

EUNSU PARK(박은수)

CURRICULUM VITAE

Update: 2026. 5. 7.

1] PERSONAL INFORMATION

Date of Birth: January 15, 1990

Gender: Male

Nationality: Republic of Korea

Current Position: Korea Astronomy and Space science Institute (KASI)

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2] EDUCATION

+ Ph. D. (2016.03 – 2020.02)

School of Space Research, Kyung Hee University, Korea.

Thesis Title: Forecasting of Solar Flares and Translation of SDO Images by Deep Learning

+ M. S. (2014.03 – 2016.02)

School of Space Research, Kyung Hee University, Korea

Thesis Title: Observational test of empirical magnetopause location models using geosynchronous satellite data

+ B. S. (2008.03 – 2014.02)

Dept. of Astronomy and Space Science, Kyung Hee University, Korea

3] RESEARCH INTEREST

Solar physics, Space Weather, and Deep Learning

Development of space weather forecasting models based on solar physics and deep learning

4] SKILL

- + Python, IDL
- + Keras, TensorFlow, and PyTorch
- + Solarsoft
- + Design and developing data pipeline

5] PARTICIPATION IN SCHOOL PROGRAM

- + **2016. 01.** SOKENDAI Asian Solar Physics Winter School, Japan
- + **2014. 06.** NASA/CCMC Space Weather REDI Summer Bootcamp, USA

6] PROJECTS

+ **2024.05 – Present**

(Principal Investigator) Research of AI Solar Observatory for Improvement Past Solar Observation Data and Prevalidating Future Solar Exploration Missions

+ **2020.03 - 2023.02**

(Principal Investigator) Study on the evolution of giant sunspots and forecast of eastern limb flares using solar farside magnetograms generated by deep learning

7] PUBLICATION

1. **Eunsu Park**, H. Lee, Y.-J. Moon, J.-Y. Lee, I.-H. Cho, K.-S. Lee, D. Lim, H.-J. Jeong, and J.-O. Lee, Pixel-to-pixel translation of solar EUV images for DEMs by Fully-connected Networks, *Astrophysical Journal Supplement Series*, **202301**, 264, 33, doi:10.3847/1538-4365/aca902
2. **Eunsu Park**, H.-J. Jeong, H. Lee, T. Kim, and Y.-J. Moon, Reply to:Reliability of AI-generated magnetograms from only EUV images, *Nature Astronomy*, **202102**, 5, 111, doi:10.1038/s41550-021-01311-5
3. **Eunsu Park**, Y.-J. Moon, D. Lim, and H. Lee, Denoising SDO/HMI Solar Magnetograms by Image Translation Method Based on Deep Learning, *Astrophysical Journal Letters*, **202002**, 891, L4, doi:10.3847/2041-8213/ab74d2
4. **Eunsu Park**, Y.-J. Moon, J.-Y. Lee, R.-S. Kim, H. Lee, D. Lee, G. Shin, and T. Kim, Generation of solar UV and EUV images from SDO/HMI magnetograms by deep learning, *Astrophysical Journal Letters*, **201910**, 884, L23, doi:10.3847/2041-8213/ab46bb
5. **Eunsu Park**, Y.-J. Moon, S. Shin, K. Yi, D. Lim, H. Lee, and G. Shin, Application of Deep Convolutional Neural Network to the Forecast of Solar Flare Occurrence Using Full-Disk Magnetograms, *Astrophysical Journal*, **201812**, 869, 91, doi:10.3847/1538-4357/aaed40

6. **Eunsu Park**, Y.-J. Moon, and K. Lee, Observational test of empirical magnetopause location models using geosynchronous satellite data, *Journal of Geophysical Research*, **201612**, 121, 10994-11006, doi:10.1002/2015JA022271

7. H. Lee, D. Lim, **Eunsu Park**, Y.-J. Moon, H. Hayakawa, A new deep-learning approach to infer solar and geomagnetic parameters for the 1859 Carrington event, *Journal of Space Weather and Space Climate*, **202605**, 16, 11, doi:10.1051/swsc/2026009

8. S.-H. Han, J.-Y. Han, J. Lee, Eunsu Park, S. Choi, Deep Learning-Based Prediction of Tool Influence Function for Nanometric Control in Space Optical Material, *Journal of Astronomy and Space Sciences*, **202603**, 43, 21, doi:10.5140/JASS.2026.43.1.21

