



UNIVERSITY  
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MĀNOA

College of Engineering  
Department of Electrical Engineering  
Yao Zheng  
Assistant Professor

December 15, 2020

Awards Committee  
Department of Electrical Engineering  
University of Hawaii  
2540 Dole Street  
Honolulu, HI 96822 USA

Drs. Victor Lubecke, James R. Yee, and Darren Carlson:

I am delighted to author this letter in support of Mr. Alvin Yang's nomination for the Outstanding Graduate Senior Award in the Department of Electrical Engineering at the University of Hawaii. I came to know Alvin through my first undergraduate class in 2018, EE260: Introduction to Digital Design, and served as his academic and CENG x96 project advisor in the past three years. During this time, Alvin has made significant contributions to several research projects, including one awarded NSF grant proposal, one IEEE journal paper, two conference papers, and participate in several community outreach activities, while maintaining an excellent academic standing. Based on his accomplishments, I firmly believe Alvin is an exceptional undergraduate student and an outstanding representative of the class of 2020.

Alvin graduated as a Valedictorian of McKinley High School and joined the University of Hawaii at Manoa in August 2017, presuming a bachelor's degree in computer engineering. Currently, he holds an excellent academic record with a 3.74 GPA, which ranks top 5% among all students in his class. Due to his excellent work, Alvin was on the College of Engineering Dean's List for five semesters (from Fall 2017 to Spring 2020).

Alvin performs extraordinarily in various challenging courses, including: machine learning, linear algebra, algorithms, and software engineering. He has demonstrated his mathematical talent, problem-solving abilities, and understanding of the many aspects of computer engineering, including computer design and programming at various levels. During Alvin's time in EE260, I was able to witness these skills first hand throughout his work in the lab, involving the design, implementation, and testing of digital circuits. Alvin is always looking for ways to improve his work and his knowledge in class.

During his junior and senior year, Alvin collaborated with other graduate/undergraduate students in our group and published two conference papers. The first paper, titled "FalR: Federated Incumbent Detection in CBRS Band," leveraged a communication efficient machine learning framework, e.g., federated learning, to allow multiple sensors jointly detect unauthorized spectrum access in the CBRS band. The paper is published in IEEE International symposium on dynamic spectrum access networks (acceptance ratio: 20%). The second paper, titled "iJam with Channel Randomization," designed a wireless physical layer security augmentation using a pattern reconfigurable antenna, which prevents eavesdropping during wireless key establishment. The paper is published in the

ACM Conference on Security and Privacy in Wireless and Mobile Networks (acceptance ratio: 18%), and won third place in the best demonstration competition. Alvin further helped incorporate the channel randomization technique into another paper for automatic device pairing. The journal article of the project, titled “Modality-Switch Compliance Tracking for Unobtrusive Sleep Apnea Test,” is to be submitted to IEEE Transactions on Dependable and Secure Computing. Other than the published work. Alvin also carried out research investigation on Millimeter wave beam alignment, with the preliminary results incorporated into my NSF proposal, titled “CRII: NeTS: Power Efficient Millimeter Wave Data Delivery for Remote Invasive Species Monitoring”, which was funded in 2020.

Alvin has worked as an assistant at Honolulu Community College at the Summer Engineering Academy (Summer 2018/2019). He has mentored many students coming in to learn more about the various aspects of engineering. He places emphasis on the importance of safety and the quality of work that comes with being an engineer. Being a member in the Cybersecurity Laboratory, Alvin has helped give lab tours for the GenCyber summer camp, and for the virtual STEM fair. He gets students excited about projects in the lab, and relates how these technologies are important to everyone. While balancing his workload, Alvin also works as a tutor at Kumon, helping students ranging from K-12 learn about math and reading.

To summarize, I feel confident in stating that Alvin is an exemplar student and ready for the challenges in the future. Therefore, I strongly recommend Alvin Yang for the award of Outstanding Graduating Senior. Should you require additional information, I would be happy to be of assistance.

Sincerely

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