A photograph of a railroad crossing at dusk or dawn. In the foreground, a white pole holds two large, circular flashing red lights. The lights are illuminated, and their red glow is visible. In the background, a train with several locomotives and freight cars is approaching the crossing. The train's headlights are on, and its lights are reflecting on the tracks. The background is filled with green trees and a hazy sky. The overall scene is dimly lit, with the primary light sources being the crossing lights and the train's headlights.

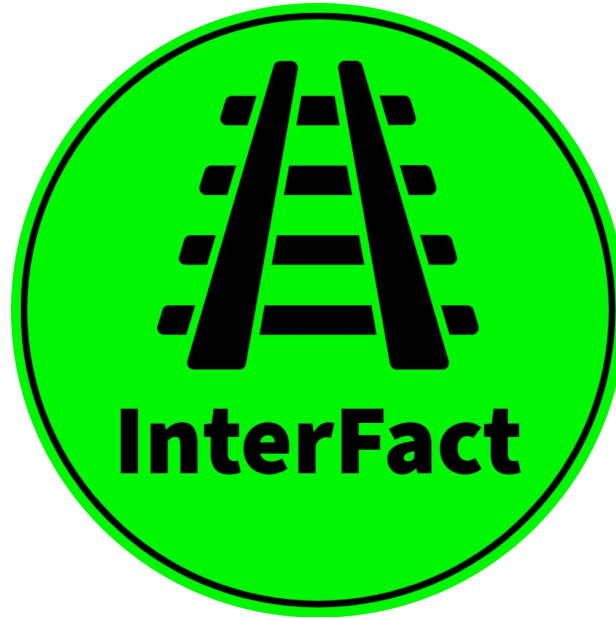
InterFact: Railroad Crossing Information System

InterFact Client & Information:



Huseyin Ergin

You know him



Determines if a train is blocking an intersection in Muncie, using cameras and machine learning



An Admin Dashboard for reviewing data about the InterFact system

5th Iteration Features

- Predictive Data!
 - Visualize statistics for every hour of the day!
- Run .py script on button press!
 - To retrain the model in the future
- Upload Snapshots straight to firebase!
- Refresh the dashboard to get new logs!



Interfact Iteration 5 Demo!



