

Data & Visualization Weekly Projects Report

2021_08_20

Active Projects

Active Development

- Vulkan on HPC
 - Vulkan is the successor to OpenGL and much of my low level graphics understanding comes from web-gpu that leverages Vulkan
 - This means in order to provide greater visualization support with the HPC I need to have access to Vulkan
 - The issues are that our nvidia driver setup has a bug in it related to Vulkan support
 - I tried to get around this by configuring a singularity container with the files we know to be missing but a new error arises 600 lines later in the `vulkaninfo` command now
 - Reached out to UCSD and Expanse HPC visualization personnel to inquire about their support for this modern graphics library
 - Sent email to the Campus Champions list serve about this but didn't get many useful replies
- Streaming Technology for HPC
 - Spent time working out how to use FFMPEG to send frames from laptop webcam over udp as concatenated JPEG to an intermediary server that received udp and converted that to http Transfer Encoded Chunks received in a web browser and displayed as an updating image
 - This will eventually develop into a program that can take researcher jpg udp frames and display them where ever the researcher wants to display them as long as the display client is also on the HPC VPN
 - This is a simpler remote visualization method than use desktops or VNC because it only requires running a script on the HPC, but does mean a researcher has to write code to send the images over udp
 - Either way, it should be less work for the Infrastructure team and is a simpler remote client setup which just has to be a browser page
- Data Visualization Roadshow With Jeff Oliver
 - Created new flyer for the catalyst studio presentation on the 2nd of Sept
 - Kiri volunteered to reserve our space at the studios
 - Worked on material that needs to be swapped out from the presentation template
 - Prepared material for first drop in time next Tuesday
- Independent Study Abby Collier
 - Met briefly last week to cover recent updates
 - Discussed plan for distributing the work related to the feedback given from Kay in the last meeting
- Stellarscape Astronomy Multimedia Dance Performance

- Several meetings last week, one with Kay to discuss feedback she had for the visuals I shared with the team in meeting
- Also met with Gustavo Almeida to discuss use of sensors in the project
- Learned about the Kalman filter approach for integrating information from the gyroscopes to minimize drift in the IMU sensor output
- Discussed method for creating sensor recordings so that we don't have to use it live each time I want to develop visuals for movement 2a of the piece
- Was audience member for Touch Designer E-Sports competition, picked up tons of information about techniques/programs used in the VFX industry from this
- Biosphere 2 Biosystems Visualization Collaboration
 - Watched presentation of Birds of a Feather at SIGGRAPH on “Virtual Nature” presented my Maria Garcia at UCF
 - Had the idea of trying to do collaborations with their group but centered on the southwest instead
 - Need to look for faculty who would be willing to participate in this collaboration
- Radiology 1St Year Resident Carl Sabotke

Consultations

Upcoming

- Has Faculty Collaborations With Holodeck
- Observablehq Portfolio Of Data Visualization
- Ray Tracing On The Hpc

Completed For Fiscal Year

Recently Completed

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>
- Resbaz Organizer And Workshop Provider
 - https://hackmd.io/-XS5Mqh8TA2EHjTHCQ_4tw
- 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

- Collaboration With Techcore’S Summer Internship
 - https://hackmd.io/xi_m4Kj6QDenBR3ZAfN3iw?edit
 - {‘Project folder on gdrive’: ‘<https://drive.google.com/drive/folders/13v9QfUFVjQD-x7dh8chQZFvAxmy5zmx6?usp=sharing>’}
 - {‘videos’: ‘<https://drive.google.com/drive/folders/18tT28oLiXFH1wH8NGUwSU1K0URyzJq9o?usp=sharing>’}
 - {‘Pecha Kucha style presentation’: ‘<https://docs.google.com/presentation/d/1n6ggKJoG7fqHfVsLMnuYkAVh095B1RA7EcNx1RQ12M/edit?usp=sharing>’}
 - {‘presentation video’: ‘<https://www.youtube.com/watch?v=EiQ9S5lNbA8>’}
- 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>
- Migrant Forensic Empathy Project: A Digital Borderlands Grant Initiative
 - <https://mfemigrantdeathmap.baylyd.repl.co/>
 - https://devinbayly.github.io/digital_borderlands_conversion/src/mesh_test.html
 - https://devinbayly.github.io/digital_borderlands_conversion/src/index.html
 - https://hackmd.io/Qo_HmwmwSTG-QPYVTJl0Lg?view
 - <https://osf.io/v9swc>
- Neuro Choropleth
 - <https://rtdatavis.github.io/#neuro-choro>
- Oyster Vibrio Literature Review
 - TBA
- Spring Break Covid Photo Maps
 - <https://rtdatavis.github.io/#spring-break-covid>

Completed Consultations

- Discussion about Social Network Analysis Visualizations
 - NA
- Advice For Thesis Defense Visualizations, Sabrina Nardin
 - NA
- Bryan Carter Photogrammetry
 - <https://sketchfab.com/3d-models/churche-maze-photogrammetry-d0767af08a5d498fb960efe3ac83385f>
 - https://drive.google.com/file/d/11E5_912vW6kuPBxcujGKs-UQD9S3jA-H/view?usp=sharing

Infrastructure Developed

- Remote Visualization Infrastructure Development spring 2021
- 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