CITATION – YOUNG RESEARCHER AWARD

Dr Seth Gilbert

Dr. Seth Gilbert from the Department of Computer Science is an outstanding researcher with an expertise in large-scale, fault-tolerant distributed computing. On arriving at NUS, he was already famous for the CAP theorem, showing that no system can be simultaneously (C)onsistent, (A)vailable, and (P)artition-tolerant. Since moving to Singapore, Seth has shot to even greater fame, significantly advancing algorithms for robust wireless networks and for improved concurrency in big data processing.

With respect to wireless networks, Seth has focused on addressing the challenges posed by the open airwaves. He has introduced new models for capturing malicious behaviour, such as electromagnetic interference, as well as more traditional attacks. He has developed new techniques for responding to these attacks, including resource-competitive analysis and multi-frequency evasion, which have led to some of the most efficient and robust existing algorithms for communication in an unreliable wireless environment.

With respect to big data processing, Seth has made fundamental breakthroughs in problems related to job scheduling, resource allocation and sharing. These are questions of long-standing interest, with research dating back to the origins of computer science. In each case, Seth has developed algorithms that are significantly faster than the best previously known results. For example, in the case of mutual exclusion, his

algorithm is an exponential improvement over existing results, and has inspired a vibrant new line of work on sub-logarithmic coordination protocols.

Seth, for your outstanding achievements, you deserve the NUS Young Researcher Award. Congratulations!