

# JUNSEOB KIM

Captain, Republic of Korea Army

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## EDUCATION

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**Masters of Science**, Electrical and Computer Engineering 2018 - 2020  
Texas A&M University, College Station, Texas, USA  
Supervised by Prof. Robert D. Nevels, GPA: 4.0/4.0  
Thesis: Propagation of High Power and Short Electromagnetic Wave in Nonlinear Dispersive Media

**Bachelor of Science**, Electrical Engineering 2012 - 2016  
Korea Military Academy, Seoul, Republic of Korea  
Supervised by Prof. Yongchul Kim, GPA(Major): 4.14/4.3 (Graduate with honors)

## RESEARCH INTERESTS

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Radar Signal Processing, Machine Learning, Optimization, Molecular Communication

## WORK EXPERIENCE

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**Assistant Professor**, Department of Electrical Engineering, Korea Military Academy 2021 - Present

**Education and Analysis Officer**, Leadership Center, Korea Military Academy 2022 - 2023

**Full-time Instructor**, Department of Electrical Engineering, Korea Military Academy 2020 - 2021

**Reconnaissance Battalion Platoon Leader**, 17<sup>th</sup> Infantry Division, Republic of Korea Army 2016 - 2017

## PUBLICATIONS

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### Journal Papers

- [J11] S. Cho, **J. Kim**, W. Lee, and Y. Choi, “**Enhancing LPI Signal Classification through Machine-Learning Based Pulse Integration**,” Submitted to *ICT Express*.
- [J10] **J. Kim**, S. Cho, S. Hwang, W. Lee, and Y. Choi, “**Enhancing LPI Radar Signal Classification through Patch-Based Noise Reduction**,” Submitted to *IEEE Signal Processing Letters*.
- [J9] **J. Kim**, S. Cho, P. Park, S. Park, and W. Lee, “Advancements in Drone Detection Radar for Cyber Electronic Warfare,” Accepted to *Journal of Convergence Security*.
- [J8] **J. Kim**, S. Cho, J. P. Coon, A. A. Castrejon-pita, and H. Arjmandi, “**Electrophoretic Molecular Communication with Piecewise Constant Electric Field**,” in *IEEE Transactions on Nanobioscience*, vol. 22, no. 3, pp.622-629, Jul. 2023.
- [J7] **J. Kim**, S. Park, Y. You, and Y. Kim, “Scenario-Based Future Infantry Brigade Information Distribution Capability Analysis,” in *Journal of Convergence Security*, vol. 23, no. 1, pp.139-145, Mar. 2023.
- [J6] P. Park, S. Park, S. Cho, **J. Kim**, and Y. Kim, “A Study on the Prediction Method of Information Exchange Requirement in the Tactical Network,” in *Journal of Convergence Security*, vol. 22, no. 5, pp.95-105, Dec. 2022.
- [J5] **J. Kim**, S. Park, J. Cha, and Y. Kim, “**Future Tactical Communication System Development Plan through Army TIGER Information Distribution Capability Analysis**,” in *Journal of Convergence Security*, vol. 21, no. 4, pp. 23-30, Oct. 2021.
- [J4] **J. Kim**, S. Park, J. Cha, and Y. Kim, “Future Tactical Communication System Development Plan,” in *Journal of Convergence for Information Technology*, vol. 11, no. 6, pp. 14-23, Jun. 2021.
- [J3] H. Kwon, J. Yoon, **J. Kim**, S. Park, and Y. Kim, “Detecting Adversarial Example Using Ensemble Method of Deep Neural Network,” in *Journal of Convergence Security*, vol. 21, no. 2, pp. 57-66, Jun. 2021.

- [J2] S. Park, W. Lee, Y. Kim, **J. Kim**, and O. Jo, “A Study on the Operation of Multi-Beam Antenna for Airborne Relay UAV Considering the Characteristics of Aircraft,” in *Journal of Convergence for Information Technology*, vol. 11, no. 4, pp. 26-34, Apr. 2021.
- [J1] **J. Kim**, H. Jeong, and Y. Kim, “A Study on Application of Internet of Things for Combat Personnel and Combat Units in Military,” in *Korean Journal of Military Art and Science*, vol. 8, no. 2, pp. 169-184, Dec. 2015.