**Average Time
Blocked:**

3.53 minutes

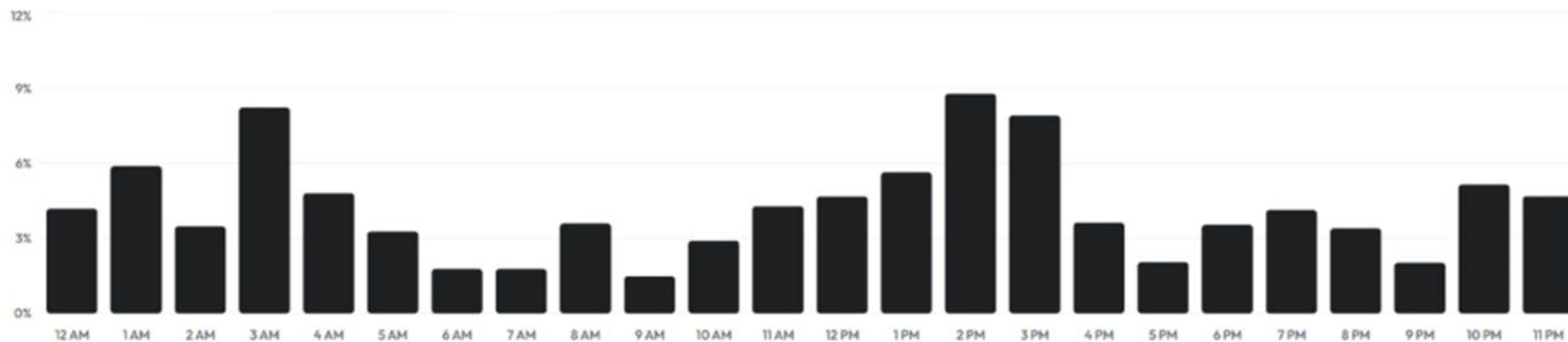
**Total Time Blocked
(Last 24 hours):**

0 minutes

**Total Time Blocked
(Last Week):**

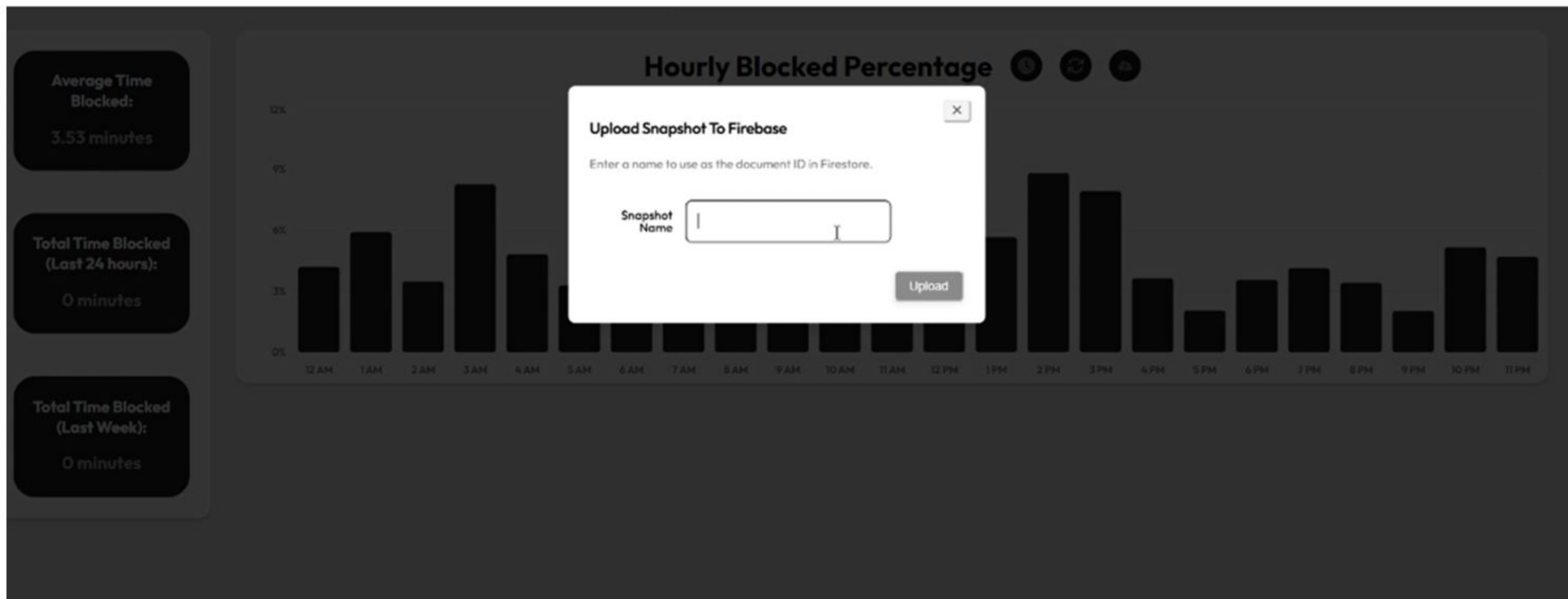
0 minutes

Hourly Blocked Percentage



Predictive Data!

