the address bar in both windows. Another red oval highlights the bottom status bar in the left window, which displays '100 items'.



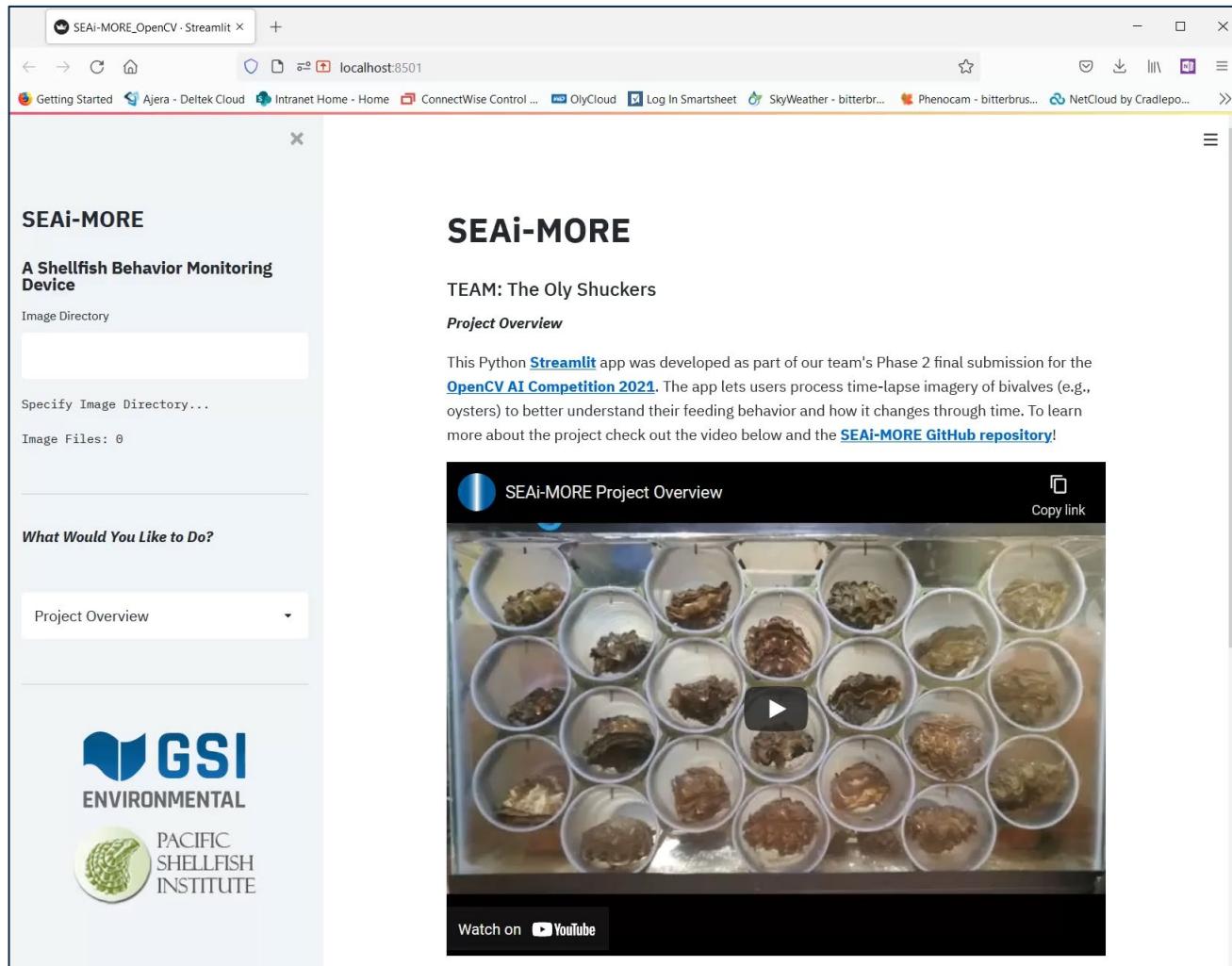
# SEAi-MORE – WEB APP OVERVIEW

- App has 4 separate ‘modules’ (see drop-down box in left-hand sidebar)
  - Project Overview
  - Pre-processing & Inference
  - Annotation Review
  - Post-processing & Time Series Analysis

