

Curriculum Vitae

PERSONAL DATA

Name: Youjeong Youn (Yujung Yun)

Date of Birth: July 17, 1994

Nationality: Republic of Korea

Current Affiliation: Ph.D. Candidate

Pukyong National University (PKNU)

Division of Earth and Environmental System Science

(Major of Spatial Information Engineering)



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EDUCATION

» **Ph.D. Spatial Information Engineering**

2022.03~Present

- Division of Earth and Environmental System Science,
- Pukyong National University (PKNU)
- *Advisor: Prof. Yangwon Lee (modconfi@pknu.ac.kr)*

» **M.S. Spatial Information Engineering**

2020.03~2022.02

- Division of Earth and Environmental System Science,
- Pukyong National University (PKNU)
- *Advisor: Prof. Yangwon Lee (modconfi@pknu.ac.kr)*

» **B.S. Geomatics Engineering**

2013.03~2020.02

- Division of Earth and Environmental System Science,
- Pukyong National University (PKNU)
- *GPA (4.17/4.5)*

FIELD OF SPECIALIZATION

» **Research Area:** Advanced AI for Geospatial Data Integrity, AI-based Modeling for Environmental Prediction, Geospatial Quality Control and Analysis

» **Research Expertise**

- Advanced AI for Data Integrity and High-Resolution: Developed and implemented Deep Learning (DL) reconstruction techniques (e.g., SAR WBI noise removal) and DL-based Super-Resolution (Downscaling) models to generate high-resolution products from meteorological and satellite data. Secured data integrity and consistency via Machine Learning (ML) Gap-filling on key satellite products (e.g., GK-2A/Himawari-8 AOD and

Sentinel-2 NDVI).

- AI-based Modeling for Environmental Prediction: Designed and validated Advanced ML/DL models (e.g., SVM, Random Forest, LightGBM, DNN) for Spatio-Temporal Modeling and High-Accuracy Estimation of critical environmental phenomena, integrating multi-source data (Satellite Products, Numerical Models, and Ground-based Station observations), with application to Wildfire Risk, Air Quality (AOD/PM10), and Resource Prediction (Fish Catch, Crop Yield).
- Geospatial Quality Control and Analysis: Developed and implemented QC Algorithms for Ground-based Station observations and conducted rigorous Validation to ensure data and model reliability. Improved prediction accuracy and robustness through Data Ensemble techniques (e.g., Ensemble Bayesian Model Averaging (EBMA)) and Advanced Geospatial Statistics (e.g., Area-to-point Regression Kriging (ATPRK), Ordinary Kriging with Lapse Rate correction (OKLR)).

SPECIALIZED SKILLS

1. Techniques: Deep Learning, Machine Learning, Spatio-Temporal Modeling, Gap-filling, Super-Resolution/Downscaling, Object Detection & Segmentation, Geostatistics, QC Algorithm Development, Data Fusion
2. Programming Languages: Python, R, MATLAB, Java
3. ML/DL Frameworks: PyTorch, TensorFlow (CUDA/cuDNN), scikit-learn
4. Geospatial and Visualization Libraries: xarray, rasterio, geopandas, GDAL, OpenCV, Matplotlib, seaborn
5. Tools and Software: QGIS, ArcGIS, ENVI, GEE, Panoply, MRT, Fiji, Fmask, Git/GitHub, Docker

