

# Data & Visualization Weekly Projects Report

## 2021\_04\_23

### Active Projects

#### Active Development

- Advice For Thesis Defense Visualizations, Sabrina Nardin
  - Met with Sabrina to discuss her dissertation defense’s visualizations
  - Her data is visualizing 8 different violent events from Italy’s history in the last 50 years covered by 3 different newspapers
  - Most of her questions were about how to improve her existing approaches so I laid out the foundation of “task abstraction” taught to me by Joshua Levine using Tamara Munzner’s design theory for visualization
  - Shared resources with Sabrina and recommended a few changes, but overall tried to equip her with the ability to critique her own work
  - Mentioned other best practices such as sharing her visualizations with as many other people that are like her target audience as early as possible
  - Has asked for a follow up based on changes incorporated since the meeting
- Biosphere 2 Biosystems Visualization Collaboration
  - Met with Omani, and started in a new direction
  - We will base our work on her photo realistic nature scene
  - Take models from it and convert into the 2 types of assets that I’ve identified in the tree-hugger video (pseudo lidar, dynamic point paths)
  - She asked to specifically learn more about shaders so I’ve started teaching that material using the shadertoy program, I should mention to her that touch is free for non commercial and perhaps it will run on her laptop
  - I have to decide what makes sense to do with the results that I already have from the Open Root Sim if we go in this direction
  - Ash Black was interested in this project in our meeting, perhaps find a way to make this into work that his students can take on
- Data Visualization Roadshow With Jeff Oliver
  - Heard back from the NSCS department about a presentation
  - Just working on the date for the presentation
  - Presenting to undergraduates also
- Independent Study Abby Collier
  - Had our usual friday meeting
  - Made quite a bit of progress on her feature Touch Designer piece called “purple stars”
  - Spent time working on her github webpage to present the work from this independent study
  - Talked about potential for her to continue in this capacity after

- graduation as a DCC
- Judging The Data Visualization Challenge
  - Two more entries of 15 to judge, had a few issues with the rubric in the process
  - Likely will circle back just to make sure I'm executing my judging process consistently on some of the more nuanced scoring categories
- Migrant Forensic Empathy Project: A Digital Borderlands Grant Initiative
  - Got answers about the visual artifacts on SO, sounds like it is a camera parameter issue, hopefully I can still resolve it using a shadeless environment texture
  - Re-implemented the quad tree algorithm to allow for subsection overlap, unfortunately this caused my recursive algorithm to stack overflow when I put greater limits on the number of elements per region
  - Re-learned some more advanced methods in rust that will allow me to write the "populate quadtree" and "query" algorithms without recursion
  - For the mean time, just started long running task and processed cross placements much more accurately
  - It's pretty heartbreaking to see the crosses that are right next to each other <https://test-cross-placement.baylyd.repl.co/>
- Oyster Vibrio Literature Review
- Remote Visualization Infrastructure Development
  - Chris notified me that NoMachine was installed on i18n16, but there's firewall issues with port 4000 so I wasn't able to test this out
  - Met other members of the Omniverse team who are willing to help me when I run into issues with remote visualization for my projects
  - Tangentially related, I figured out how to render raw byte streams of data over TCP in the Touch Designer program which may be a personal method for doing remote visualization from simulations running on the HPC
- Resbaz Organizer And Workshop Provider
  - Met Chinmay and we discussed some final todo items
  - Testing our links next week and publishing them to the website team
  - Noticed that my workshop still isn't listed on the resbaz page so I'll have to get in touch with Alex about that
  - Blake volunteered to perform the uploads to youtube so that's helpful, still haven't heard from Kelsey about whether our unlisted approach is going to be the correct way to go
- Stellarscape Astronomy Multimedia Dance Performance
  - Worked out how to use the Engine COMP to start processes in other threads so that we can keep our visualization performance high
  - This enabled me to implement a TCP client that receives raw bytes and converts them to a texture that we can operate on with the GPU
  - I believe this will help me bring the HPC into the project in bigger ways

- Spent more time learning how to create multi segment lines in the compute shader

### **Consultations**

- Advice For Thesis Defense Visualizations, Sabrina Nardin

### **Upcoming**

- Bryan Carter Photogrammetry
- Collaboration With Techcore's Summer Internship
- Has Faculty Collaborations With Holodeck
- Jason Hortin Holographic Dance Graduate Project
- Observablehq Portfolio Of Data Visualization
- Ray Tracing On The Hpc

### **Completed For Fiscal Year**

#### **Workshops/Trainings**

- Mt. Lemmon In Your Pocket-Creating A Virtual Reality Tour
  - [https://rtdatavis.github.io/#GIS\\_week2020](https://rtdatavis.github.io/#GIS_week2020)
- Presentation For Civil Engineering Department
  - <https://docs.google.com/presentation/d/15Z9zcxU4vIIgFPnKEcaGv9GH7JtjNdx4Xpnjec0EzEc/edit>
- Tech Core Level Up Presentation Monday, Sept 28 2020
  - <https://rtdatavis.github.io/#techcoresept28>
- Tech Core Level Up Presentation Tuesday, Mar 17 2020
  - <https://rtdatavis.github.io/#techcoremar20>
- Womens Hackathon: Visualization On The Web Workshop
  - <https://womenshackathon.arizona.edu/>
  - <https://www.youtube.com/channel/UCe1YiJ53o3qcayVs4cipeXA/videos>
  - <https://www.youtube.com/watch?v=VLwPOtqW8oM>

#### **Completed Projects/Collaborations**

- 3D & Vr Retrofit Azlive
  - <https://rtdatavis.github.io/#retrofitAZLIVE>
- Bio5 Virtual Reality Tour
  - <https://rtdatavis.github.io/#bio5-vr-tour>
- Covid Retail Mitigation Web Scraping
  - <https://rtdatavis.github.io/#retailscraping>
- Force Directed Biochem Networks
  - <https://rtdatavis.github.io/#biochem-networks>
- Neuro Choropleth
  - <https://rtdatavis.github.io/#neuro-choro>
- Spring Break Covid Photo Maps
  - <https://rtdatavis.github.io/#spring-break-covid>

### **Infrastructure Developed**

- Autamus Web Interface
  - [https://rtdatavis.github.io/#autamus\\_interface](https://rtdatavis.github.io/#autamus_interface)
- Virtualgl For Nvidia Accelerated Remote Hpc Visualizations
  - <https://rtdatavis.github.io/#virtualgl>
- Xpra And Singularity For Comprehensive Graphical Application Support On Hpc
  - <https://rtdatavis.github.io/#xprasingularity>

### **Protocols and Analysis Developed**