To whom it may concern:

I am writing to endorse Zheyuan Ma's application to the DAC Young Fellows Program 2023. As an assistant professor at the University at Buffalo and director of the CyberspACe securiTy and forensIcs lab (CactiLab), I have had the privilege of supervising Zheyuan's research in embedded system and software security. Zheyuan has demonstrated exceptional talent and dedication in his field, and his **first-authored** paper **Return-to-Non-Secure Vulnerabilities on ARM Cortex-M TrustZone: Attack and Defense**, which will appear in **DAC 2023**, is a testament to his talent and dedication.

Zheyuan's paper on the new exploitation technique of return-to-non-secure attacks is a significant contribution to the field of embedded and IoT system and software security. In this paper, Zheyuan and the team demonstrated how the fast state switch mechanism of ARM Cortex-M processor can be exploited for arbitrary code execution with escalated privilege in the non-secure state. He experimentally confirmed the feasibility of four variants of such attacks on two Cortex-M hardware systems. To defend against these attacks, he and the team designed two address sanitizing mechanisms that have negligible performance overhead.

Zheyuan is a second-year Ph.D student, and had little conference experience due to the pandemic. As Zheyuan's first paper submission under my supervision, his success in being accepted at DAC is a remarkable achievement. I fully support Zheyuan's application to the DAC Young Fellows Program 2023, which will provide him with an opportunity to learn from experts in the industry, network with like-minded individuals, and participate in hands-on labs, career coaching, a summer school, and fun contests. Zheyuan's research potential, dedication, and talent make him an ideal candidate for this program, and I am confident that he will be an asset to the program.

Lastly, I would like to emphasize that **I will provide Zheyuan with matching funds for the remainder of the cost.** I believe that this program will help Zheyuan achieve his career goals and contribute to the field of embedded system and software security in the future.

Thank you for your consideration.

Sincerely,

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