PUBLICATION

» First Author

1. **Youjeong Youn**, Seunghye Kim, Yangwon Lee* (2026). Enhancing Accuracy and Resolution: A Novel Ordinary Kriging Approach with Lapse Rate Correction for Daily Air Temperature Grids in South Korea (*to be submitted*).
2. **Youjeong Youn**, Seoyeon Kim, Seunghye Kim, Yangwon Lee* (2024). Spatial Gap-filling of Himawari-8 Hourly AOD Products Using Machine Learning with Model-based AOD and Meteorological Data: A Focus on the Korean Peninsula, *Remote Sensing*, 16(23), 4400. <https://doi.org/10.3390/rs16234400>
3. **Youjeong Youn**, Jonggu Kang, Seoyeon Kim, Yemin Jeong, Soyeon Choi, Yungyo Im, Youngmin Seo, Myoungsoo Won, Junghwa Chun, Kyoung-min Kim, Keunchang Jang, Joongbin Lim, Yangwon Lee* (2023). Gap-Filling of Sentinel-2 NDVI Using Sentinel-1 Radar Vegetation Indices and AutoML, *Korean Journal of Remote Sensing*, 39(6-1), 1341-1352. <https://doi.org/10.7780/kjrs.2023.39.6.1.14>
4. **Youjeong Youn**, Jonggu Kang, Seoyeon Kim, Yemin Jeong, Soyeon Choi, Yungyo Im, Youngmin Seo, Myoungsoo Won, Junghwa Chun, Kyoung-min Kim, Keunchang Jang,

- Joongbin Lim, Yangwon Lee* (2023). Gridding of Automatic Mountain Meteorology Observation Station (AMOS) Temperature Data Using Optimal Kriging with Lapse Rate Correction, *Korean Journal of Remote Sensing*, 39(5-1), 715-727. <https://doi.org/10.7780/kjrs.2023.39.5.1.19>
5. **Youjeong Yoon**, Jonggu Kang, Geunah Kim, Ganghyun Park, Soyeon Choi, Yangwon Lee* (2022). Spatial Gap-filling of GK-2A/AMI Hourly AOD Products Using Meteorological Data and Machine Learning, *Korean Journal of Remote Sensing*, 38(5-3), 953-966. <https://doi.org/10.7780/kjrs.2022.38.5.3.12>
 6. **Youjeong Yoon**, Seoyeon Kim, Soyeon Choi, Ganghyun Park, Jonggu Kang, Geunah Kim, Chunguen Kwon, Kyungwon Seo, Yangwon Lee* (2022). Regional Optimization of Forest Fire Danger Index (FFDI) and its application to 2022 North Korea Wildfires, *Korean Journal of Remote Sensing*, 38(6-3), 1847-1859. <https://doi.org/10.7780/kjrs.2022.38.6.3.9>
 7. **Youjeong Yoon**, Seoyeon Kim, Yemin Jeong, Subin Cho, Jonggu Kang, Geunah Kim, Yangwon Lee* (2021). Spatial Gap-Filling of Hourly AOD Data from Himawari-8 Satellite Using DCT (Discrete Cosine Transform) and FMM (Fast Marching Method), *Korean Journal of Remote Sensing*, 37(4), 777-788. <https://doi.org/10.7780/kjrs.2021.37.4.8>
 8. **Youjeong Yoon**, Kwangjin Kim, Chu-Yong Chung, No-Wook Park, Yangwon Lee* (2020). Ensemble Downscaling of Soil Moisture Data Using BMA and ATPRK, *Korean Journal of Remote Sensing*, 36(4), 587-607. <https://doi.org/10.7780/kjrs.2020.36.4.8>
 9. **Youjeong Yoon**, Seoyeon Kim, Yemin Jeong, Subin Cho, Yangwon Lee* (2020). Evaluation of the DCT-PLS Method for Spatial Gap Filling of Gridded Data, *Korean Journal of Remote Sensing*, 36(6-1), 1407-1419. <https://doi.org/10.7780/kjrs.2020.36.6.1.10>
 10. **Youjeong Yoon**, Subin Cho, Seoyeon Kim, Nari Kim, Soo-jin Lee, Jihye Ahn, Eunjeong Lee, Seongeok Joh, Yang-Won Lee* (2020). An Artificial Intelligence Method for the Prediction of Near-and Off-Shore Fish Catch Using Satellite and Numerical Model Data, *Korean Journal of Remote Sensing*, 36(1), 41-53. <https://doi.org/10.7780/kjrs.2020.36.1.4>