The screenshot shows a web browser window for the 'SEAi-MORE\_OpenCV - Streamlit' application at 'localhost:8501'. The main content area displays the 'SEAi-MORE' logo and the text 'A Shellfish Behavior Monitoring Device'. Below this, there's a section for specifying an 'Image Directory' with a red circle highlighting the 'Project Overview' dropdown menu. To the right, another panel titled 'SEAi-MORE' shows 'TEAM: The Oly Shuckers' and a 'Project Overview' section with a video thumbnail and a 'Copy link' button. The video thumbnail shows a grid of oysters in containers. Logos for 'GSI ENVIRONMENTAL' and 'PACIFIC SHELLFISH INSTITUTE' are also visible.

# SEAi-MORE – PROJECT OVERVIEW

- Initial app landing page
- Provides overview and general information about the SEAi-MORE project



The image displays two side-by-side screenshots. On the left is a screenshot of a Streamlit application window titled "SEAi-MORE\_OpenCV - Streamlit" running on "localhost:8501". The interface includes a header with tabs like "Getting Started", "Ajera - Deltek Cloud", "Intranet Home - Home", etc. Below the header, the main content area has a title "SEAi-MORE" and a subtitle "A Shellfish Behavior Monitoring Device". It features a "Image Directory" section with a "Specify Image Directory..." button and a message "Image Files: 0". A dropdown menu "What Would You Like to Do?" contains "Project Overview". At the bottom, there's a logo for "GSI ENVIRONMENTAL PACIFIC SHELLFISH INSTITUTE" with a green circular icon. On the right is a screenshot of a video player titled "SEAi-MORE Project Overview". The video frame shows a tray filled with numerous oysters in individual wells, with a play button in the center. Below the video frame, there's a "Watch on YouTube" button and a "Copy link" button.

# SEAi-MORE – PRE-PROCESSING & INFERENCE

- Users specify input directory of images for processing using the Roboflow server hosted API endpoint
- Exposes user-defined inputs that can be used to adjust arguments used during API calls

The screenshot shows two side-by-side views of the SEAi-MORE Streamlit application. Both views have a header bar with the title 'SEAi-MORE\_OpenCV - Streamlit' and the URL 'localhost:8501'. The left view is a smaller preview window showing the sidebar and the main content area. The sidebar has a section titled 'SEAi-MORE' and 'A Shellfish Behavior Monitoring Device'. It contains a text input field labeled 'Image Directory' with the placeholder 'Specify Image Directory...', a status message 'Image Files: 0', and a dropdown menu 'What Would You Like to Do?' with 'Pre-Processing & Inference' selected. Below this is a slider for 'Confidence' set at 40, with a note explaining it's a scale from 0-100. The right view is the full application window. It also has the 'SEAi-MORE' header and 'A Shellfish Behavior Monitoring Device' section. It includes a larger text input field for specifying the image directory, a note about sample images, instructions for user-defined inputs, and details about the API response. At the bottom, there's a progress bar labeled 'Processing File 0 of 0...' and a footer note 'Made with Streamlit'.

SEAi-MORE

A Shellfish Behavior Monitoring Device

Image Directory

Specify Image Directory...

Image Files: 0

What Would You Like to Do?

Pre-Processing & Inference

Confidence

0 40 100

A threshold for the returned predictions on a scale of 0-100. A lower number will return more predictions. A higher number will return fewer high-certainty predictions (Default = 40).

TEAM: The Oly Shuckers

*Pre-Processing & Inference*

To begin, paste the full path to a directory containing JPEG images into the sidebar on the left.

A collection of sample images ( $n = 100$ ) that can be used to evaluate the app can be downloaded [here](#).

User-defined inputs include bounding box prediction **confidence**, **overlap**, and **shellfish** type. Once all selections are made, hit the run button in the sidebar on the left.

The app sends each image in the specified directory to the Roboflow server hosted API endpoint. The API returns bounding box predictions for all detected shellfish in a standardized JSON-formatted response.

JSON responses are saved as simple text files (.json) into the user-defined input directory using the same file name as the associated JPEG image.

