Melissa Mullen

Melissa worked for a small start-up in Manchester called URSA (Unmanned Robotics Systems Analysis), a company which creates risk management software for unmanned systems such as unmanned aerial vehicles (UAVs), drones and counter-unmanned aircraft systems (CUAS). This software turns telemetry data into a more easily readable form for operators, which allows them to use their systems with reduced risk. Melissa's onboarding process and training was focused on analyzing a specific unmanned system flight and determining why this system crashed. After training, she spent two months working on a "classifier", a program which determines if a certain behavior has occurred, or a specific criterion has been met. The specific classifier which Melissa worked on determined whether or not an unmanned system was traveling in a straight line, and for how long. Later on in the internship, Melissa worked on two more classifiers, one for FAA compliance and one for system forensics.

When she was tasked with creating a classifier, the first phase of development was always brainstorming ideas for how to complete this task. During this phase of development, she would meet with her supervisor, who would help her understand what the end product might look like, using tools like whiteboard sketches and Q&A discussions. The next step was to find potentially relevant data sets. For example, for the straight line classifier, Melissa took data from flights she knew flew long straight line paths, as well as other flights which flew minimal straight lines, so in the future she could determine whether or not her classifier was giving accurate results. The next part of the process was building the first version of the classifier, a slow process involving lots of research, debugging, and meetings with supervisors. After the code was ready, it would be submitted to a supervisor who would review it and ask for changes. Typically, Melissa would need to submit a classifier three or four times before the supervisor was happy with the code.

Melissa's work environment was very locked down and secure. Because of her companies partnerships with the U.S. Air Force as well as the Department of Defense, she had to attend security workshops, had to use two factor authentication to log into her work computer, and did not have access to all the companies classifiers until late into the internship. Her company had daily staff meetings where she had to discuss her progress for the day, as well as biweekly check-in meetings with the director of engineering, monthly all-hands-on-deck staff meetings, and a few workshops.

Melissa is an Analytics and Data Science major, and she says that this internship was a great experience which taught her about the roles and responsibilities of a data scientist. She was very grateful for the oppurtunity to work in such a professional environment. She also enjoyed the smaller nature of the company, which at the time had only about ten employees. This meant that if she had questions about a piece of code, she could very easily find and ask the person who wrote it to help her understand. She was surprised but grateful to find out that despite the high security measures and sensitivity of data, her company had a very lenient corporate culture, which allowed for more casual dress, casual conversation, flexible work hours which allow you to clock in and out whenever you want (as long as you work enough hours), the ability to work from home, and weekly staff gatherings at a local bar. This helped reduce the stress of the internship for her greatly. The internship helped her become much more confident in her programming skills, as well as confident she was in the right field.

Kevin Booth

Kevin Booth works as a web developer at GYK Antler, a marketing agency which provides branding, video production, web development services, and more. GYK Antler is a mid-sized company with three locations, including one in Manchester. Kevin's job is to work on web maintenance tasks on client sites. He is a Full Stack Web Developer whose job requires knowledge of every part of the websites he creates. Since Kevin had already been though the internship process with GYK Antler and was currently working full-time with them, he completed the applied research option for this course.

For three years before his applied research project, GYK Antler had been supporting a small start-up called Explorics which pulls data from dozens of third-party data sources like Facebook, Instagram, Twitter, and so on. This data is unified into one place, and with the data Explorics can create easily digestible charts and tables for the customer. The relationship between these two companies was very good, and they came to the decision to integrate Explorics data presentation software exclusively with GYK Antler. This is where Kevin's applied research project comes in. Kevin's task was to advance his knowledge of the Explorics platform, as well as to help adapt Explorics software for his companies specific needs.

The first thing Kevin needed to do was to familiarize himself with the code base he would be working on. Him and his advisors agreed that the best way to do this would be to identify an area of the program which needed improvement, and to have him work on it. The area they decided to work on was the front-end architecture in their web application, which was a data visualization platform that the company had been licensing for a large fee, which was driving up the cost of the program. Kevin's task would be to learn how the platform worked, as well as how it interacted with the rest of Exploric's software so that he could eventually completely replace it with his own front-end architecture.

The first two weeks of the project were spent with Kevin trying to wrap his head around the unfamiliar code by dissecting it, getting a local environment up on his PC, and attending knowledge transfer meetings with the lead software engineer. After this, Kevin met with his supervisor to find a good starting point, which they determined would be developing sub-dashboards. Much of the challenges that Kevin faced were about figuring out what tools he would be utilizing to complete his task, such as which front-end JavaScript framework, charting library, and table library would be the best fit for the project. After implementing these tools, Kevin worked on many other tasks such as validating API security, writing code to make API requests, implementing elements such as pie charts and tables, and much more. By the time the internship class had completed, Kevin had finished the Web sub-dashboard and presented it to the Explorics CEO. Kevin would continue to work on this project after the internship class was over.

Due to the amount of freedom Kevin had over the entire project, he ended up learning a lot about self-discipline and project management. He had to set his own personal due dates, which he did not always meet, but which helped keep him on track the entire way through the project. Though he had advisors who assisted him throughout the project, he mostly had to take responsibility into his own hand when it came to setting up meetings and doing research. Even though it was difficult and daunting to go at such a large project mostly on his own, it was greatly beneficial to him as it increased his confidence and taught him a lot about decision making. This also made his work more satisfying, as he knows that something he built by himself will be useful for dozens of other businesses.