Data & Visualization Weekly Projects Report 2021_04_30

Active Projects

Active Development

- Advice For Thesis Defense Visualizations, Sabrina Nardin
  - Answered follow up questions about her new stream graph over email
- Biosphere 2 Biosystems Visualization Collaboration
  - Didn't connect with Omani last week because of a time conflict on her end with building maintenance
  - Started working on a Proof of Concept for helping to convert models into point clouds
  - Wrote a js triangle sampling program which will be used when loading pixels from an image that is used as a mesh face texture. https://trianglesampler.baylyd.repl.co/
  - Had a big meeting with Ash, Victoria, and Aaron and it sounds like I'll be working with Tech Core students this summer on the Biosphere2 collab
- Bryan Carter Photogrammetry
  - Meeting Tayvien who works with Bryan on Thursday this week
  - Will spend some time getting him started with apporto and metashape to test things out
- Data Visualization Roadshow With Jeff Oliver
- Independent Study Abby Collier
  - Abby won the SBS senior award !!
  - Met and discussed how to use actively moving particles positions for sampling other textures
  - This is the foundation of reactive particle systems, so we now can use video input of a person to manipulate our particle system!
  - Will work with Blake to submit grade before the end of the semester
- Jason Hortin Holographic Dance Graduate Project
  - Wrote another email to Jason and mentioned he should get his project into the running for projects listed in the tech core summer Internship
  - He also reached out to Dr. Bryan Carter recently to see what the options were for doing volumetric capture footage recording
  - Sounds like more will happen in the fall because he's going back to Chicago for the summer
- Judging The Data Visualization Challenge
  - Completed this, my favorite entries also were the ones that won so at least I was judging along the lines of the others
- Migrant Forensic Empathy Project: A Digital Borderlands Grant Initiative
  - Time to really push on this project
  - discovered that the "shader:flat" method can help eliminate artifacts introduced from a renderer that's struggling with shadows on a large

mesh
  - rewrote the populate and query side of the quad-tree in non recursive algorithms, and dealt with bug that was running my machine out of memory in the development of this
  - New ideas about how to integrate the shrine into the landscape in a modular fashion
  - Will probably make a shallow quadtree for querying the user position every 5 seconds to see if we need to render more or less crosses in the environment
- Oyster Vibrio Literature Review
  - Emily had her defense last week, will now reach out to see if she is happy with the project and wants to call it done
- Remote Visualization Infrastructure Development
  - Met with Chris and discussed remote visualization options
  - Sounds like we should look into other tools that support rendering vulkan windows that aren't just NoMachine, still need to get to the bottom of that conversation with Chris
  - Discussed Omniverse usage
  - Tested Vulkan on each HPC and each have the same Invalid Driver message
  - Created a vulkan issue on their tracker https://vulkan.lunarg.com/issue/view/608706d05df112e5e0a11
- Resbaz Organizer And Workshop Provider
  - Met Chinmay one more time
  - Heard back from Kelsey about what the listing should be for the videos (public unless the instructor says otherwise), I think we need to make sure that's spelled out for folks attending workshops
  - Got our Observable workshop listed in the webpage
- Stellarscape Astronomy Multimedia Dance Performance
  - Wrote code to generate multisegment lines, but got stuck with how to apply this with multi line data also
  - Got curious about the scanline fill algorithms used to color the interior of geometries that we express with lines
  - Met with Gustavo from the sensor lab to discuss our options.

Consultations

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Upcoming

- Collaboration With Techcore's Summer Internship
- Has Faculty Collaborations With Holodeck
- Observablehq Portfolio Of Data Visualization
- Radiology 1St Year Resident Carl Sabotke
- 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
- 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
- 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