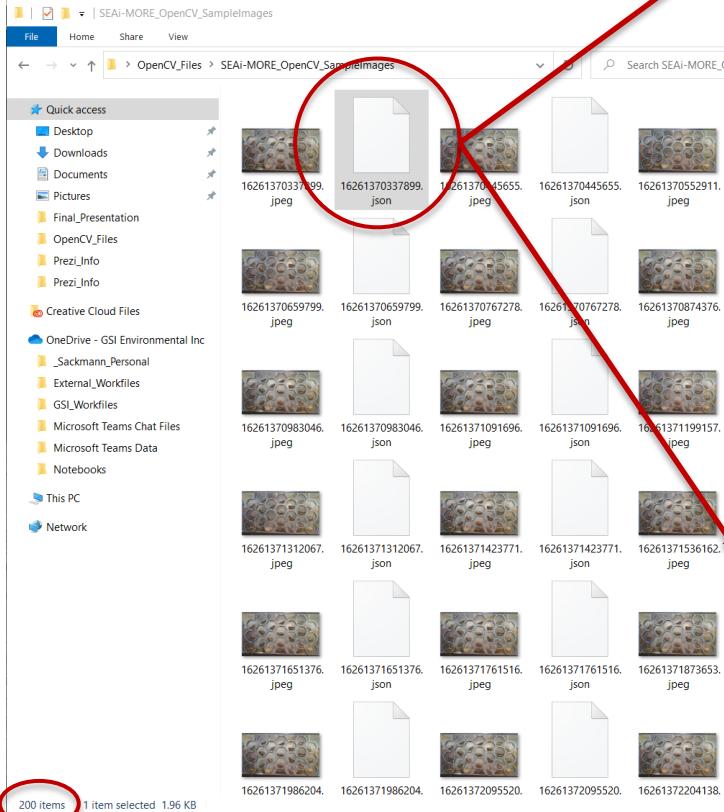
Processing File 0 of 0...

Made with Streamlit

# SEAi-MORE – PRE-PROCESSING & INFERENCE

Processing File 100 of 100...

Images Processed Successfully!



A screenshot of Notepad++ showing a JSON file named "16261370337899.json". The file contains a list of objects representing oysters detected in images. Each object is a dictionary with properties: "x", "y", "width", "height", "class", and "confidence". The "class" is consistently "Oyster" and the "confidence" values range from 0.405 to 0.94. The JSON structure is as follows:

```
[{"x": 3341.5, "y": 1869.0, "width": 333, "height": 342, "class": "Oyster", "confidence": 0.94}, {"x": 978.5, "y": 983.0, "width": 369, "height": 250, "class": "Oyster", "confidence": 0.861}, {"x": 2428.0, "y": 1888.0, "width": 314, "height": 268, "class": "Oyster", "confidence": 0.859}, {"x": 3323.5, "y": 808.0, "width": 277, "height": 212, "class": "Oyster", "confidence": 0.85}, {"x": 517.0, "y": 1287.5, "width": 332, "height": 231, "class": "Oyster", "confidence": 0.843}, {"x": 1957.0, "y": 503.0, "width": 314, "height": 194, "class": "Oyster", "confidence": 0.84}, {"x": 1509.5, "y": 748.0, "width": 323, "height": 240, "class": "Oyster", "confidence": 0.839}, {"x": 526.0, "y": 715.5, "width": 296, "height": 249, "class": "Oyster", "confidence": 0.808}, {"x": 1412.0, "y": 1315.5, "width": 314, "height": 231, "class": "Oyster", "confidence": 0.793}, {"x": 1056.5, "y": 457.0, "width": 323, "height": 212, "class": "Oyster", "confidence": 0.78}, {"x": 2921.5, "y": 1597.0, "width": 323, "height": 258, "class": "Oyster", "confidence": 0.774}, {"x": 974.0, "y": 1555.5, "width": 304, "height": 213, "class": "Oyster", "confidence": 0.763}, {"x": 2455.5, "y": 798.5, "width": 351, "height": 213, "class": "Oyster", "confidence": 0.76}, {"x": 2473.5, "y": 1310.5, "width": 351, "height": 295, "class": "Oyster", "confidence": 0.739}, {"x": 2963.0, "y": 1052.0, "width": 406, "height": 240, "class": "Oyster", "confidence": 0.68}, {"x": 2907.5, "y": 531.0, "width": 369, "height": 194, "class": "Oyster", "confidence": 0.652}, {"x": 1901.5, "y": 1569.0, "width": 369, "height": 258, "class": "Oyster", "confidence": 0.65}, {"x": 1901.5, "y": 1048.0, "width": 425, "height": 212, "class": "Oyster", "confidence": 0.643}, {"x": 1370.5, "y": 1846.0, "width": 397, "height": 296, "class": "Oyster", "confidence": 0.613}, {"x": 3369.0, "y": 1315.0, "width": 332, "height": 286, "class": "Oyster", "confidence": 0.576}, {"x": 448.0, "y": 1818.5, "width": 434, "height": 277, "class": "Oyster", "confidence": 0.405}]
```

