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Cyber Threats and Nuclear Weapons

Most of the work done at the intersection of cyber threats and nuclear weapons relates to nuclear command and control. Although this is a very important topic, cyber technologies affects all aspects of nuclear forces weapons and operations. Tthis talk addresses potential cyber impacts of nuclear weapons design and production, including the Stockpile Stewardship Program; nuclear delivery systems and platforms carrying such systems; advanced cyber-enabled defensive capabilities that might be deployed against U.S. nuclear forces; the nuclear tactical warning and attack assessment system; nuclear command, control, and communications (NC3); the planned modernization of U.S. NC3 systems; nuclear planning; and nuclear decision-making and escalation.

AI and the Nuclear Weapons Enterprise

How AI might be used in nuclear command and control is the subject of much discussion in national security circles. But this debate—important though it has been—obscures many other ways that AI could be used or should not be used across the entire nuclear weapons enterprise. (In this talk, the nuclear weapons enterprise also encompasses nuclear weapons, their delivery systems, the associated command and control and the links of these entities to AI in systems not usually associated with nuclear weapons.) Key attributes of AI and the nuclear weapons enterprise will be reviewed, principles for thinking about AI in the nuclear weapons enterprise discussed, and specific guidelines for assessing the wisdom of AI in any given nuclear application proposed.

Short Bio

Herbert Lin is senior research scholar at the Center for International Security and Cooperation and Research Fellow at the Hoover Institution, both at Stanford University. His research interests relate broadly to the impact of emerging technologies on national security, with a special focus on digital technologies (cyber, artificial intelligence, and influence operations). He is also director and editor-in-chief of the Stanford Emerging Technology Review (setr.stanford.edu). In addition to his positions at Stanford University, he is Chief Scientist, Emeritus for the Computer Science and Telecommunications Board, National Research Council (NRC) of the National Academies, where he served from 1990 through 2014 as study director of major projects on public policy and information technology. In 2016, he served on President Obama's Commission on Enhancing National Cybersecurity. In 2019, he was elected a fellow of the American Association for the Advancement of Science. In 2020, he was a commissioner on the Aspen Commission on Information Disorder. From 2016 through 2025, he was a member of the Science and Security Board of the Bulletin of Atomic Scientists. Prior to his NRC service, he was a professional staff member and staff scientist for the House Armed Services Committee (1986-1990), where his portfolio included defense policy and arms control issues. He received his doctorate in physics from MIT.