» Co-Author

1. Geunah Kim, **Youjeong Yoon**, Yangwon Lee* (2026). AI-based Plant phenology modeling and Creation and Analysis of Plant Phenology Maps using Meteorological and Satellite Data (*to be submitted*)
2. Seoyeon Kim, **Youjeong Yoon**, Menas Kafatos, Jaejin Kim, Wonsik Choi, Seung Hee Kim*, Yangwon Lee* (2025). Real-Time Production of High-Resolution, Gap-Free, 3-Hourly AOD over South Korea: A Machine Learning Approach Using Model Forecasts, Satellite Products, and Air Quality Data, *Atmosphere* (*under review*)
3. Jonggu Kang, **Youjeong Yoon**, Seoyeon Kim, Yemin Jeong, Soyeon Choi, Yungyo Im, Youngmin Seo, Yangwon Lee* (2023). Analysis of Color Characteristics of Marine Oil Spills Using PlanetScope Images, *Korean Journal of Remote Sensing*, 39(5-2), 875-883. <https://doi.org/10.7780/kjrs.2023.39.5.2.11>
4. Seoyeon Kim, **Youjeong Yoon**, Jonggu Kang, Seoyeon Kim, Yemin Jeong, Yungyo Im, Youngmin Seo, Wan-Yeop Kim, Minha Choi, Yangwon Lee* (2023). Waterbody

Detection for the Reservoirs in South Korea Using Swin Transformer and Sentinel-1 Images, *Korean Journal of Remote Sensing*, 39(5-3), 949-965. <https://doi.org/10.7780/kjrs.2023.39.5.3.6>

5. Soyeon Choi, **Youjeong Yoon**, Jonggu Kang, Seoyeon Kim, Yemin Jeong, Yungyo Im, Youngmin Seo, Wan-Yeop Kim, Minha Choi, Yangwon Lee* (2023). Waterbody Detection for the Reservoirs in South Korea Using Swin Transformer and Sentinel-1 Images, *Korean Journal of Remote Sensing*, 39(5-3), 949-965. <https://doi.org/10.7780/kjrs.2023.39.5.3.6>
6. Yemin Jeong, **Youjeong Yoon**, Jonggu Kang, Seoyeon Kim, Soyeon Choi, Yungyo Im, Youngmin Seo, Jeongah Yu, Kyoung-Hee Sung, Jeong-Ah Yu, Kyoung-Hee Sung, Sang-Min Kim, Yangwon Lee* (2023). Artificial Intelligence-based Detection of Smoke Plume and Yellow Dust from GEMS Images, *Korean Journal of Remote Sensing*, 39(5-2), 1225-6161. <https://doi.org/10.7780/kjrs.2023.39.5.2.10>
7. Yungyo Im, **Youjeong Yoon**, Jonggu Kang, Seoyeon Kim, Yemin Jeong, Soyeon Choi, Youngmin Seo, Yangwon Lee* (2023). Ship Detection from SAR Images Using YOLOv5: The Model Constructions and Accuracy Characteristics According to Polarization, *Korean Journal of Remote Sensing*, 39(5-3), 997-1008. <https://doi.org/10.7780/kjrs.2023.39.5.3.9>
8. Ganghyun Park, Jonggu Kang, Soyeon Choi, **Youjeong Yoon**, Geunah Kim, Yangwon Lee* (2022). Detection of Active Fire Objects from Drone Images Using YOLOv7x Model, *Korean Journal of Remote Sensing*, 38(6-2), 1737-1741. <https://doi.org/10.7780/kjrs.2022.38.6.2.13>
9. Ganghyun Park, **Youjeong Yoon**, Jonggu Kang, Geunah Kim, Soyeon Choi, Seonwoong Jang, Suho Bak, Shinwoo Gong, Jiwoo Kwak, Yangwon Lee* (2022). A Comparative Study on the Object Detection of Deposited Marine Debris (DMD) Using YOLOv5 and YOLOv7 Models, *Korean Journal of Remote Sensing*, 38(6-2), 1643-1652. <https://doi.org/10.7780/kjrs.2022.38.6.2.6>
10. Geunah Kim, Jonggu Kang, **Youjeong Yoon**, Junghwa Chun, Keunchang Jang, Myoungsoo Won, Yangwon Lee* (2022). Statistical Analyses of the Flowering Dates of Cherry Blossom and the Peak Dates of Maple Leaves in South Korea Using ASOS and MODIS Data, *Korean Journal of Remote Sensing*, 38(1), 57-72. <https://doi.org/10.7780/kjrs.2022.38.1.5>
11. Geunah Kim, **Youjeong Yoon**, Jonggu Kang, Soyeon Choi, Ganghyun Park, Junghwa Chun, Keunchang Jang, Myoungsoo Won, Yangwon Lee* (2022). MODIS of Vegetation Phenology Using MODIS and ASOS data, *Korean Journal of Remote Sensing*, 38(5-1), 627-646. <https://doi.org/10.7780/kjrs.2022.38.5.1.15>
12. Jonggu Kang, Ganghyun Park, Geunah Kim, **Youjeong Yoon**, Soyeon Choi, Yangwon Lee* (2022). Cloud Detection from Sentinel-2 Images Using DeepLabV3+ and Swing Transformer Models, *Korean Journal of Remote Sensing*, 38(6-2), 1743-1747. <https://doi.org/10.7780/kjrs.2022.38.6.2.14>
13. Jonggu Kang, **Youjeong Yoon**, Geunah Kim, Ganghyun Park, Soyeon Choi, Chan-Su Yang, Jonghyuk Yi, Yangwon Lee* (2022). Detection of Marine Oil Spills from

