AR Security 11/15

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alliec45 Boxplots and Time Series Plots 0e05220 · 10 hours ago 58 Commits

scans	Boxplots and Time Series Plots	10 hours ago
video_captures	forgot to upload video of the demos	4 days ago
weekly_updates	rename weekly updates	2 days ago
.gitattributes	Initial commit	2 months ago
.gitignore	scans	last month
README.md	update readme	2 days ago

README

Mixed Reality Defense

This repository hosts the BURGS Project "AR Security", also known as Mixed Reality Defense. This repository hosts all of the team's work to investigate how performance indicators can be exploited to expose a MR User's location type. The project began with the an AR headset called the Magic Leap 2.

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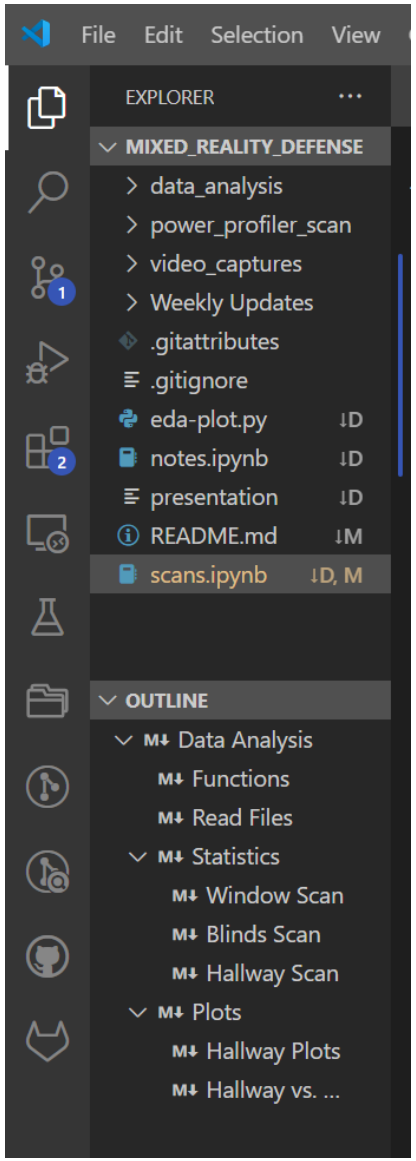
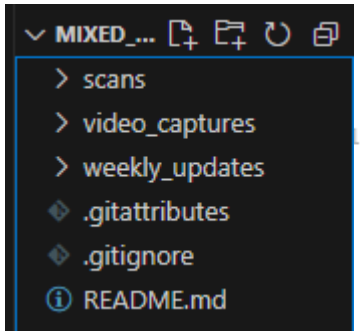
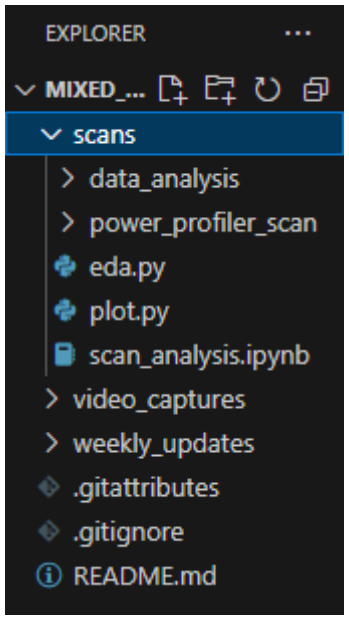
Repository Structure

- `/scans` : Contains all necessary information from scanning with the headset.
  - `/power_profiler_scan` : contains CSVs of performance indicator data collected from the Power Profiler
  - `/data_analysis` : outputs in the form of statistic tables and time-series graphs
  - `scan_analysis.ipynb` : contains the code which uses `eda.py` and `plot.py` to analyze the CSVs from `/power_profiler_scan`
  - `eda.py` : functions which use the `pandas` library for Exploratory Data Analysis (EDA)
  - `plot.py` . functions which use the `matplotlib` library for graphical analysis
- `/video_captures` : Contains all videography and photography from the headset.



