Hacktember 2022: Orcasound

Visualizing data for Orca Network and
PSEMP's Marine Mammal Work Group

- Google folder for hackathon
- Google photo album from hackathon

Hackathon Project Goals

Challenge 1: Sighting data pulled from archived Acartia.io into a map for the Orca Network website (+/- Facebook, +/- their weekly emailed reports)

Erika, Joyce, Christian, Sal

Sub-goal: maintain story-telling connection to the initial observer (community scientist), and the phenomena Alisa mentioned: the human value photographers feel in sharing their images in near-real-time.

Challenge 2: Facebook feed live on the new orcanetwork.org website.

Challenge 3: Hack together some basic (Python?) scripts to make Acartia.io API calls (e.g. pull SRKW rows for a month of interest) and generate a cool visualization (e.g. for a presentation layer)

Challenge 4: Visualize recent tracks (of at least SRKWs) from Acartia.io using open source visualization tools

Scott (Val?), Christian

Planned Scope of Hackathon Project (Deliverables)

1. A digital script-generated version of Howie's monthly hand-generated sightings map for Orca Network
2. A demonstration of the Facebook widget within a SquareSpace example site

3. Subsets of the Acartia.io data cooperative's decentralized observations, organized into visualization challenges within the orcadata wiki and/or the new salish-sea organization on Github (e.g. humpbacks, Bigg's KW tracks in Puget Sound, SRKW J pod track from Fraser to San Juan Island "west side shuffle"
4. Animations of cherry-picked Acartia data subsets:
    a. SRKW J pod shuffle and Fraser looping
    b. Bigg's matriline tracks through Puget Sound
    c. Yukusam sperm whale track through Salish Sea (need to add points)?
    d. Beluga track through Puget Sound (need to add points)?

Schedule for Hackathon Team (please include a time zone)

PST
8:30 Doors Open
9:00 Welcome and Overview
9:05 Opening Remarks from Amanda Renteria, CEO at Code for America
9:20 Project Pitches and Team Formation

10:00 Teamwork (6 hours)
10:00 Intros (in-person and remote)

- Christian, Seward Park, Seattle
- Sal, Texas, background in audio, recent experience with UX/design and web develo
- Brendan, Seattle-based, UX-team lead with Orcasound
- Howie, Whidbey Island, WA
    - Co-founder of Orca Network with Susan Berta
    - Challenge is to represent orca+whale occurrences in a public way
    - Alisa is the connecting agent between wild world in water and the humans of Washington and the world
    - Goal: graphically represent sightings coming in from mobile app (Whale Alert and/or Ocean Alert)
- Alisa, Shoreline, North Seattle, WA, volunteer in 2010 by Orca Network
    - Sighting network coordinator since 2015
- Joyce, in-person, based in Covington
    - Full stack developer, talking with Brendan
    - ~1.5 years experience with Orcasound hardware and streaming software
- Erika, based in Redmond
    - Web full stack developer, led team in Mexico City
    - Angular, Typescript
- Scott
    - Oceanographer, marine biologist

        - Chair Marine Mammal Work Group of Puget Sound Ecosystem Monitoring Program

10:30 Select challenges based on skills

- Onboarding logistics:
    - Invite to Orcasound Slack
    - Google accounts to add to this Google doc for collaborative editing and enclosing Hacktember Google Drive folder for easy file sharing and slide deck generation
- Quick tour of Orca Network
    - orcanetwork.org (new SquareSpace-based web site)
    - Facebook page (180k followers)
    - Album of visualizations/maps (includes other orgs/sources/ideas, too)
- Review of past orcamap efforts
    - V1 orcamap repo - Mapbox UI built by Christian
    - V2 site | orcamap-react repo open layers UI (Ivan lead in early 2021)
- Review recent acartia.io progress (site | Github repo w/API docs)
- Strategize about visualization generation vs deployment
- Brainstorm about best ways to share visualizations
- break into teams if needed

11:00 work on challenges
12:00 lunch break (option to chat informally)
12:30 Continue hacking
14:00 Quick check-in to resolve blocking issues
15:30 Draft presentation pages (1 per challenge?)

4:00 Project Presentations
5:00 Closing Comments and Adjourn

Additional Onboarding Notes for Volunteers

Resources for challenge 1: automate generation of a map of Acartia.io data for Orca Network web site (e.g. show days species sighted during latest complete month on a map)

- Album of visualizations/maps of Salish Sea marine animals from Orca Network and other outreach/education efforts
- Whale icons used by Howie in the recent sightings map?
- Acarta.io
    - Open source Github repository for Acartia.io
    - Can we query without a token?
        - Syntax: `https://acartia.io/api/v1/sightings/current`
        - `Documentation: https://github.com/Typehuman/SSEMMI/blob/main/CONTRIBUTING.md`
    - Issue a token for a new Orca Network user

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- Acartia.io data in a Google spreadsheet, somewhat cleaned (in case you don't want to use API)
    - Data dump this morning
    - Latest J+K pod track from San Juan to Fraser River (separate tab)
- Historic data: 25+ years of text-based Orca Network sightings reports (could be added to Acartia.io eventually)
    - Orca Network page (web format, HTML)
    - Sightings data scraped by Beam Reach students (.txt files)
        - https://beamreach.org/data/others/sightings/orcanetwork/
        - More example maps, .txt files, spreadsheets

Resources for challenge 2: demo Facebook live feed on Squarespace site

- Orca Network's Facebook group (public)
- Orca Network recently re-launched their web site using SquareSpace. This video suggests a possible solution using the Elfsight Facebook Feed widget (which might cost Orca Network $10/month?)
- Are there any open source alternatives to such widgets?
- Estimate monthly cost if Orca Network were to implement?

Resources for Challenge 3:

- Acartia.io web app
- Acartia.io open source code repository
    - API documentation
    - CONTRIBUTING.md (including data scheme)
- Salish Sea organization on Github
- Salishsea.io sandbox deployed via Gihub Pages

Challenge #4: Visualize recent tracks (of at least SRKWs) from Acartia.io using open source visualization tools

- Orcasound data visualization opportunities: animal location data (in orcadata wiki)
- Possible tools to try:
    - moveVis (Python, ffmpeg)
        - Used for Chilean blue whale visualization with ship traffic
    - Paraview (spatial data flow fields) desktop app, web ParaviewWeb Javascript library
- Build on extant or emerging SRKW movement models
    - Forecast model in R by Marine Randon of Simon Fraser Univ. in Vancouver, BC
        - Overview of project (post-doc completed spring, 2022)

        - Deployed model within Shiny app
        - R-code for forecast system (publication supplement)
        - Code parameterized with SRKW data (closed source?)
    - UW modeler who worked with Rich Osborne?
        - Did they publish a model?
- Contextualize SRKW movement (or strike risk for baleen whales)
    - Archived AIS data (2009-2020) https://marinecadastre.gov/ais/
    - Ask Val for AIShub data access

Bonus challenge (#5): Visualize tracks of SRKWs from satellite tagging program

- NOAA archive of SRKW satellite tracks
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Random thoughts/connections

- Connect with SmartFin for surfer based observations? Maybe not relevant for Salish Sea, but interesting for coastal obs?
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