To the Admissions Committee,

It is my great pleasure to recommend Jiahe Xu for admission to your Ph.D. program. Jiahe worked with me at Carnegie Mellon University from 2024 to 2025, where he made exceptional contributions to both our 3D FlowMatch Actor (3DFA) project and his own follow-up research.

In 3DFA, Jiahe was indispensable in building a reliable real-world bimanual robot system. He redesigned the end-effector controller for the Aloha platform, enabling smoother and more reliable robot motion. He also optimized the multi-camera streaming pipeline, tested a variety of RGB and depth sensors, and explored different depth estimation methods to make the system more stable. As a result, our collected dataset achieved higher image frequency and more accurate depth information than existing benchmarks. Thanks to his work, we moved from fragile prototypes to a robust platform for large-scale bimanual manipulation experiments. Jiahe then led real-world testing of 3DFA across multiple setups (with and without wrist cameras, trajectory vs. keypoints prediction), and extended evaluations to other vision-language-action models such as iDP3 and Pi0. His sharp observations, such as identifying Pi0's dependence on wrist cameras, reflected his ability to uncover practical limitations often overlooked in simulation.

After 3DFA, I was involved in advising Jiahe on his own idea, which became the OC3D project: an object-centric 3D diffusion model designed to overcome the limited performance of existing methods. Building on his strong systems background, Jiahe initiated a new line of human-centric learning, exploring how to model human behavior and scene dynamics in 3D. With his prior experience in Apple's hardware ecosystem and depth estimation, he began using the Apple VisionPro as a sensor stack for human data collection and scene reconstruction. I am delighted that this work has already matured into his first submitted paper, OC3D.

What makes Jiahe unique is the way he combines strong system-building experience with a clear research vision. He is persistent and resourceful, able to solve issues and bottlenecks quickly and find practical improvements. His journey—from building reliable dual-arm robot platforms, to advancing diffusion-based policies, to launching his own line of human-centric 3D research—reflects the steady growth of a young researcher who is ready to lead.

I do not doubt that Jiahe will thrive in your Ph.D. program and emerge as a leader in building the next generation of learning-based robotic and human-centric systems. I recommend him in the strongest possible terms.

Sincerely,
Tsung-Wei Ke
Assistant Professor, National Taiwan University Department of Computer Science