- PlanetScope Images Using DeepLabV3+ Model, *Korean Journal of Remote Sensing*, 38(6-2), 953-966. <https://doi.org/10.7780/kjrs.2022.38.6.2.4>
14. Seoyeon Kim, **Youjeong Yoon**, Yemin Jeong, Chan-Won Park, Sang-II Na, Hoyong Ahn, Jae-Hyun Ryu, Yangwon Lee* (2022). Atmospheric Correction of Sentinel-2 Images Using GK2A AOD: A Comparison between FLAASH, Sen2Cor, 6SV1.1, and 6SV2.1, *Korean Journal of Remote Sensing*, 38(5-1), 647-660. <https://doi.org/10.7780/kjrs.2022.38.5.1.16>
 15. Seoyeon Kim, **Youjeong Yoon**, Yemin Jeong, Chunguen Kwon, Kyungwon Seo, Yangwon Lee* (2022). Analysis of Burned Areas in North Korea Using Satellite-based Wildfire Damage Indices, *Korean Journal of Remote Sensing*, 38(6-3), 1861-1869. <https://doi.org/10.7780/kjrs.2022.38.6.3.10>
 16. Soo-Jin Lee, **Youjeong Yoon**, Eunha Sohn, Mija Kim, Yangwon Lee* (2022). A Real-time Correction of the Underestimation Noise for GK2A Daily NDVI, *Korean Journal of Remote Sensing*, 38(6-1), 1301-1314. <https://doi.org/10.7780/kjrs.2022.38.6.1.24>
 17. Soyeon Choi, Ganghyun Park, Jonggu Kang, Geunah Kim, **Youjeong Yoon**, Yangwon Lee* (2022). Flood Detection from Sentinel-1 SAR Images using U-Net and HRNetV2 Models, *The Geographical Journal of Korea*, 56(4), 409-419. <https://doi.org/10.22905/kaopqj.2022.56.4.8>
 18. Soyeon Choi, **Youjeong Yoon**, Jonggu Kang, Ganghyun Park, Geunah Kim, Seulchan Lee, Minha Choi, Hagyu Jeong, Yangwon Lee* (2022). An Artificial Intelligence Approach to Waterbody Detection of the Agricultural Reservoirs in South Korea Using Sentinel-1 SAR Images, *Korean Journal of Remote Sensing*, 38(5-3), 925-938. <https://doi.org/10.7780/kjrs.2022.38.5.3.10>
 19. Geunah Kim, Jonggu Kang, Yemin Jeong, Seoyeon Kim, **Youjeong Yoon**, Subin Cho, Kyung-Ja Ha, Yangwon Lee* (2021). Assessment of the Predictability of Heatwave Index Using ASOS and ERA5 Data with Machine Learning: Case Study of South Korea, 1979-2020, *Journal of Climate Research*, 16(2), 147-156. <https://dx.doi.org/10.14383/crj.2021.16.2.147>
 20. Jonggu Kang, Geunah Kim, Yemin Jeong, Seoyeon Kim, **Youjeong Yoon**, Subin Cho, Yangwon Lee* (2021). U-Net Cloud Detection for the SPARCS Cloud Dataset from Landsat 8 Images, *Korean Journal of Remote Sensing*, 37(5-1), 1149-1161. <https://doi.org/10.7780/kjrs.2021.37.5.1.25>
 21. Seoyeon Kim, Yemin Jeong, **Youjeong Yoon**, Subin Cho, Jonggu Kang, Geunah Kim, Yangwon Lee* (2021). A Comparison between Multiple Satellite AOD Products Using AERONET Sun Photometer Observation in South Korea: Case Study of MODIS, VIIRS, Himawari-8, and Sentinel-3, *Korean Journal of Remote Sensing*, 37(3), 543-557. <https://doi.org/10.7780/kjrs.2021.37.3.14>
 22. Subin Cho, **Youjeong Yoon**, Seoyeon Kim, Yemin Jeong, Geunah Kim, Jonggu Kang, Kwangjin Kim, Jaeil Cho, Yangwon Lee* (2021). A Comparative Evaluation of Multiple Meteorological Datasets for the Rice Yield Prediction at the Country Level in South Korea, *Korean Journal of Remote Sensing*, 37(2), 337-357. <https://doi.org/10.7780/kjrs.2021.37.2.12>