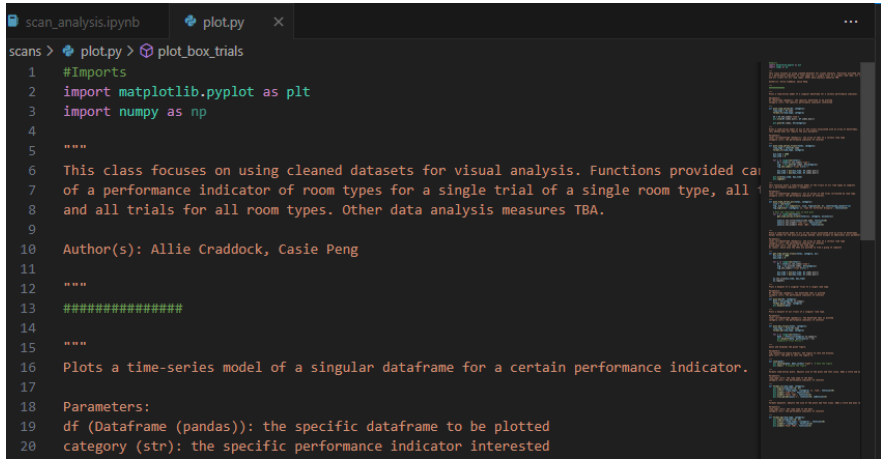


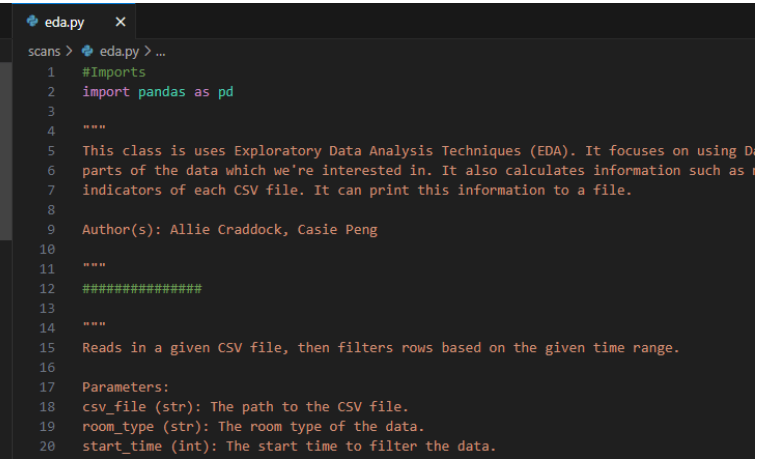


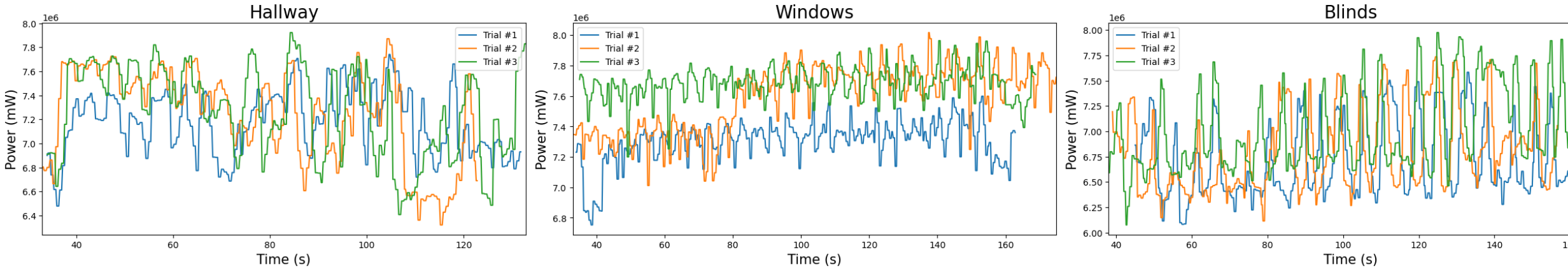
Read Files

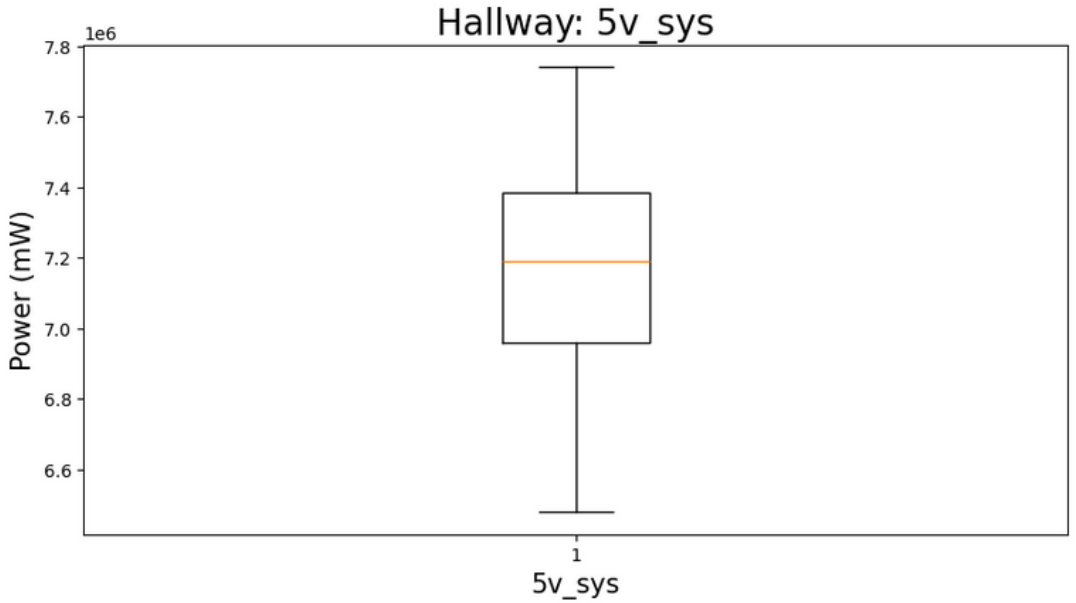
Read in files and assign them to dataframes for later analysis

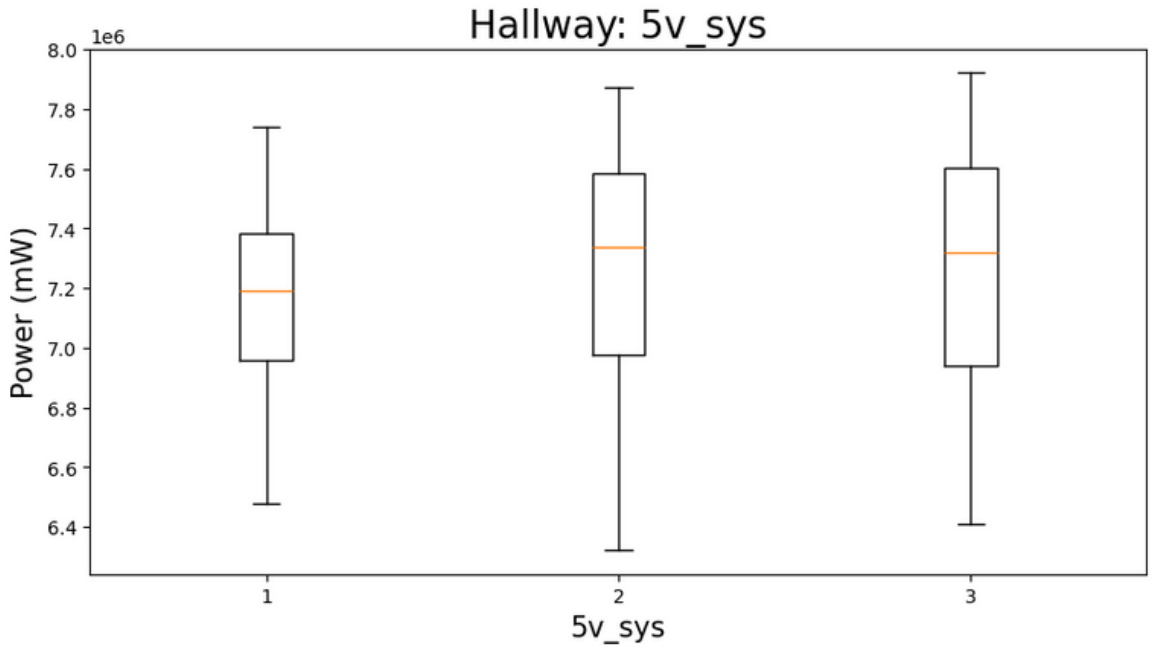
```
# Input file paths for room type: window
windows_csv_0 = 'power_profiler_scan/windows/mr_windows_0.csv'
windows_1 = 'power_profiler_scan/windows/mr_windows_1.csv'
windows_2 = 'power_profiler_scan/windows/mr_windows_2.csv'
windows_3 = 'power_profiler_scan/windows/mr_windows_3.csv'

# Read in the csv and create dataframes for before, during, and after the scanning process
# Before
w_1_b = csv_to_df(windows_1, "Windows", 0, 34)
w_2_b = csv_to_df(windows_2, "Windows", 0, 33)
w_3_b = csv_to_df(windows_3, "Windows", 0, 35)

# During
w_0_scan = csv_to_df(windows_csv_0, "Windows", 46, 194)
w_1_scan = csv_to_df(windows_1, "Windows", 34, 163)
w_2_scan = csv_to_df(windows_2, "Windows",  33, 175)
w_3_scan = csv_to_df(windows_3, "Windows", 35, 169)

# After
```