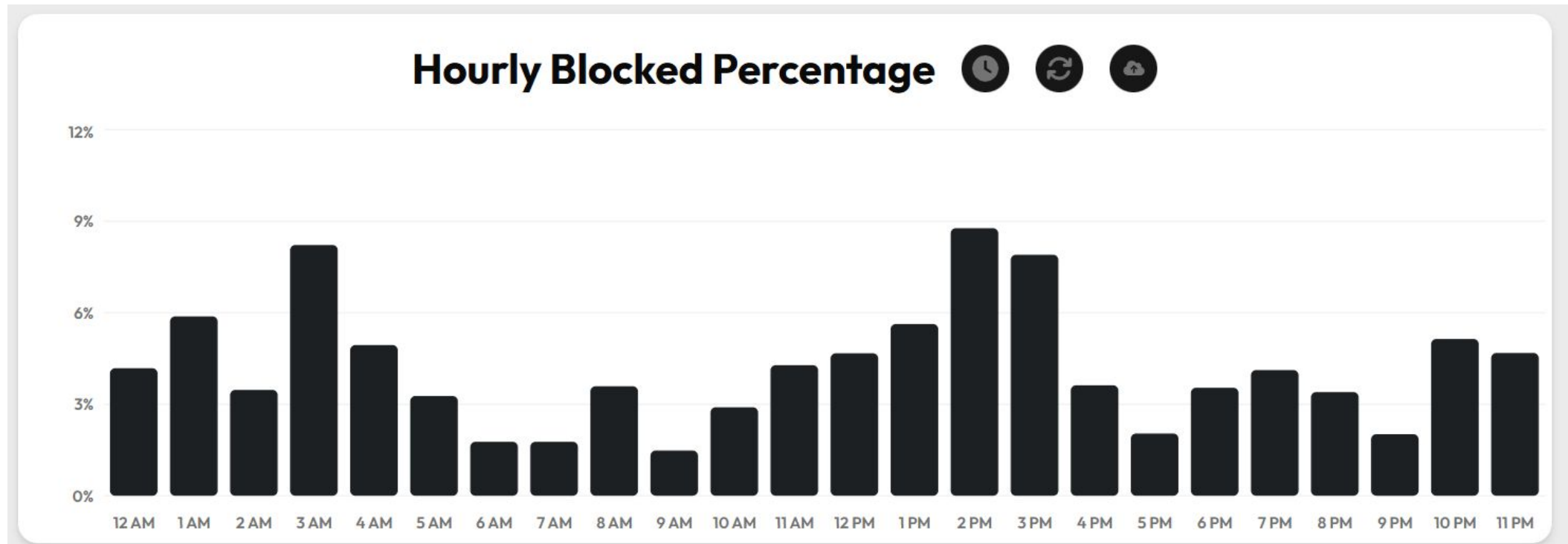
See the total intersection blocked percentage per day and per hour!



Upload Snapshot to Firebase!

Ethan

I worked on updating data analysis as well as uploading snapshots of the data to Firebase



Brooke

File	% Stmts	% Branch	% Funcs	% Lines
-----	-----	-----	-----	-----
All files	73	67.64	75	72.75

code coverage

I worked on testing the new features as well as fixing bugs the new features introduced.

bug showing reports for the wrong intersection

Reports Received 1

Log ID:1308

Camera ID:HAC1

Timestamp:3/5/2025, 12:29:22 PM

Filename:ITSNUMBERS.JPG

Status:CLOSED

Path:/path/to/imageFILLER.jpg

Confirm or deny report:

👍

👎

Camera Logs

Log ID:240

Camera ID:ELL1

Timestamp:11/6/2024, 3:55:00 AM

Filename:3343330240_20241106035500_IMAG1240-100-1240.JPG

Status:OPEN

Path:/path/to/image240.jpg

Log ID:239

Camera ID:ELL1

Timestamp:11/6/2024, 3:50:00 AM

Filename:3343330239_20241106035000_IMAG1239-100-1239.JPG

Status:OPEN

Path:/path/to/image239.jpg

Log ID:238

Tanner

I continued working on the transition to make it work across multiple page changes besides the links at the tops. I made it pretty modular besides the blocks on the dashboard since those need to be somewhere for the animation to play.

```
// navigate to intersection page by the intersection id
const navToIntersectionPage = async (id: string) =>{
  if (isPageAnimating()) return;

  await runPageTransition(true);
  router.push(` /Intersection/${id}`)
};
```

```
export function setupPageTransitions({ router, pathname }) {
  if (typeof window === 'undefined') return;

  const handleClick = (event) => {
    const link = event.currentTarget;
    const href = link.getAttribute('href');

    if (
      !href || href.startsWith('#') || href === pathname || href === lastNavigatedPath || isAnimating
    ) {
      event.preventDefault();
      return;
    }

    event.preventDefault();

    runPageTransition(false).then(() => {
      router.push(href);
      lastNavigatedPath = href;
    });
  };

  document.querySelectorAll('a[href]').forEach((link) => {
    link.removeEventListener('click', handleClick);
    link.addEventListener('click', handleClick);
  });

  revealTransition();
}
```

Mason

This Iteration, I created the Interfact poster for the symposium and showcases, and presented the project at each of the events.

