## Project Background

### Company Background
- This project was done in partnership with Viasat, specifically their UI/UX team.
- Viasat: a communications company based out of Southern California
- Specializes in high-speed satellite broadband services and secure networking systems

### Prior Project Work
- Worked on by a few iterations of intern teams and a corporate partnership team in the past year.
- Backend and anomaly detection models created, + initial end front components and UI.
- Final step was to create a user interface that follows company standards and branding guidelines.

### Anomaly Detection Background
- To understand this project, a general knowledge of what anomaly detection is and why it is useful is required.
- An anomaly is defined as an abnormality appearing in a set of data. As shown in Figure 1, an anomaly will normally appear as a dramatic spike or trough in otherwise visually normal data.
- Important to find and classify anomalies as they can represent real-life events such as equipment failure, solar outage, or general degradation.
- The ability to accurately classify anomalies for Viasat to provide better and faster service to their customers.

### Project Goals
- The overall goal of this Viasat UIUX design project is to create a front-end user interface for a preexisting tool designed to detect anomalies from time series data that does not currently have a fully functional user interface.
- This to be done by following an industry standard design process including UX research consisting of stakeholder interviews, user expectation interviews, prototype design and usability testing.

#### UX Research
- After determining the general task for the project UX Research was conducted

### Heuristic Evaluation
- Definition: a method for finding the issues with a user interface design in order to improve upon them in the next iteration of the design
- Based on 10 Nielsen’s Heuristics For Usability shown to the right in Figure 2

#### Results:
- Potential difficulty navigating the current FADER tool for an inexperienced user
- Error handling/help and documentation found to be lacking
- Complex user flows that require prior understanding of the tool

#### Stakeholder Interviews:
- Stakeholder Definition: Key individuals with vested interest in a project’s outcome
- Purpose: Understand the end goal for the FADER tool and what the front end should support
- Results: Wished ability to detect anomalies in real time for data scientists to research and refine algorithms
- Target audience conflict: Between network analysts who could use anomalies to troubleshoot the network or for data scientists to use for testing
- Decided to focus on data scientists in the immediate future
- Graphical representation of the anomaly in time series data was a positive part of past prototypes and should be retained with other improvements

#### Key UX Research Takeaways
- While there are lofty end goals for the FADER tool, the main job was to refine the user interface for the immediate use case of data scientists refining and testing algorithms and detecting prior anomalies
- The ability to mark and track anomalies would be the end goal from there

### Conclusion
- The UX research process allowed for the team to have a better understanding of the project scope and goals, as well as the type of user that was being designed for and proceed in the general design process shown in Figure 3.

### Prototype Design
- Started with lo-fi wireframes drawn on a whiteboard
- Created initial flow diagram shown in Figure 5
- Detail how users will move between and interact with pages
- Created initial digital mockup using Sketch with wireframes drawn on a whiteboard
- Complex user flows that require prior understanding of the tool
- Follow flow diagram while designing pages and interactions
- Revised prototype
- Heuristic Evaluation
- Results:
- Currently working on React implementation; until the end of the semester
- Graphical representation of the anomaly in time series data was a positive part of past research
- Follow flow diagram while designing pages and interactions
- Revised prototype

#### Anomaly Detection
- Anomaly is defined as an abnormality appearing in a set of data. As shown in Figure 1, an anomaly will normally appear as a dramatic spike or trough in otherwise visually normal data.

### Conclusion and Future Goals
- Gained knowledge and experience in participating in the UX/UI design process
- Valuable experience interviewing and designing
- Currently working on React implementation; until the end of the semester
- Goal to launch application and contribute to Viasat data science efforts

## References and Acknowledgements

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