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[Policy Brief] Canvasing Variations in US-South Korea Cooperation on AI and Quantum Technology

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This policy brief offers a concise summary and set of recommendations from a longer paper, featured in the Fall/Winter issue of KEI's flagship journal Korea Policy. The full paper can be found here and the entire Korea Policy issue here.

Executive Summary

Technology cooperation is denoted here as government-to-government efforts aimed at cultivating and developing technology, focusing on national strategies and interests. In AI, the United States holds a dominant leadership position, while South Korea demonstrates strengths in certain areas, though not across the board. Cooperation in AI primarily focuses on standardization efforts, with significant involvement of the South Korean government in partnerships with the US private sector, as well as private-sector-led bilateral research initiatives. In contrast, South Korea's capabilities in quantum technologies are far more limited. Nevertheless, cooperation in this domain is largely centered on research collaboration, with both governments actively participating alongside international research consortia led by the United States. The differing focuses—standardization in AI and research collaboration in quantum technologies—reflect the respective strengths and needs of the two countries in these critical fields.

Background

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When Washington and Seoul opened a "new chapter" of their alliance in 2021, it marked the first time AI was recognized in a joint statement between the two countries as part of emerging technologies. AI was again highlighted during South Korean President Yoon Suk-yeol's 2022 visit to Washington, DC, emphasizing the need for "public and private cooperation to protect and promote critical and emerging technologies." Despite some private-sector collaborations driven by industrial demand, national-level AI cooperation between the United States and South Korea has remained relatively limited and delayed. In 2023, the United States, South Korea, and Japan formally recognized AI as "a transformative technology" at the trilateral Camp David Summit, with leaders agreeing to facilitate international governance and develop secure, trustworthy AI. This broader focus on governance, which was reiterated during the US-ROK ICT Policy Forum in late 2023, emphasized the need for global discussions on AI governance and principles, illustrating a shift toward collaborative efforts in AI regulation.

Bilateral cooperation between the United States and South Korea on AI technology advanced further with the inaugural US-ROK Next Generation Critical and Emerging Technologies (CET) Dialogue in December 2023. During this meeting, the two countries launched a bilateral AI working group focused on developing international standards, advancing joint research, and fostering policy interoperability. However, the nature of bilateral AI collaboration remains primarily focused on standardization, with fewer concrete developments in joint technology creation. This was underscored by the US-ROK Standards Forum in 2024, where both countries' national standard organizations signed an MOU to share strategies for emerging technologies, and South Korea hosted key international sessions on AI standards. The framework for cooperation is being laid, although much of the joint efforts are concentrated on setting AI standards rather than immediate technological development.

Quantum technology collaboration between the United States and South Korea is centered on joint research and development (R&D), with a focus on creating new knowledge and capabilities. Quantum technologies were first recognized in the May 2022 US-South Korea joint statement and later reinforced during the meeting between Alondra Nelson, head of the US Office of Science and Technology Policy (OSTP), and Jong-ho Lee, the South Korean minister of science and ICT. The Korea-US Quantum Technology Cooperation Center, established in Washington, DC, exemplifies this partnership, serving as a platform for connecting research and commercialization efforts. Further support comes from initiatives like the Entanglement Exchange, which facilitates international collaboration by offering exchange opportunities for researchers in quantum information science.

The unique trajectory of quantum technology cooperation is underscored by the joint statement between the US OSTP and South Korea's Ministry of Science and ICT in April 2023, recognizing quantum information science and technology (QIST) as a key area for collaboration. Rooted in the bilateral Scientific and Technological Cooperation Agreement, the joint statement seeks to accelerate innovation through transnational R&D efforts. The 11th joint committee meeting on science and technology further solidified this focus, with quantum technology taking priority. At the US-ROK Standards Forum in June 2024, the emphasis on quantum technology extended to standardization, particularly in areas like post-quantum cryptography and quantum secure communications.

Policy Recommendations and Implementation

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The United States and South Korea can enhance their research environments by building on their respective strengths—whether it be the US ability to attract global talent or South Korea's effective cultivation of homegrown researchers.

– For AI, the United States and South Korea should engage actively in the initiatives and processes of the Global Partnership on AI to foster the development of secure, reliable AI systems.

– Both states should also actively participate in and lead dialogues, workshops, and conferences within the International Organization for Standardization/International Electrotechnical Commission's Joint Technical Committee 1/Subcommittee 42 (ISO/IEC JTC 1/SC 42), which serves as the primary forum for discussing AI technical standards.

– Furthermore, both governments should aim for more robust governmental cooperation or elevate private-sector-led collaborations to a national level.

– For cooperation on quantum technology, both states should expand cooperation on a broader scale with like-minded partners to promote both research and standardization processes. In particular, Seoul should expand bilateral cooperation in quantum technologies to multilateral platforms by coordinating its research initiatives with both Washington and Brussels.

Conclusion

This policy brief elucidates how Washington and Seoul cooperate on AI and quantum technologies, both recognized as critical emerging technologies essential to their national interests. The US-ROK alliance originated from the security threat posed by North Korea during the Korean War and is rooted in the Mutual Defense Treaty of 1953. While security threats to South Korea remain significant, the US-ROK alliance has evolved into a broader framework that extends beyond security and economic matters to include technological cooperation based on shared norms and principles. The progression of the US-ROK alliance in this direction is both natural and beneficial, as the development of advanced and sophisticated technology is increasingly beyond the capacity of any single state alone. As AI and quantum technologies are critical areas of focus for many countries, advancing technology cooperation is a next step for the US-ROK alliance.

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