香港科技大學
THE HONG KONG
UNIVERSITY OF SCIENCE
AND TECHNOLOGY

電子及計算機工程學系
DEPARTMENT OF
ELECTRONIC & COMPUTER ENGINEERING

To Whom It May Concern,

It is my great pleasure to submit to you this letter of recommendation for my former student, Dr. Naeimeh Omidvar, supporting her application for a faculty position in your institute. I have known Naeimeh since Spring 2013 when she joined my research group at The Hong Kong University of Science and Technology (HKUST), as a Ph.D. student under the supervision of Professor Danny Tsang and me, where she got offered a full scholarship by HKUST to pursue her Ph.D. studies in Electronic and Computer Engineering.

Naeimeh is a motivated and sharp researcher who has obtained a solid mathematical background (including in probabilities, stochastic processes, and optimisation) as well as deep insight about their potential applications to emerging engineering problems. Moreover, she is always enthusiastic for learning new materials and investigating new areas, as well as eagerly sharing her knowledge with others. During her Ph.D. studies, much more than the required curriculum, she has taken lots of various courses from Mathematics, Computer Science and Electronic and Computer Engineering Departments at HKUST, and accomplished all of them with A+ or A, with a total GPA of 4.15 (out of 4). Since Feb. 2013 that she started her Ph.D. at HKUST, I found her extremely motivated and creative, confident but modest, and organised in doing research. She is a very independent person, and besides, has also a quite welcoming attribute for team-working with a high dedication for contributing to the group. All of these qualities make her a best fit for a faculty position in any prestigious university.

Since she was a member of both my research group and Prof. Tsang's research group, she had actively and eagerly been participating in various research projects in the areas of computer and communication networks and data science, all with a core of advanced optimisation. Following her impressive performance and progress, Prof. Tsang and I decided to

nominate her for the HKUST Engineering School Scholarship Award, which she competitively won for four consecutive semesters.

Observing her outstanding performance in doing research as well as her enthusiasm toward developing theoretical ideas for high-tech problems, I decided to involve her in an industrial project from Huawei Co., working on designing new stochastic optimisation algorithms for the emerging flexible backhauling in 5G networks. During this project, she was working on developing two-timescale stochastic optimisation algorithms for the hierarchical design of cross-layer radio resource management schemes for 5G heterogeneous networks with flexible backhaul. Just within a few months of starting this project, her efforts resulted in proposing one patent (filed as "Hierarchical RRM Design for HetNet with Flexible Backhaul"). She accomplished to finish the project with excellent outcomes, and later on, she continued her works on this area by utilising her background on stochastic optimisation to complete several theoretical papers which later on got accepted in top journal and conferences in the field.

After finishing several works on the applications of stochastic optimisation in emerging computer networks problems, she continued her path through working on the theoretical aspects of stochastic optimisation. She spent a lot of time focusing on developing a novel stochastic optimisation framework for non-convex distributed learning/optimisation problems. Such contribution has a significant impact for many various emerging applications, especially in the areas of large-scale machine learning, deep neural networks, and distributed systems. In fact, various applications in the area of machine learning are currently relying on advanced optimisation methods to tackle many emerging challenges. Therefore, designing new methods that address their new requirements is highly desirable in this area. As such and to address the new requirements, Naeimeh concentrated on proposing a fast-converging parallel stochastic optimisation framework which can solve a large class of possibly non-convex stochastic optimisation problems arising in various emerging applications with multi-agent systems.

In her proposed framework, each agent updates its control variable in parallel, by solving a convex quadratic surrogate sub-problem, independently. In spite of having a great impact, such fundamental works naturally include lots of theoretical challenges. With the great motivation and hard- working manner that Naeimeh has, she could successfully address all the challenges and accomplish the proposed framework that can

beat the state-of- the-art works in the literature. She could also prove the convergence of the proposed method to the optimal solution for convex problems, as well as to a stationary point for general non-convex problems. None of the above accomplishments would have been possible without her determination and high motivation, solid mathematical background, and outstanding problem-solving skills.

I would also like to emphasise that she is innovative, creative and hardworking; not only in the areas of her research, but also in any other area that she feels would benefit her to grow in her professional carrier. As an example, in her second semester at HKUST, she got nominated and awarded as the second runner-up for the business plan that she and her team members had developed and proposed for "High Technology Innovation and Entrepreneurship" competition (run by Prof. Michael Sung, MIT), where many competitors from Business and Management backgrounds had participated.

In closing, I am more than confident to highly recommend Naeimeh for a faculty position in your institute. Having a solid mathematical background and showing an outstanding performance in her works, along with demonstrating a high level of motivation in conducting rigorous research and a great enthusiasm in contributing to the professional society, I confidently believe that she is well suited for an academic position in any prestigious institute. I am sure that this opportunity will help her to thrive her potentials more. Finally, please feel free to contact me if you would like any additional information regarding Naeimeh.

Sincerely ,

Vincent LAU
Chair Professor,
Department of ECE,
Hong Kong University of Science and Technology.