

## Regatta Rules Adjudication System

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**Author Note:** Our team is comprised of George Mason Systems Engineering students. We would like to thank the George Mason faculty and staff including Dr. George Donohue for the help on this project as well as our Sponsor Mr. Tony Syme and the Chesapeake Yacht Club.

**Abstract:** Yacht series racing, known as a regatta, occurs around the world in both the amateur and professional competitive scene. However, as rules and boat designs evolve, adjudication systems at the amateur level have not. Professional regattas use cutting edge technology in real-time to adjudicate their races while amateur races must rely on competitor testimony in post-race meetings due to lower budgets and complexity at the cost of accuracy and objectivity. Our team has developed five systems of monitoring, including GPS, UAV, Aerostat, and ship mounted cameras to monitor races for both real-time and post-race adjudication. Alternative evaluation, with criteria including precision, simplicity, and other factors was aided by experimentation, a predictive 2-dimensional simulation, and sensitivity analysis. In conclusion, our project aims to assist with regatta adjudication by providing a technical system of monitoring devices and a prediction tool to objectively analyze and report potential rule violations.

*Keywords:* Regatta, Yacht Adjudication, Stochastic Simulation, Design, Sailing