

Editor: Rizki Putri



ARTIFICIAL INTELLIGENCE ASYMMETRIC WARFARE



Kolonel Arh. Dr. Bambang Utomo S.I.P., M.Sos

Kolonel Laut (E) Dr. Ir. Lukman Yudho Prakoso, S.I.P., M.A.P. M.Tr.Opsa, I.P.U., ASEAN Eng

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Tim Penulis:

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Desain Cover:

Helmaria Ulfa

Sumber Ilustrasi:

www.freepik.com

Tata Letak:

Handarini Rohana

Editor:

Rizki Putri

ISBN:

978-634-246-842-5
978-634-246-841-8 (PDF)

Cetakan Pertama:

April, 2026

Hak Cipta Dilindungi Oleh Undang-Undang
by Penerbit Widina Media Utama

Dilarang keras menerjemahkan, memfotokopi, atau memperbanyak sebagian atau seluruh isi buku ini tanpa izin tertulis dari Penerbit.

PENERBIT:

WIDINA MEDIA UTAMA

Komplek Puri Melia Asri Blok C3 No. 17 Desa Bojong Emas
Kec. Solokan Jeruk Kabupaten Bandung, Provinsi Jawa Barat

Anggota IKAPI No. 519/JBA/2025

Website: www.penerbitwidina.com

Instagram: @penerbitwidina

Telepon (022) 87355370

KATA PENGANTAR

Perkembangan *Artificial Intelligence* (AI) telah mengubah wajah konflik global secara fundamental. Perang tidak lagi semata ditentukan oleh jumlah pasukan, kekuatan senjata konvensional, atau superioritas wilayah, melainkan oleh kemampuan memanfaatkan teknologi cerdas secara adaptif dan asimetris. Buku ***Artificial Intelligence Asymmetric Warfare*** hadir untuk mengkaji secara komprehensif bagaimana AI menjadi instrumen strategis yang mampu menggeser keseimbangan kekuatan, bahkan memungkinkan aktor negara maupun non-negara menghadapi lawan yang secara konvensional lebih unggul.

Melalui pendekatan multidisipliner—meliputi studi pertahanan, keamanan internasional, teknologi, hukum, dan etika—buku ini menguraikan konsep, bentuk operasi, serta implikasi strategis perang asimetris berbasis AI. Pembahasan tidak hanya berfokus pada dimensi militer, tetapi juga pada dampaknya terhadap keamanan nasional, stabilitas regional, dan tatanan global. Diharapkan, buku ini dapat menjadi referensi akademik dan kebijakan bagi pembaca dalam memahami tantangan serta peluang AI dalam dinamika konflik modern dan masa depan.

Jakarta, April 2026

Kolonel Arh. Dr. Bambang Utomo S.I.P., M.Sos.

**Kolonel Laut (E) Dr. Ir. Lukman Yudho Prakoso., S.IP., M.A.P., M.Tr.Opsa.,
I.P.U., ASEAN Eng**

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BAB 1

EVOLUSI PERANG: DARI SIMETRIS KE ASIMETRIS



Gambar 1.1 Illustration Split-screen composition, left side: traditional symmetric World War II battlefield, soldiers in uniform marching in neat formations, tanks aligned in rows under a clear sky; right side: chaotic modern asymmetric conflict in a ruined urban setting, lone special forces soldier in advanced camouflage taking cover, drone flying overhead amidst smoke and debris, (AI, 2026)

Perang merupakan salah satu fenomena paling kompleks dalam sejarah umat manusia, mencerminkan interaksi antara kekuatan politik, sosial, dan militer. Secara tradisional, perang dipahami sebagai konflik antara dua entitas yang relatif seimbang dalam kekuatan, struktur komando, dan kemampuan militer, yang dikenal sebagai **perang simetris (symmetric**

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BAB 2

AI SEBAGAI SENJATA ASIMETRIS NON-KONVENSIONAL



Gambar 2.1 A central, glowing AI core resembling a complex digital brain pulses with light in a dark server room, countless glowing data streams extend like tentacles towards holographic screens showing a world map where major cities are flickering, stock market graphs are crashing, and social media feeds are filled with chaotic propaganda all being manipulated by the AI, dark high-tech cinematic digital art style, (AI,2026)

A. KARAKTERISTIK SENJATA ASIMETRIS BERBASIS AI

Perkembangan teknologi Artificial Intelligence (AI) telah membuka paradigma baru dalam konsep perang asimetris. Senjata berbasis AI tidak hanya meningkatkan kemampuan militer konvensional, tetapi juga memungkinkan negara atau aktor non-negara untuk mengeksploitasi

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BAB 3

BENTUK-BENTUK OPERASI AI DALAM PERANG ASIMETRIS



Gambar 3.1 Covert operative in dense urban environment looking through smart scope, scope's augmented reality display powered by AI highlighting specific target in crowd, showing predicted path, identity, and vulnerabilities based on real-time data analysis, cold precision of AI-assisted assassination, dark high-tech cinematic digital art style, (AI, 2026)

