AIS Ship Tracking/Databases and SQL
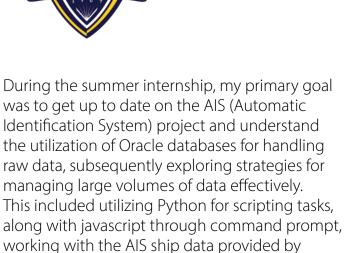

Intern: Fernando Alvarado
Mentor: Professor Arjit Das
Location: Naval Postgraduate School

During the summer internship, my primary goal was to get up to date on the AIS (Automatic Identification System) project and understand the utilization of Oracle databases for handling raw data, subsequently exploring strategies for managing large volumes of data effectively. This included utilizing Python for scripting tasks, along with javascript through command prompt, working with the AIS ship data provided by MarineCadestre.gov as the main data source, and employing Oracle/SQL for data manipulation. My specific focus involved utilizing Oracle and SQL to work with provided data entries, along with running java scripts alongside Oracle.

My Contributions included storing AIS data in Oracle databases, performing data manipulation using SQL queries, implementing primary and foreign keys for data integrity, and conducting comprehensive data cleaning to eliminate garbage values, nulls, and duplicate entries and corrupted entries. Additionally, I segmented extensive datasets into more manageable units, optimizing accessibility. The results showcased the ability to leverage databases, Oracle, and

SQL to manage and transform the AIS data, enhancing its presentation and usability. One notable observation from the project was the underutilization of the Navy's Oracle license despite its potential for scaling data and information. The internship emphasized the benefits of secure, efficient database systems, making a case for modern database solutions like Oracle in naval operations to optimize data management for improved decision-making and strategic planning. These databases would then be moved onto computer clusters/server racks located on campus at NPS. During my 2 week internship extension at NPS, I would also be tasked with reviewing and replicating a colleague's project on AI machine learning on a virtual machine, based on her report. This AI would be then trained using data entries from the AIS ship database.

Fernando Alvarado

Major: Computer Science