23. Yemin Jeong, Subin Cho, **Youjeong Yoon**, Seoyeon Kim, Geunah Kim, Jonggu Kang, Dalgeun Lee, Euk Chung, Yangwon Lee* (2021). Kriging of Daily PM10 Concentration from the Air Korea Stations Nationwide and the Accuracy Assessment, *Korean Journal of Remote Sensing*, 37(3), 379-394. <https://doi.org/10.7780/kjrs.2021.37.3.2>
24. Seoyeon Kim, Yemin Jeong, Subin Cho, **Youjeong Yoon**, Nari Kim, Yangwon Lee* (2020). A Comparison between the Reference Evapotranspiration Products for Croplands in Korea: Case Study of 2016~2019, *Korean Journal of Remote Sensing*, 36(6-1), 1465-1483. <https://doi.org/10.7780/kjrs.2020.36.6.1.14>
25. Yemin Jeong, Subin Cho, **Youjeong Yoon**, Seoyeon Kim, Daesun Kim, Yangwon Lee* (2020). Machine Learning-based Prediction Maps for the Tomorrow's PM10 Concentration in Korea, *Journal of Climate Research*, 15(4), 1-17. <https://dx.doi.org/10.14383/crj.2020.15.4.1>
26. Yemin Jeong, **Youjeong Yoon**, Subin Cho, Seoyeon Kim, Morang Huh, Yangwon Lee (2020). Prediction of Daily PM10 Concentration for Air Korea Stations Using Artificial Intelligence with LDPAS Weather Data, MODIS AOD, and Chines Air Quality Data, *Korean Journal of Remote Sensing*, 36(4), 573-586. <https://doi.org/10.7780/kjrs.2020.36.4.7>

