

## Recommendation Letter

Dear Sir or Madam,

I take delight in writing this letter on behalf of Mr. Liu Shuo, a promising candidate for your graduate program. Liu Shuo worked as a research assistant at Institute of Automation, China Academy of Science in the summer of 2018, when he won my praise with his work attitude and capabilities.

Liu Shuo had struck me as an efficient learner as early as the first week. His work was primarily to familiarize himself with the relevant knowledge, including some APIs and manuals. Although newly commencing this work, he expeditiously read through many reinforcement learning papers concerning DDPG and MADDPG, and actively discussed with senior colleagues to have a better understanding of these algorithms.

When evaluating his performance in the first week, I found that he had gained a good mastery of the algorithms that would be used in this work, and then arranged him to pick up the work of his predecessors. Although facing many difficulties, such as deprecated methods and outdated packages, he cooperated with his teammates and finally managed to dramatically improve multi-agents' collective performance in *PYSC II* reinforcement learning environment through trials and errors. This process let me see his strong determination to carry out plans, as well as his excellent development skills.

At the end of his project, Liu Shuo deeply impressed me with his sense of responsibility and unique earnest attitude in work. Not only did he complete his own assignment, he also considered the well-being of the whole group. He pinpointed the inconsistent coding style and the highly coupled modular structure of our project. In response to these, he made some revisions to the project structure and codes to help his successors faster started up and to improve the development efficiency. He could always think about the overall benefits, which made him stand out as a member in our team rather than just a running student.

To conclude, Liu Shuo has good study, thinking, observation, and development capabilities, which distinguished him from other trainees in this period. I look forward to seeing his fast growth with your education and I am willing to give my strong backing to his postgraduate study plan.

Sincerely,