Dr. Jonathan H. Jiang
Supervisor, Principal Scientist
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California Institute of Technology
4800 Oak Grove Drive, Pasadena, CA 91109

Date: 09/20/2023

Re: Henry Hanyue Shen

To Whom It May Concern:

This is to certify that Henry Hanyue Shen has devoted his time and effort as a full-time volunteer research intern during the months of June to August 2023 at the esteemed California Institute of Technology. The following evaluation is an encapsulation of his dedication, performance, and progress during this tenure.

Title of Project: Biophysical Principles of Avian High-Speed Wing Architecture: Implications on Aerodynamic and Aeroelastic Improvements for Small UAVs.

Abstract: Henry's research delves into the exploration and analysis of the aeroelastic characteristics of a novel wing design inspired by the peregrine falcon. Through an adept application of VLM estimation, coupled with fluid and structural finite element analysis, Henry has showcased an optimized wing design that exhibits commendable improvements. With validation from two distinct wind tunnel experiments, the proposed design manifests an impressive 4.8% reduction in displacement, over 10% reduction in strain, and a substantial 25.16% decrease in high aerodynamic loading area, when juxtaposed with the conventional straight delta wing under comparable conditions. This study amplifies the potential of integrating such a design in small UAVs, aiming to enhance maneuverability and durability, all the while optimizing cruising efficiency.

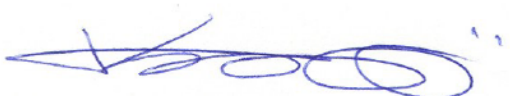
Performance Evaluation: Throughout his research training exercise, Henry consistently demonstrated a profound interest in science, which was further elucidated by his stellar performance. In the scheduled weekly project meetings, he was punctual and well-prepared, detailing his progress in the project that spanned across various facets, including meticulous literature reviews and nuanced exoplanet data analyses. His prowess in computer coding was noteworthy and immensely contributed to the project's success.

By the culmination of the summer internship period, Henry adeptly presented a comprehensive report on his project, ensuring that all aspects of his research were thoroughly communicated and understood. His presentation skills were commendable, with a clear articulation of complex topics, making them accessible even to those unfamiliar with the subject matter.

On a personal note, I have had the pleasure of working closely with Henry. His fervor for science, dedication to his work, and commitment to pushing the boundaries of what is known, have left a lasting impression on me. I genuinely believe that his passion and prowess will drive him to make significant contributions in the realm of STEM in the foreseeable future.

I am eager to witness his future achievements and developments in the vast domain of STEM.

Sincerely,



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