

Henry Wright

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BIOGRAPHY

Henry first became interested in engineering when he joined his high school's rocketry club. It was here where he was awarded the opportunity to participate in a summer internship at a local university. During this internship he discovered how rewarding a career in research could be. Armed with his newfound passion, Henry entered SLU as freshman studying Engineering Physics. During his undergraduate years, Henry participated in as many research endeavors as he could, ranging from the study of graphene to aircraft control systems. As his research experience expanded, he learned that his interests were leading him to the study of control systems. Regardless of the research topic, he always found himself drawn to the various control systems driving the project's technical aspects. This understanding coupled with his passion for aerospace engineering is what led Henry to expand his knowledge on flight control systems and thus pursue a master's degree in aerospace and mechanical engineering.

RESEARCH

A new era of aviation is upon us. With the onset of unmanned aerial vehicles (UAVs), the nature of flight is poised to change forever. It is predicted that the total value of business and labor across all industries that could be improved with UAVs is upwards of \$127.3 billion. The resulting market demand for UAVs will naturally lead to increased autonomy for reasons of both safety and cost, but we will not be able to fully reap the benefits of these autonomous UAVs until they are able to fly safely in urban or cluttered environments, under a wide range of conditions. These conditions lead to nonlinearities in the flight dynamics that can lead to catastrophic failure. A controller that is proven to be fully adaptive to all these conditions has not yet been realized. In the case of autonomous UAVs, these conditions can be random and possibly unidentifiable. Consequently, the most promising method of control would be for the vehicle to *learn* the best allocation of its resources following a failure. Machine learning is a viable option in solving these issues that plague flight control, and its exploration in this field is imperative.



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