## Conference Papers

- [C5] **J. Kim**, S. Cho, S. Hwang, and Y. Choi, “**Automatic LPI Radar Waveform Recognition Using Vision Transformer**,” in *IEEE International Radar Conference*, Sydney, Australia, Nov. 2023. Oral Presentation.
- [C4] **J. Kim**, S. Cho, S. Hwang, Y. Choi, and W. Lee, “Trends and Development Plans of Deep Learning Approaches for LPI Radar Recognition,” in *Symposium of the KICS*, Jeju, Korea, Jun. 2023. Oral Presentation.
- [C3] **J. Kim**, S. Cho, H. Lee, and I. Son, “Future Tactical Communication System Development Plan Utilizing Core Technologies of the 4th Industrial Revolution,” in *Symposium of the KICS*, Jeju, Korea, pp. 679-680, Jun. 2022. Oral Presentation.
- [C2] A. A. Voronin, **J. Kim**, P. Yang, R. D. Nevels, and A. M. Zheltikov, “**Propagation of Low-Frequency Broadband Electromagnetic Field Waveforms in the Atmosphere**,” in *IEEE International Symposium on APS/URSI*, Atlanta, USA, pp. 2133-2134, Jul. 2019.
- [C1] **J. Kim**, H. Jeong, and Y. Kim, “Improving Military Night Duty System Using IoT,” in *Symposium of the KICS*, Seoul, Korea, pp. 374-375, Nov. 2015.

## Book Chapters

- [B1] W. Lee, Y. Kim, S. Cho, P. Park, **J. Kim**, W. Lim, I. Son, S. Park, *Military Communications and Electronics*, 2<sup>nd</sup> ed, Gold Egg Publishing Company, 2023.

## RESEARCH EXPERIENCE

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- 10. Development of Methods for Tracking, Verification, and Removal of Unknown Terrorist Substances (III)  
*National Institute of Chemical Safety* May. 2023 – Nov. 2023
- 9. **Low Probability of Intercept (LPI) Radar Signal Classification using Deep Learning Techniques**  
*Future Strategy and Technology Research Institute* Mar. 2023 – Dec. 2023
- 8. Cyber Electronic Warfare Operations Concept for Drone Operations  
*Hwarangdae Research Institute* Mar. 2023 – Dec. 2023
- 7. **Development of Predictive Technology for Terrorist Material Characteristics (III)**  
*National Institute of Chemical Safety* Jun. 2022 – Nov. 2022
- 6. **Research and Development of Intelligent Radar Signal Detection Technology**  
*Korea Research Inst. for Defense Technology Planning and Advancement* May. 2022 – May. 2024
- 5. Enhancement of Physical Layer Security Transmission Techniques for Visible Light Communication  
*National Research Foundation of Korea* Mar. 2022 – Mar. 2025
- 4. **Analysis on Information Exchange Capability of Military Satellite Communication System-III**  
*Agency for Defense Development* Dec. 2021 – Aug. 2022
- 3. Research on the Application of Cyber Electronic Warfare in the Army  
*Hwarangdae Research Institute* Mar. 2021 – Dec. 2021
- 2. Analysis on Information Exchange Capability of Mobile Integrated Communication System  
*Agency for Defense Development* Dec. 2020 – Aug. 2021
- 1. Analysis of Domestic Operational Environment and Operational Concepts for Establishing an Aerial Network  
*Agency for Defense Development* Dec. 2020 – May. 2021

## AWARDS & HONORS

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- Two Awards for Recognition of the Excellence in Service, Awarded by the Superintendent of KMA 2022, 2023
- Award for Contribution to Leadership Research, Awarded by the Commandant of KMA 2022
- **Outstanding Performance in M.S. Study, Awarded by Army Human Resource Commander** 2020
- Best Platoon of the Division, Awarded by the 17<sup>th</sup> Infantry Division Commander 2016
- **JAEGU Award, Awarded at the Graduation Ceremony by the Superintendent of KMA** 2016
- **Best Graduate Dissertation Award, Awarded by Dean of the Academic Board of KMA** 2015

\* KMA stands for Korea Military Academy

## SCHOLARSHIPS

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- **Republic of Korea Army Graduate Study Scholarship (M.S.) (\$45,000/year)** 2018 - 2020
- Texas A&M University Graduate Student Travel Grant (\$1,000) Jul. 2019
- **BYUNGSOO RHO Scholarship Prize for the Best Paper Award (\$1,200)** Jun. 2015

## TEACHING EXPERIENCE (AT KOREA MILITARY ACADEMY)

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- Engineering Mathematics Fall 2021, Spring & Fall 2022, Spring 2023  
Lecture Evaluation: 4.84/5.0
- AI-Centric Future Military ICT Spring & Fall 2021, Spring & Fall 2022, Spring & Fall 2023  
Lecture Evaluation: 4.74/5.0
- Military Communications and Electronics Fall 2020, Fall 2023  
Lecture Evaluation: 4.79/5.0
- Introduction to Military Engineering Spring 2021
- Military Engineering Projects Spring 2021, Spring & Fall 2022

## COMPUTING SKILLS

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- Programming: MATLAB, Python, C#
- Tools: Git/GitHub, VS Code, PyTorch, L<sup>A</sup>T<sub>E</sub>X, COMSOL Multiphysics, Unity