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
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
Work Plan

- Pre-summer 2021: Campfire and StudySafe working individually
- Summer 2021: Structure, Functionality & Design
- Fall 2021: Data integrity & prediction
- Now: Unity implementation & Other applications
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
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