Additionally, I worked on creating the presentation slides and updating the documentation.

24 - 25 CS Capstone Presentation



Interfact

Railway Intersection Information System

Ethan , Brooke, Tanner, Bella, Mason

Faculty Mentor: Huseyin Ergin, Ph.D.



What Is Interfact?

Interfact aims to track & monitor the status and statistics of railway intersection traffic for use by both first responders and online users alike!



Introduction

Using a live network of cameras and a machine learning model, Interfact is able to track the closure of railway intersections in the city of Muncie! The storage, filtration, and categorization of these logs allows the Interfact system to show train traffic trends, likelihood of closure at specific intersections at specific times, and live city intersection blockage data up to the minute!

TechStack

- React Framework
- Typescript
- Jest Tests
- Ant Design UI
- MySQL

Programmed with Microsoft Visual Studio

Versioned with GitHub

Meet The Clients!



Prof. Huseyin Ergin,
Ph.D.



Kyle Johnson
CIO Muncie Office of
Information and GIS Services

Main Dashboard

The Interfact dashboard opens with an overview of the cities railway intersections and their current Blocked or Open status! Users can refine their searches by clicking the filter icon and applying one of the preset filters!





For more detailed information on a specific intersection, users can click on an intersection image card for previous camera entries, statistics, and more!

View Logs From The Dashboard!

Validate Intersection Status With One Click!



See Real Statistics!

The data logs for each intersection can be utilized to provide blocked intersection statistics for each hour of the day every day of the week!



Conclusion

The Interfact project was an amazing experience to take on unique programming challenges in a new language & framework to facilitate progress in real world applications!

The project encapsulated several coding principals, taught us so much about testing & test coverage, and represented a major milestone in our academic careers!



Class Information & Special Thanks

- Project work was done through the CS 495 & 498 courses under the direction of Prof. Ergin, for the Capstone Project
- Special thanks to Bradley Vaal for your mentorship!



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Science

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Bella

I worked on connecting the Requests page to the database. The requests are now totalled at the top of the page and the requested intersections are listed below.

Camera Requests **3**

LKO1

GEC2

LKO1

```
export default function requests() {  
  
  const userFeedback = useUserFeedback();  
  const [requests, setRequests] = useState<string[] | null>([]);  
  
  const getRequests = (): string[] => {  
    return userFeedback.flatMap(user => {  
      if (Array.isArray(user.requests)) {  
        return user.requests.filter((request : string) => {  
          return request  
        });  
      }  
      return [];  
    });  
  };  
  
  useEffect(() => {  
    if (userFeedback.length > 0) {  
      const fetchedRequests = getRequests();  
      setRequests(fetchedRequests);  
    }  
  }, [userFeedback]);  
  
  return (  
    <div>  
      <div className="request-main">  
        <div><h1>Camera Requests<span className='item-reports'>{requests?.length || " - "}</span></h1></div>  
      </div>  
      {requests && requests.length > 0 ? (  
        requests.map((request : string, index) => {  
          return (  
            <RequestComponent request={request} index={index}></RequestComponent>  
          );  
        })  
      ) : null}  
    )  
  );  
}
```

Mentor Feedback

- Feedback :
Bradley gave very positive feedback on the new features and said that the newly implemented features looked to be very useful.



Client Feedback

- Feedback:
 - Would like to be able to see the hourly statistics for each day of the week instead of for the week as a whole.
- Changes Made:
 - Added notes & changes to the tasks to complete before the semester ends.



Planned Final Features:

- Implement a more detailed hourly statistics display.
 - Show hourly blockage data for each day of the week

