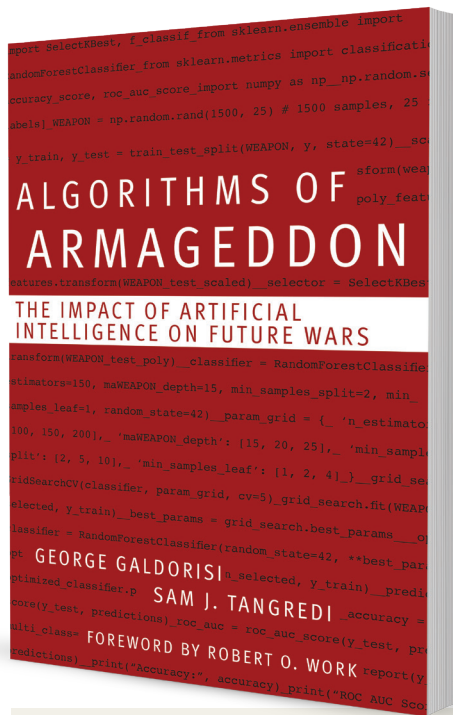# ALGORITHMS OF ARMAGEDDON
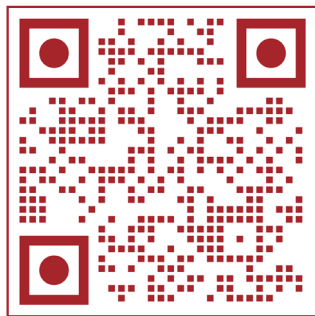## *The Impact of Artificial Intelligence on Future Wars*

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BY GEORGE GALDORISI AND SAM J. TANGREDI; FOREWORD BY ROBERT O. WORK

It is unclear if U.S. policy makers and military leaders fully realize that we have already been thrust into an artificial intelligence (AI) race with authoritarian powers. Today, the United States' peer adversaries—China and Russia—have made clear their intentions to make major investments in AI and insert this technology into their military systems, sensors and weapons. Their goal is to gain an asymmetric advantage over the U.S. military. The implications for our national security are many and complex. *Algorithms of Armageddon* examines this most pressing security issue in a clear, insightful delivery by two experts. Authors George Galdorisi and Sam J. Tangredi are national security professionals who deal with AI on a day-to-day basis in their work in both the technical and policy arenas.

Opening chapters explain the fundamentals of what constitutes big data, machine learning, and artificial intelligence. They investigate the convergence of AI with other technologies and how these systems will interact with humans. Critical to the issue is the manner by which AI is being developed and utilized by Russia and China. The central chapters of the work address the weaponizing of AI through interaction with other technologies, man-machine teaming, and autonomous weapons systems. The authors cover in depth debates surrounding the AI "genie out of the bottle" controversy, AI arms races, and the resulting impact on policy and the laws of war. Given that global powers are leading large-scale development of AI, it is likely that use of this technology will be global in extent. Will AI-enabled military weapons systems lead to full-scale global war? Can such a conflict be avoided? The later chapters of the work explore these questions, point to the possibility of humans failing to control military AI applications, and conclude that the dangers for the United States are real.

Neither a protest against AI, nor a speculative work on how AI could replace humans, *Algorithms of Armageddon* provides a time-critical understanding of why AI is being implemented through state weaponization, the realities for the global power balance, and more importantly, U.S. national security. Galdorisi and Tangredi propose a national dialogue that focuses on the need for U.S. military to have access to the latest AI-enabled technology in order to provide security and prosperity to the American people.

NAVAL INSTITUTE PRESS

"Few books have discussed the use of artificial intelligence in war and those few have generated more heat than light. *Algorithms of Armageddon*, written by two national security professionals who are recognized experts in the field, is the essential book for anyone trying to understand why the United States must win the "AI arms race" with our potential adversaries, China and Russia."

—Admiral James Stavridis, USN (Ret.), former Supreme Allied Commander of NATO

"National security is the realm of human activity where the risks of AI are most profound. Those risks are being increased every day by potential opponents who are seeking to surpass the U.S. in military applications of AI. *Algorithms of Armageddon* identifies these risks—and potential solutions—in a clear and accessible manner. This book should be read and discussed by everyone."
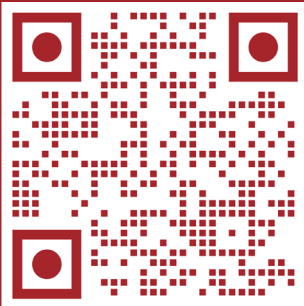
—Michele Flournoy, former UNDERSECDEF for Policy

"*Algorithms of Armageddon* takes an urgent look at the harsh realities of how AI is transforming warfare and the dilemmas militaries face in AI adoption. The book is a call to arms for mobilizing the American military to use AI, not to replace human warfighters, but to make them more effective."

—Paul Scharre, author of *Four Battlegrounds: Power in the Age of Artificial Intelligence*

"As Secretary of the Navy, I received many, many briefs on new technologies. I wish that they had all been as clear, concise and understandable as this book. The authors unravel the complexity and supposed mystery involving AI. And its findings are right on the mark."

—Former Secretary of the Navy John Lehman

CAPTAIN GEORGE GALDORISI, U.S. NAVY (RET.), is Director of Strategic Assessments and Technical Futures for the Naval Information Warfare Center Pacific. Prior to joining NIWC Pacific, he completed a thirty-year career as a naval aviator, culminating in fourteen years of consecutive service as executive officer, commanding officer, commodore, and chief of staff. He is the author of seventeen books, including four consecutive New York Times bestsellers. He especially enjoys writing speculative fiction about the future of warfare. His most recent novel, Fire and Ice, was widely recognized as being prescient regarding Russia's 2022 invasion of Ukraine.

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