5v_sys vs. Time for Different Groups
Hallway
Windows
Blinds
1e6
Power (mW)
Time (s)
Trial #1
Trial #2
Trial #3


Hallway: 5v_sys
1e6
Power (mW)
5v_sys

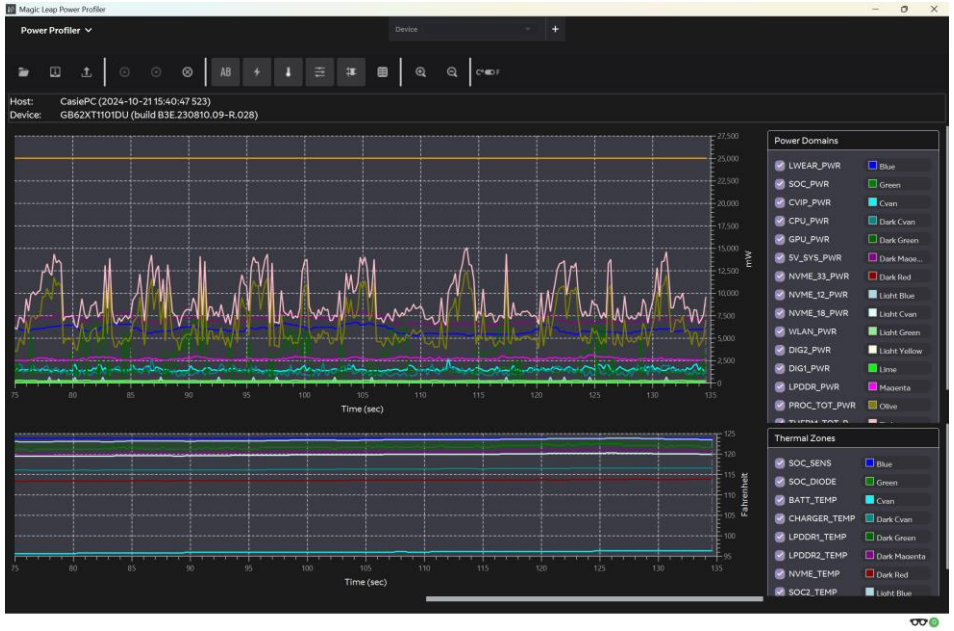

Hallway: 5v_sys
1e6
Power (mW)
5v_sys

Unity

- Did scans
- Learned some pandas from Allie

Unity Scan

Magic Leap Scan



Current Questions