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Supervisor Review for the Bachelor Thesis of Lum Ramabaja

It was our great pleasure to supervise the bachelor thesis of Lum Ramabaja on *Interconnected Neural Networks for Multitask Learning* for his Bioinformatics study program. This work investigates new ways of solving a hard bioinformatics problem (predicting several biochemical activities of small chemical compounds in parallel) using Machine Learning techniques based on Deep Learning.

Lum showed great initiative, interest and displayed remarkable discipline, perseverance and strength of independent work during research necessary for this thesis. He came up with the central idea of the thesis himself after researching the relevant literature. He thought of a novel approach that showed promise of improving the way this problem is handled: based on how multi-task learning is performed in neural networks, his approach to share the representations learned by a single prediction task in a read-only way with all other tasks, thus allowing information to be shared, but learning tasks individually. Under our guidance, he implemented his approach in a Deep Learning framework and compared it to meaningful baseline approaches. The obtained results show that Lum's techniques do show some promise for this problem.

During all of his work, we were very impressed with Lum: He displayed great initiative and creativity in coming up with a novel approach for multi-task learning, and his knowledge of Deep Learning far exceeds what we commonly expect from bachelor students. While he was working independently, he always kept us in the loop, and it was a pleasure discussing his research with him. He always sought, welcomed and valued our feedback, and we enjoyed working with him both on a scientific and a personal level. We can confidently state that Lum is more than worthy of obtaining a Bachelor of Science title, given the excellent work he performed for this thesis.


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