A. AUTONOMOUS WEAPON SYSTEMS DAN DRONE SWARM

Dalam konteks perang asimetris modern, penggunaan **Autonomous Weapon Systems (AWS)** dan **Drone Swarm** telah menjadi salah satu bentuk operasi AI yang paling transformatif. Senjata otonom dan swarm drone memungkinkan aktor, baik negara maupun non-negara, untuk mengimbangi ketidakseimbangan kekuatan militer dengan biaya relatif

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BAB 4

DIMENSI HUKUM, ETIKA, DAN KEAMANAN GLOBAL



Gambar 4.1 A metaphorical scene of the Scales of Justice, one scale with a pile of traditional weapons like rifles and helmets, the other scale heavily weighed down by a single small glowing microchip representing AI (AI, 2026)

A. AI ASYMMETRIC WARFARE DALAM PERSPEKTIF HUKUM HUMANITER INTERNASIONAL

Perkembangan **Artificial Intelligence (AI)** dalam perang asimetris menimbulkan pertanyaan hukum yang kompleks. **Hukum Humaniter Internasional (International Humanitarian Law/IHL)**, yang mengatur perilaku pihak dalam konflik bersenjata, berfokus pada prinsip-prinsip seperti **pembedaan (distinction)**, **proporsionalitas (proportionality)**, dan **kemanusiaan (humanity)** (Dinstein, 2016). AI sebagai senjata dan sistem

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BAB 5

IMPLIKASI STRATEGIS BAGI KEAMANAN NASIONAL DAN KETAHANAN NEGARA



Gambar 5.1 A high-tech national security command center, military officers looking at holographic maps, subtle glowing red digital lines creeping across maps and data screens unseen by officers, (AI, 2026)

A. AI ASYMMETRIC WARFARE SEBAGAI ANCAMAN KEAMANAN NASIONAL

Perkembangan **Artificial Intelligence (AI)** telah mengubah lanskap ancaman keamanan Nasional. Dalam konteks **perang asimetris**, AI digunakan untuk meningkatkan efektivitas aktor yang lebih lemah, baik negara maupun non-negara, terhadap kekuatan militer yang lebih besar. Hal ini menciptakan **ancaman baru yang kompleks**, karena AI memungkinkan serangan presisi, serangan siber, operasi informasi, dan

Dengan strategi terpadu, **ketahanan nasional tidak hanya bersifat defensif**, tetapi juga proaktif dalam menghadapi perang asimetris berbasis AI.

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BAB 6

MASA DEPAN PERANG ASIMETRIS DAN STRATEGI ANTISIPATIF



Gambar 6.1 The Predictive Command Center, inside a futuristic strategic room, military analysts and AI specialists stand around a massive holographic globe, the globe projects shimmering, predictive light paths of potential drone swarm attacks and cyber intrusions in red, a network of blue light representing an AI-driven anticipatory defense system automatically plots interception routes and defensive shields neutralizing threats before they materialize, (AI, 2026)

A. TREN GLOBAL AI WARFARE DAN PROYEKSI ANCAMAN MASA DEPAN

Perkembangan **Artificial Intelligence (AI)** telah membawa perubahan fundamental pada dinamika konflik global, khususnya dalam **perang asimetris**. AI bukan hanya memperluas kapasitas militer tradisional, tetapi juga menciptakan **ancaman asymmetric baru** yang bersifat multi-domain,

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ARTIFICIAL INTELLIGENCE ASYMMETRIC WARFARE



ARTIFICIAL INTELLIGENCE ASYMMETRIC WARFARE

Buku Artificial Intelligence Asymmetric Warfare membahas transformasi mendasar dalam strategi peperangan modern yang dipicu oleh perkembangan kecerdasan buatan (Artificial Intelligence/AI). Dalam konteks konflik asimetris—di mana terdapat ketimpangan kekuatan antara aktor negara dan non-negara—AI hadir sebagai “equalizer” yang mampu mengubah peta kekuatan secara signifikan. Buku ini menguraikan bagaimana teknologi seperti machine learning, autonomous systems, dan analitik data besar dimanfaatkan untuk meningkatkan efektivitas operasi militer, intelijen, serta propaganda digital.

Pembahasan diawali dengan konsep dasar warfare asimetris dan evolusinya di era digital, diikuti dengan peran AI dalam memperkuat aktor-aktor yang sebelumnya dianggap lemah. Teknologi seperti drone otonom, cyber warfare berbasis AI, serta sistem pengambilan keputusan otomatis menjadi fokus utama dalam menganalisis bagaimana konflik kini tidak lagi bergantung pada kekuatan fisik semata, tetapi juga pada keunggulan teknologi dan informasi. Buku ini juga menyoroti fenomena perang hibrida yang menggabungkan operasi militer konvensional dengan serangan siber dan manipulasi informasi.

Selain aspek strategis, buku ini turut membahas implikasi etis dan hukum dari penggunaan AI dalam peperangan, termasuk tantangan dalam pengendalian senjata otonom dan risiko eskalasi konflik yang tidak terkendali. Peran negara, organisasi internasional, serta regulasi global menjadi penting dalam menjaga stabilitas keamanan internasional di tengah pesatnya adopsi teknologi ini.



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