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CampusView

Immersive Virtual Campus Tour with Data Visualization Overlay Maryellen Marino, Chuoxi (Tracy) Chen

Undergraduate Research Symposium presentation The Rensselaer IDEA Faculty Advisors: Jim Hendler & John Erickson Rensselaer Polytechnic Institute



Rensselaer Institute for Data Exploration and Applications

CampusView

Research Statement: Using the IDEA Campfire visualization suite as a platform, this project creates a StreetView-like virtual tour experience for the Rensselaer campus, augmented by location-appropriate data overlays.

Project Relevance:

- Unique way to explore RPI Campus
 - Interactive map
 - Panoramic views
 - Data Overlays
- "Walk" on campus, stop at locations, "look at" how populated buildings are at set date/times
- Appropriate to RPI's COVID response objectives for de-densification













Method & Materials

App Infrastructure

- Idea modified from StudySafe & SafeCampus
- Implemented using RShiny and RPI-created MWShiny
 - Built and solidified app structure & functionality
- Captured 360 panoramic images for data visualization overlay

Data Integrity, Visualization, and Prediction

- Source: 1,300+ WAP devices on and off RPI main campus
- Aggregate data by building, time range, and day of week
- Prediction: median of the last 3 weeks' data
 - Simplest approach
 - Display in 4 color groups by building capacity
 - Additional details in supplement bar plots



RPI VirtualCampusTour







Results & Analysis

Results

- Functional virtual tour app
- Prediction-based data overlays
- User-friendly navigation

Analysis

- Project fit plan
- Small additional modifications







Conclusion

Research significance

- Bring visualization from 2D to a 360-degree panoramic view
 - Data overlay
 - Interactivity



Next steps

- Deployment of the app via Unity (done Spring 2022)
- Small design tweaks
- Exploration of other application of data on the CampusView framework