9. H.-J. Jeong, **Eunsu Park**, H. Lee, J. Youn, M. Jeon, Y.-J. Moon, S. Poedts, F. Carella, H. Wang, D. Kim, Y. Kim, and J. Kang, Artificial-intelligence-based Reconstruction of Solar Farside Vector Magnetograms from Multispacecraft Extreme-ultraviolet Data, *Astrophysical Journal Supplement Series*, **202512** 281, 63, doi:10.3847/1538-4365/ae21b8

10. J. Youn, H. Lee, H.-J. Jeong, J.-Y. Lee, **Eunsu Park**, and Y.-J. Moon, Can We Properly Determine the DEMs from Solar Orbiter/EU/FSI with Deep Learning? *Astronomy and Astrophysics*, **202503**, 695, A125, doi:10.1051/0004-6361/202452304

11. Y.-J. Moon, K.-S. Cho, S.-H. Park, E.-K. Lim, R. Kim, D. Song, J. Park, **Eunsu Park**, H. Lee, H.-J. Jeong, J. Kang, J. Park, K. Yi, I.-H. Cho, and H. Na, Scientific Perspectives of the Heliophysics L4 Mission by Remote-Sensing Observation, *Journal of the Korean Astronomical Society*, **202403**, 57, 1, 35, doi:10.5303/JKAS.2024.57.1.35
12. K.-S. Cho, J. Kim, R.-S. Kim, **Eunsu Park**, Y. Kubo, and K. Iwai, Automatic Detection of Type II Solar Radio Burst by Using 1-D Convolution Neural Network, *Journal of the Korean Astronomical Society*, **202312**, 56, 2, 213, doi:10.5303/JKAS.2023.56.2.213
13. Y.-J. Moon, H. Lee, J. Son, S.-K. Sung, K. Yi, H.-J. Jeong, **Eunsu Park**, E.-Y. Ji, I.-H. Cho, B. Lawrance, D. Lim, G. Shin, S. Lee, S. Rahman, and T. Kim, Application of Deep Learning to Solar and Space Weather Data, *Proceedings of the International Astronomical Union*, **202309**, 18, 131, doi:10.1017/S1743921322004847
14. S. Rahman, S. Shin, H.-J. Jeong, A. Siddique, Y.-J. Moon, J. Kang, S.-H. Bae, and **Eunsu Park**, Fast Reconstruction of 3D Density Distribution around the Sun based on the MAS by Deep Learning, *Astrophysical Journal*, **202304**, 948, 21, doi:10.3847/1538-4357/acbd3c
15. K.-S. Lee, J. Chae, **Eunsu Park**, Y.-J. Moon, H. Kwak, and K. Cho, Deep Learning-based Fast Spectral Inversion of Ha and Ca II 8542 Line Spectra, *Astrophysical Journal*, **202211**, 940, 147, doi:10.3847/1538-4357/ac9c60

16. H.-J. Jeong, Y.-J. Moon, **Eunsu Park**, H. Lee, and J.-H. Baek, Improved AI-generated Solar Farside Magnetograms by STEREO and SDO Data Sets and Their Release, *Astrophysical Journal Supplement Series*, **202210**, 262, 50, doi:10.3847/1538-4365/ac8d66
17. B. Lawrance, H. Lee, **Eunsu Park**, I.-H. Cho, Y.-J. Moon, J.-Y. Lee, A. Shanmugaraju, and S. Rahman, Generation of Solar Coronal White-light Images from SDO/AIA EUV Images by Deep Learning, *Astrophysical Journal*, **202210**, 937, 111, doi:10.3847/1538-4357/ac8c24
18. S. Uneme, S. Imada, H. Lee, Eunsu Park, H. Hayakawa, T. Iju, and Y.-J. Moon, Inference of magnetic field during the Dalton minimum: Case study with recorded sunspot areas, *Publications of the Astronomical Society of Japan*, **202206**, 74, 767, doi:10.1093/pasj/psac032
19. J. Son, J. Cha, Y.-J. Moon, H. Lee, **Eunsu Park**, G. Shin, and H.-J. Jeong, Generation of He I 1083 nm Images from SDO/AIA Images by Deep Learning, *Astrophysical Journal*, **202110**, 920, 101, doi:10.3847/1538-4357/ac16dd
20. D. Lim, Y.-J. Moon, **Eunsu Park**, and J.-Y. Lee, Selection of Three (E)UV Channels for Solar Satellite Missions by Deep Learning, *Astrophysical Journal Letters*, **202107**, 915, L31, doi:10.3847/2041-8213/ac0d54
21. K. Yi, Y.-J. Moon, H.-J. D. Lim, **Eunsu Park**, and H. Lee, Visual explanation of a deep learning solar flare forecast model and its relationship with physical parameters, *Astrophysical Journal*, **202103**, 910, 8, doi:10.3847/1538-4357/abdebe

