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# Letter of Recommendation

To whom it may concern,

I am Prof. Jong Hyuk Park, a full-time professor in the Department of Computer Science and Engineering at Seoul National University of Science and Technology (SeoulTech), South Korea. It is my great pleasure to recommend Mr. Haotian Chen for admission to the PhD program at the National University of Singapore (NUS), with full scholarship consideration.

I have known Haotian since his second year as an undergraduate student, when he first joined my laboratory. He continued to work under my supervision throughout his master's and doctoral combined studies, for a total period of more than five years. His academic journey with me officially began in August 2021, when he joined my laboratory—Ubiquitous Computing and Security (UCS)—as a graduate researcher. My observations of his performance started from that very moment, and over the years, I witnessed the growth of a truly dedicated and capable scholar.

Haotian's academic profile is marked by consistent effort and steady progress. One notable strength is his ability to self-direct his learning path. While participating in multiple research directions in security track—ranging from blockchain-based IoT applications to digital twin modeling and metaverse systems—he gradually developed a particular interest in quantum information security. Despite having no formal training in quantum science at that time, he chose to learn the subject independently and completed an SCI-indexed survey article. Although he had already published several SCI-indexed papers prior to this work—including articles in Applied Sciences, Sensors, and Journal of Network and Computer Applications—those were mainly results from his earlier explorations across various subfields of security and systems. Since they were completed before he firmly committed to quantum-related research, I will not elaborate on them here. One clear example of his academic initiative is a peer-reviewed survey paper titled "A Comprehensive Study on Quantum Computing Technologies in Smart City: Review and Future Directions" which was published in Human-centric Computing and Information Sciences (HCIS). This work presented a structured roadmap for the integration of quantum computing technologies in future smart city infrastructure. It highlighted use cases such as quantum sensing, quantum communication, and quantum-enhanced computation in smart city environment.

Another example of his academic initiative was his full-length technical book combining concepts from quantum computing and cybersecurity. He completed this work entirely as an independent author during a difficult financial period, after withdrawing from the PhD program. Without institutional support or co-authorship, he managed the full writing, structuring, and revision process on his own. Publishing with a highly regarded technical press in China, this book demonstrated not only his subject mastery but also a clear example of self-discipline, long-term commitment, and the ability to carry out a major academic task independently. His published book, Quantum Security: A New Era in Information Protection, received a formal endorsement from Professor Laurence T. Yang, a Fellow of the Canadian Academy of Engineering. Such recognition, especially from a highly respected international scholar, reflects the academic merit and practical relevance of the book's content, as well as the maturity of his theoretical synthesis. Additionally, I cannot read Chinese myself, so I'm not able to assess the book's content directly. But considering its substantial length and the fact that it received a recommendation from a Fellow of the Canadian Academy of Engineering, I believe it clearly demonstrates serious academic effort and value.

As for his weakness, in the early stages of his graduate study, Haotian sometimes took on too many tasks at once, which affected his research focus and pace. However, over time, he has learned to set clearer boundaries and make more strategic decisions about his time and energy. That said, this might remain a potential risk, and I would advise his future academic supervisor to assign relatively well-defined and goal-oriented tasks, so as to avoid excessive time cost caused by overly open-ended exploration. In addition, as we mainly used Korean for our daily academic communication, I am not in a position to fairly evaluate his English proficiency. That said, I do not consider this a serious concern. Even if there is room for improvement, language ability is usually a matter of sustained practice and can be enhanced more easily than other technical or conceptual skills.

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Beyond research, Haotian played a vital role in administrative and team-oriented responsibilities. As one of only two foreign researchers in my lab's leadership group, he coordinated several logistics-intensive international collaborations, including a three-year China–Korea joint research program, where he actively communicated with the Chinese team and helped draft official bilingual correspondence. His language fluency gave him a natural advantage in coordination. During our preparation and execution of international academic workshops, he worked late into the night to ensure that schedules, guest invitations, and translation logistics were properly handled. His ability to operate in multiple languages facilitated smooth communication with university administration and external partners. I especially appreciated his willingness to handle difficult or detail-heavy tasks such as official document preparation, bilingual correspondence, and coordination of meetings with stakeholders.

While he is more research-driven than administrative by preference, Haotian never refused a responsibility. He managed to balance both domains and was seen by peers and lab members as trustworthy and dependable. For instance, as a core member of our lab's leadership group, he shared responsibilities with his Moroccan senior colleague, including scheduling, internal task delegation, and event preparation. I did not interfere much in the division of duties, but their balance seemed efficient. His TA contributions were particularly noteworthy—he handled exam design, grading, and assignment feedback with care and accuracy, and provided one-on-one support to students, which made him highly approachable and appreciated.

Taken together, these traits—academic autonomy, resilience, bilingual professionalism, and commitment to team success—suggest that he is well prepared for the demands of doctoral study. I believe he will be a strong contributor to both the academic and collaborative aspects of any graduate program he joins. In conclusion, I believe that Haotian Chen's academic foundation, communication skills, teaching experience, research output, and personal integrity have all been well demonstrated during the time he spent in my lab. He has proven himself to be an excellent researcher and a reliable colleague. I strongly support his application to your PhD program and believe he will be a great asset to your institution.

Sincerely,
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