

Monterey Bay Aquarium Research Institute
7700 Sandholdt Road. Moss Landing, California 95039

Dear MBARI Team,

I grew up with a strong passion for the ocean. From watching groups of sea lions porpoise past me while surfing, to observing brilliantly colored rockfish near the sea floor, the ocean's creatures will always amaze me. I want to help preserve aquatic ecosystems, their biodiversity, and their natural resources for future generations. I believe studying the ocean and its organisms is the best way to understanding our impacts and ways to reduce them. Your organization's mission of researching the world's oceans, particularly our own here in Monterey Bay is inspiring; I would love to join a team of passionate, technically minded people dedicated to ocean exploration and conservation.

I am currently a third-year general engineering student at Cal Poly, San Luis Obispo, concentrating in mechanical product design. I am from Felton and am passionate about finding solutions to the climate crisis by working within my community. This opportunity would benefit me in several ways. For one, I would apply my experience with computer-aided design and my understanding of fluid mechanics, dynamics, and mechanical systems to improving underwater robotics. I would also gain experience working at a research organization, which appeals to me much more than a for-profit company. My technical skills and interests are closely aligned with a few of your summer projects.

The project I see myself most closely aligned with is the autonomous coastal profiling float. I am particularly interested in developing the technology of sensors and other equipment to help the floats collect more data and improve their research potential. I am experienced with Solidworks and interested in improving underwater robotic systems. I also have mechatronics experience and an understanding of motor and servo controls.

Another project I'm intrigued by is Scalable Marine Robotics. I am interested in learning more about underwater mapping technology that produces a three-dimensional representation of the ocean floor. I have experience with Python and have worked on several remotely operated robotics projects, including combat robots that I have competed and won with at Robogames, a robotics competition in the Bay Area.

The final project that appeals to me is Underwater Mapping. Using remotely operated vehicles to explore and understand deep sea organisms is fascinating. I would love to work on calibrating and optimizing the sensors involved in this project. With regards to all of these projects, I have experience working in design teams from a variety of hands-on lab classes, including mechanical systems design, design for strength and stiffness, and mechatronics. I am an effective communicator and a collaborative, supportive teammate.

Sincerely,
Aiden Largay. (831) 278-0581 , ablargay@gmail.com

Aiden Largay

544 Westmont Ave, San Luis Obispo CA 93405 | 831.278.0581 | ablargay@gmail.com

EDUCATION

California Polytechnic State University , San Luis Obispo, CA	September 2021 – June 2025
Bachelor of Science in General Engineering Concentration in Product Design	GPA: 3.87
Relevant Coursework: Mechanical Design, Mechatronics, Thermodynamics, Fluid Mechanics, Heat Transfer, Electronics, Differential Equations, Solid Modeling, Technical Writing for Engineers.	
San Lorenzo Valley High School , Felton, CA	August 2016 – June 2020
Johns Hopkins Center for Talented Youth , Virtual.	August 2017 – June 2018
Stanford Online High School , Virtual.	August 2014 – June 2017

WORK EXPERIENCE

Server, Bartender, Busser, Host	May 2020 – September 2023
<i>Cowboy Bar and Grill</i>	<i>Felton, CA</i>
- Worked at a restaurant in my hometown, from serving tables and making drinks to hosting and running food. - Collaborated closely with coworkers to accomplish tasks most efficiently. - Lots of experience with problem solving and customer service.	
Mathematics and Science Tutor	August 2019 – June 2022
<i>San Lorenzo Valley High School and Private</i>	<i>Felton and San Luis Obispo, CA</i>
- Tutored mathematics, algebra through calculus at my high school. - Worked closely with students to bridge understanding gaps and encourage thoughtful approaches to problems. - Moved to online tutoring during the covid pandemic, helped elementary-high school with a variety of subjects.	
Food Preparation	December 2020 – March 2021
<i>Gerard's Restaurant</i>	<i>Lahaina, HI</i>
- Prepared food at a high-end French restaurant. - Learned from Chef Gerard how to craft all the cold appetizers and desserts. - Worked efficiently and precisely in a fast-paced environment.	

LEADERSHIP & INVOLVEMENT

Outdoor Engineering Teaching Assistant	June 2019
<i>Camp CREATE</i>	<i>Felton, CA</i>
- Helped teach the design and engineering process to middle school campers. - Emphasized the importance of collaboration, communication, and respect. - Built everything from cardboard boats to solar-powered cars.	
Engineering Innovation and Design Camp	July 2018
<i>Northeastern University</i>	<i>Boston, MA</i>
- Explored the concepts of design and engineering and their impacts on the world. - Experimented with additive and subtractive manufacturing techniques. - Used Arduino hardware and software to automate mechanical systems.	

TECHNICAL SKILLS & INTERESTS

Software	Solidworks, Python, Microsoft Excel/Word/PowerPoint, Google Suite.
Equipment	Circuit and bread board assembly and soldering, function generator and oscilloscope, power tools.
Strengths	Problem solving, mathematical and scientific interpretation, creative and artistic vision.
Interests	Collaborating in groups to solve problems, merging technical engineering with creative design.



CAL POLY

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February 27, 2024

Monterey Bay Aquarium Research Institute

Subject: **Letter of reference for Mr. Aiden Largay**

To the admissions committee,

It is with great pleasure that I write this letter of recommendation on behalf of Mr. Aiden Largay. I served as Mr. Largay's instructor in our **ME305: Introduction to Mechatronics** course. In class and in our other interactions I have been able to observe his strong work ethic, problem solving ability, technical skill, and scientific curiosity. It is because of these experiences that I believe Aiden will be an excellent candidate for the summer internship opportunities at MBARI.

I first met Aiden as his lecture and lab instructor in **ME305: Introduction to Mechatronics**. **ME305** is known to be one of the most difficult courses in our undergraduate curriculum. The course is designed to teach fundamentals of electrical and mechanical systems. To emphasize these concepts, we use a low-level programming language, a microcontroller, and peripheral devices to force students to think algorithmically about problem solving before diving into coding solutions. Aiden excelled in this course and demonstrated a strong understanding of how low-level, fundamental concepts, map to high-level, complex systems. Because we use assembly language, students are not able to simply write code without planning. They must fully design their electro-mechanical system interfaces using finite state machines (FSMs). They then implement and debug these FSMs on hardware. This method forces students to think about a problem from a higher-level, language independent perspective. One of the strongest skills students develop is the ability to frame a problem, determine potential solutions, and systematically implement and debug their approach. I believe this skill goes beyond the specific domain of mechatronics and may be applicable to the various marine-focused internship opportunities at MBARI. For his final course project, Aiden (and the other students) focused on the development of a cooperative, multitasking closed-loop motor controller with full user interface. In this project, he demonstrated his understanding of cooperative multitasking, user interface design, and closed-loop PI control, all coded in the assembly programming language. Ongoing projects that may most align with his skillset include but are not limited to: (1) autonomous coastal profiling float; (2) scalable marine robotics; and (3) soundscape.

I believe that Aiden has gained a strong understanding of modelling and controlling complex, multi-domain systems. Equally important, he has learned how to properly frame, design plans for, and to pursue solutions for complex problems. His ability to absorb information in the classroom, consolidate information from a variety of sources, and apply a solution are all skills that will

help him to become a successful intern at MBARI. It is for these reasons that I enthusiastically recommend him for a project opportunity.

Please feel free to contact me with any follow-up questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'E. Wade' with a stylized flourish at the end.

Eric Espinoza-Wade, PhD
Associate Professor
California Polytechnic University
San Luis Obispo, CA

Adjunct Associate Professor
University of Tennessee, Knoxville