22. H. Lee, **Eunsu Park**, and Y.-J. Moon, Generation of modern satellite data from Galileo sunspot drawings in 1612 by deep learning, ***Astrophysical Journal***, **202102**, 907, 118, doi:10.3847/1538-4357/abce5f
23. S. Lee, E.-Y. Ji, Y.-J. Moon, and **Eunsu Park**, One-day forecasting of Global TEC using a novel deep learning model, ***Space Weather***, **202101**, 19, 1, 2020SW002600, doi:10.1029/2020SW002600
24. H.-J. Jeong, Y.-J. Moon, **Eunsu Park**, and H. Lee, Solar Coronal Magnetic Field Extrapolation from Synchronic Data with AI-generated Farside, ***Astrophysical Journal Letters***, **202011**, 903, L25, doi:10.3847/2041-8213/abc255
25. S. Rahman, Y.-J. Moon, **Eunsu Park**, A. Siddique, I.-H. Cho, and D. Lim, Super-resolution of SDO/HMI Magnetograms Using Novel Deep Learning Method, ***Astrophysical Journal Letters***, **202007**, 897, L32, doi:10.3847/2041-8213/ab9d79
26. G. Shin, Y.-J. Moon, **Eunsu Park**, H.-J. Jeong, H. Lee, and S.-H. Bae, Generation of High-resolution Solar Pseudo-magnetograms from Ca II K Images by Deep Learning, ***Astrophysical Journal Letters***, **202005**, 895, L16, doi:10.3847/2041-8213/ab9085
27. E.-Y. Ji, Y.-J. Moon, and **Eunsu Park**, Improvement of IRI Global TEC Maps by Deep Learning Based on conditional Generative Adversarial Networks, ***Space Weather***, **202004**, 18, 5, 2019SW002411, doi:10.1029/2019SW002411
28. D. Lim, Y.-J. Moon, **Eunsu Park**, J. Park, K. Lee, J.-Y. Lee, and S. Jang, Ensemble Forecasting of Major Solar Flares with Short-, Mid-, and Long-term Active Region Properties, ***Astrophysical Journal***, **201910**, 885, 35, doi:10.3847/1538-4357/ab45e7

29. K. Kim, J.-H. Kim, Y.-J. Moon, **Eunsu Park**, G. Shin, T. Kim, Y. Kim, and S. Hong, Nighttime Reflectance Generation in the Visible Band of Satellites, *Remote Sensing*, **201909**, 11, 18, 2087, doi:10.3390/rs11182087
30. D. Lim, Y.-J. Moon, J. Park, **Eunsu Park**, K. Lee, J.-Y. Lee, and S. Jang, Forecast of Daily Major Flare Probability Using Relationships between Vector Magnetic Properties and Flaring Rates, *Journal of the Korean Astronomical Society*, **201908**, 52, 4, doi:10.5303/JKAS.2019.52.4.133
31. T. Kim, **Eunsu Park**, H. Lee, Y.-J. Moon, S.-H. Bae, D. Lim, S. Jang, L. Kim, I.-H. Cho, M. Choi, and K.-S. Cho, Solar farside magnetograms from deep learning analysis of STEREO/EUVI data, *Nature Astronomy*, **201903**, 3, 397, doi:10.1038/s41550-019-0711-5
32. H. Lee, Y.-J. Moon, V. M. Nakariakov, H. Na, I.-H. Cho, and **Eunsu Park**, Three-dimensional Oscillations of 21 Halo Coronal Mass Ejections Using Multi-spacecraft Data, *Astrophysical Journal*, **201811**, 868, 18, doi:10.3847/1538-4357/aae5f6