# SEAi-MORE – ANNOTATION REVIEW

- Users review and visualize bounding box predictions returned by the Roboflow server hosted API endpoint

The image shows two side-by-side browser windows. Both windows have the title "SEAi-MORE\_OpenCV - Streamlit" and are running on "localhost:8501".

**Left Window (Annotation Review):**

- Header:** SEAi-MORE
- Section:** A Shellfish Behavior Monitoring Device
- Image Directory:** \\SEAi-MORE\_OpenCV\_SampleImages
- Image Files:** 100
- Section:** What Would You Like to Do?
- Sub-section:** Annotation Review
- Logos:** GSI Environmental and Pacific Shellfish Institute.

**Right Window (Annotation Review):**

- Header:** SEAi-MORE
- Section:** TEAM: The Oly Shuckers
- Section:** Annotation Review
- Text:** Once bounding box predictions have been made, results can be reviewed and displayed below.
- Text:** The **select image** input box below lets users display bounding box predictions for specific JPEG images found in the user-specified input directory.
- Text:** Users can also change the thickness of the lines used to draw bounding boxes by adjusting the **box stroke width** value.
- Text:** Labels can be turned on/off by toggling the **display labels** checkbox and the JSON-formatted predictions can be viewed by checking the **display JSON** checkbox found below the image.
- Section:** Select Image
- Input:** 1
- Section:** Box Stroke Width
- Input:** 10
- Checkboxes:**  Display Labels
- Text:** Current Image File Name: C:\Users\bssackmann\Desktop\OpenCV\_Files\SEAi-MORE\_OpenCV\_SampleImages\16261376337899.jpeg
- Image:** A photograph of several oysters in a tray, each with a blue label that says "Oyster".

# SEAi-MORE – POST-PROCESSING & TIME SERIES ANALYSIS

- Users calculate animal-specific summary statistics to better understand their animals' feeding behavior and how it changes through time
- Results are visualized as time series using interactive Plotly graphs

The screenshot shows two side-by-side browser windows displaying the SEAi-MORE Streamlit application. Both windows have the title "SEAi-MORE - Post-processing & Time Series Analysis".

**Left Window:**

- Header:** SEAi-MORE\_OpenCV - Streamlit, localhost:8501
- Content:**
  - Image Directory:** \SEAi-MORE\_OpenCV\_SampleImages (Image Files: 100)
  - Section:** What Would You Like to Do?
    - Post-Processing & Time Series An...**
  - JSON Annotation Files:** 100

**Right Window:**

- Header:** SEAi-MORE
- Content:**
  - TEAM:** The Oly Shuckers
  - Section:** Post-processing & Time Series Analysis
    - Once bounding box predictions have been made, results can be compiled, and additional post-processing can be done on an animal-specific basis.
    - Currently, the SEAi-MORE app only calculates a select subset of derived metrics. For example, the size of the bounding boxes predicted for individual animals can be viewed as interactive time series plots and the variability that one sees in these plots relates, in part, to the animals opening and closing their shells at different times.
    - As the SEAi-MORE project matures we will be introducing additional functionality to the app and expanding the suite of derived metrics that we calculate. Stay tuned!
  - Checklist:** Live Updates (checked)
  - Text:** Turn off live updates to improve app performance
  - Progress Bar:** Processing Images... (blue bar)
  - Image Selection:** Select Image (dropdown menu showing "55")
  - Text:** Current Image File Name: C:\Users\bssackmann\Desktop\OpenCV\_Files\SEAi-MORE\_OpenCV\_SampleImages\16261376224242.jpeg
  - Image Style:** RGB (dropdown menu)

# MORE INFO

## Contact



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## Links

**GitHub URL: <https://github.com/bssackmann/SEAi-MORE>**