CONFERENCES

» International Conferences

1. **Youjeong Yoon**, Yangwon Lee* (2025). An Unsupervised Multi-temporal SAR Gap-filling Approach for Wideband Interference Regions, American Geophysical Union Fall Meeting 2025 (AGU 2025) (**Poster**)
2. **Youjeong Yoon**, Yangwon Lee* (2025). Development of an Integrated SAR-Optical Machine Learning Framework for All-weather NDVI Monitoring under Climate Change, International Symposium on Remote Sensing 2025 (ISRS 2025) (**Oral**)
3. **Youjeong Yoon**, Yangwon Lee* (2024). Machine Learning-Based Gap Filling for Sentinel-2 NDVI Time Series and Comparison with Drone Imagery NDVI, International Society for Photogrammetry and Remote Sensing (ISPRS 2024) (**Poster**)
4. **Youjeong Yoon**, Yangwon Lee* (2023). Rasterization of Mountain weather temperature data using spatial statistical methods, 13th International Conference on Environmental Pollution and Remediation (ICEPR 2023) (**Oral**)
5. **Youjeong Yoon**, Yangwon Lee* (2023). Evaluation of convolutional Neural Networks based Statistical downscaling of Gridded data, The 28th International Symposium on Remote Sensing and ThE 6th Unmmanned Aerial Vehicles in Geomatics (ISRS 2023&UAV-g 2023) (**Oral**)
6. **Youjeong Yoon**, Yangwon Lee* (2022). Spatial Gap-Filling of GK-2A/AMI AOD Products for Estimation of Particulate Matter using Machine Learning, 12th International Conference on Environmental Pollution and Remediation (ICEPR 2022) (**Oral**)

7. **Youjeong Youn**, Yangwon Lee* (2022). Spatial Gap-Filling of GK-2A/AMI AOD Products Using Meteorological Data with Machine Learning, International Symposium on Remote Sensing 2022 (ISRS 2022) (**Poster**)
8. **Youjeong Youn**, Yangwon Lee* (2021). Gap-Filling of Gridded Data using DCT-PLS Method, International Symposium on Remote Sensing 2021 (ISRS 2021) (**Poster**)

» **Domestic Conferences**

1. **Youjeong Youn**, Yangwon Lee* (2024). Development of Radar and Optical Sensors Integrated AI(ROS-AI) Model for Gap-free NDVI, the Korean Society of Remote Sensing Fall Conference 2024 (KSRS 2024) (**Oral**)
2. **Youjeong Youn**, Yangwon Lee* (2023). Production of High-Resolution Future Climate Data Using RCM and CNN, GeoAI Data Society 2023 (GAIDAS 2023) (**Oral**)
3. **Youjeong Youn**, Yangwon Lee* (2022). Estimation of Temperature in Forest Areas through Rasterizing of Mountain Weather Temperature Data, the Korean Association of Geographic Information Studies Fall Conference 2022 (KAGIS 2022) (**Oral**)
4. **Youjeong Youn**, Yangwon Lee* (2022). An Optimized Kriging of Mountain Weather Data Considering the Laps Rate, the Korean Society of Remote Sensing Fall Conference 2022 (KSRS 2022) (**Oral**)
5. **Youjeong Youn**, Yangwon Lee* (2021). A Study on the Comparison of Univariate Gap-Filling Methods Using AOD Data of Himawari-8 Satellite, the Korean Society of Remote Sensing Fall Conference 2021 (KSRS 2021) (**Poster**)

GRANTS AND HONORS

1. NRF Doctoral Student Research Fellowship, National Research Foundation of Korea (NRF), Korea, KRW 25,000,000/year (2025.09~2026.08)
2. Brain Korea 21 Four (BK21 Four) Research Support Scholarship (Ph.D. Program), Pukyong National University (PKNU), Korea, KRW 19,200,000/year (2022.03 ~ 2024.02)
3. Brain Korea 21 Four (BK21 Four) Blue Scholarship (Merit-based), Pukyong National University (PKNU), Korea, KRW 1,000,000/semester (2022.03 ~ 2024.02)
4. Brain Korea 21 Four (BK21 Four) Blue Scholarship (Merit-based), Pukyong National University (PKNU), Korea, KRW 1,000,000/semester (2021.03 ~ 2021.08)
5. Brain Korea 21 Four (BK21 Four) Research Support Scholarship (M.S. Program), Pukyong National University (PKNU), Korea, KRW 8,400,000/year (2020.03 ~ 2022.02)