NUS120 Distinguished Speaker Series by Professor Richard Sutton
Shaping the Future of AI and Reinforcement Learning
Welcome remarks by Professor Tan Eng Chye, NUS President
Friday 6 June 2025, 3pm, Shaw Foundation Alumni House

Good afternoon, everyone, and a very warm welcome to our third NUS120 Distinguished Speaker Series.

Today's lecture explores one of the most transformative fields in modern science. Artificial intelligence is reshaping what is possible, unleashing new possibilities and capabilities that are transforming industries, lives, and society. Reinforcement learning has played a key role in driving the AI evolution.

How much farther can computations and machine learning go, and to what end? Will humans lose control? Tackling this question involves technical knowledge, precision and also ethical responsibility.

It is my honour today to welcome a pioneer whose work has profoundly shaped our understanding of AI. Professor Richard Sutton is widely recognised as a founding father of modern reinforcement learning. Beginning in the 1980s, he worked with Professor Andrew Barto to develop the conceptual, mathematical and algorithmic foundations of reinforcement learning, formulating reinforcement learning as a general problem framework.

Now, this has evolved to become one of the most important approaches for creating intelligent systems. It has been applied to a vast range of problems, powering the development of intelligent systems everywhere, from robotics and personalised healthcare to autonomous vehicles and more.

Reinforcement learning is compelling because of its technical elegance and wide applicability. At its core, it embodies the essence of human intelligence – learning from rewards, exploring environments, and adapting continuously to make better decisions. Prominent examples of reinforcement learning include AlphaGo's victory over top-ranked Go player Lee Sedol, and as all of us know, ChatGPT. This year, reinforcement learning has experienced a resurgence as it helps improve AI's reasoning or "thinking" abilities, making these systems better at tackling even more complex problems.

Professor Sutton's work in AI has had far-reaching impact. His work also exemplifies how a multidisciplinary approach can inspire new advances and break knowledge frontiers – much of his work is inspired by psychology and neuroscience.

Notwithstanding his prolific scientific contributions, Professor Sutton's vision extends beyond smarter machines; he advocates for the responsible and impactful application of AI – that is, developing systems that are not only highly intelligent but also aligned with humanity's progress and society's good.

NUS shares this vision. We believe deeply in advancing technologies with real-world impact, guided by a strong sense of social responsibility.

AI is deeply embedded in our multidisciplinary efforts. At NUS Computing, for instance, our researchers are collaborating with faculty from engineering, medicine and other faculties, to develop intelligent and multi-agent systems. Reinforcement learning is being applied to address challenges in areas such as health diagnostics, autonomous robotics and more.

Last year, we launched the NUS AI Institute, with research interests in translating foundational AI and machine learning research into scalable applications for the greater public good. Safety and ethics are core tenets of the Institute; we want to address risks and create systems that not only help us solve humanity's most complex issues, but are also fair, sustainable and robust.

It is in this spirit that I warmly welcome Professor Richard Sutton and look forward to his invaluable insights and a lively discussion with the audience. Thank you.