

# Curriculum Vitae

Dec, 2024

## Jaese Lee

Phone: (+82)10-9589-6779

wotp12@unist.ac.kr / wotp12@gmail.com

UNIST-gil 50, Ulsan 44919, South Korea

### Education

*Mar.2019 –Mid 2024 (Expected)*

Ulsan National Institute of Science and Technology (UNIST), Ulsan, Korea

**Combined Master's-Doctoral Course, Major: Environmental Science and Engineering, GPA: 3.86/4.3**

*Mar.2016 – Aug.2018 (transferred to)*

Kyungpook National University (KNU), Daegu, Korea

**B.A., Major: Geography, GPA: 3.84/4.5**

*Mar.2012 – Mar.2016 (transferred from)*

Yeungnam University (YU), Gyeongsan, Korea

**B.A., Major: Sociology, GPA: 3.68/4.5**

### Research interests

1. Understanding Earth's eco-hydrological environment using remote sensing data
2. Retrieval of geophysical parameter based on radiative transfer model and deep learning
3. Soil moisture control on land carbon uptake variability

### Publications

1. **Lee, J.**, Im, J., Son, B., Cosio, E. G., & Salinas, N. (2024). Improved SMAP Soil Moisture Retrieval Using a Deep Neural Network-based Replacement of Radiative Transfer and Roughness Model. *IEEE Transactions on Geoscience and Remote Sensing*.
2. **Lee, J.**, Jung, S., & Im, J. (2024). ASCAT2SMAP: image-to-image translation to obtain L-band-like soil moisture from C-band satellite data. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*.
3. **Lee, J.**, Park, S., Im, J., Yoo, C., & Seo, E. (2022). Improved soil moisture estimation: Synergistic use of satellite observations and land surface models over CONUS based on machine learning. *Journal of*

Hydrology, 609, 127749.

4. Park, S., **Lee, J.**, Yeom, J., Seo, E., & Im, J. (2022). Performance of drought indices in assessing rice yield in North Korea and South Korea under the different agricultural systems. *Remote Sensing*, 14(23), 6161.
5. Cho, D., Yoo, C., Im, J., Lee, Y., & **Lee, J.** (2020). Improvement of spatial interpolation accuracy of daily maximum air temperature in urban areas using a stacking ensemble technique. *GIScience & Remote Sensing*, 57(5), 633-649.
6. **Lee, J.**, Kim, W., Im, J., Kwon, C., & Kim, S. (2021). Detection of forest fire damage from Sentinel-1 SAR data through the synergistic use of principal component analysis and K-means clustering [Sentinel-1 SAR K-means clustering].
7. **Lee, J.**, Kang, Y., Son, B., Im, J., & Jang, K. (2021). Estimation of Leaf Area Index Based on Machine Learning/PROSAIL Using Optical Satellite Imagery. *Korean Journal of Remote Sensing*, 37(6\_1), 1719–1729.
8. Son, B., Im, J., Park, S., & **Lee, J.** (2021). Satellite-based Drought Forecasting: Research Trends, Challenges, and Future Directions. *Korean Journal of Remote Sensing*, 37(4), 815-831.
9. Sim, S., Kim, W., **Lee, J.**, Kang, Y., Im, J., Kwon, C., & Kim, S. (2020). Wildfire severity mapping using sentinel satellite data based on machine learning approaches. *Korean Journal of Remote Sensing*, 36(5\_3), 1109-1123.
10. Park, S., Son, B., Im, J., **Lee, J.**, Lee, B., & Kwon, C. (2019). Development of satellite-based drought indices for assessing wildfire risk. *Korean Journal of Remote Sensing*, 35(6\_3), 1285-1298.

---

#### Grants and awards

1. Grant for Ph.D. fellowship from National Research Foundation of South Korea (Sep, 2023). Title: An Improved Parameterization of Passive Microwave Radiative Transfer Model using a Physics Informed Neural Network.
2. Excellent paper award from The Korean Association of Geographic Information Studies (Nov, 2019)

---

#### International presentations

1. **Lee, J.**, Im, J., & Son, B. (2024). A Physics-Informed Neural Network-based Retrieval of L-band Tau-Omega Model parameters for Improved Soil Moisture Retrieval. AGU24. (Poster)
2. **Lee, J.**, Im, J., & Son, B. (2023). A Deep learning-based replacement of Tau-Omega Model for Improved Soil Moisture Retrieval. AGU23. (Poster)
3. **Lee, J.**, Im, J., & Son, B. (2022). An Improved SMAP Soil Moisture Retrieval using Deep Neural Network-based inversion of a Passive Microwave Radiative Transfer Model. AGU22. (Poster)
4. **Lee, J.**, Park, S., Im, J., Yoo, C. (2019). Remote sensing based soil moisture downscaling using weighted composite of CCI and GLDAS soil moisture using random forest. ACRS2019 (Oral)

**Applicable data and skills**

<b>Data types and skills</b>	<b>Details</b>
Satellite data	SMAP, ASCAT, SMOS, AMSR-E/2 ALOS2 PALSAR2, Sentinel-1 Sentinel-2, Landsat, MODIS
Numerical model data	GLDAS, NLDAS, ERA5
Ground measurement data	ISMN, SMAP CVS
Physically-based modeling	Tau-Omega model, Q/H roughness model, Mironov model Oh model, Dubois model, Water cloud model
Deep Learning Technique	Neural Networks (Physics-Informed, Convolutional, Feed-forward, Autoencoder...), Random Forest, Support Vector Machine
Program language	Python, Matlab, R
Visualization tool	ArcGIS Pro, ArcGIS, Qgis, Erdas Imagine
Writing tool	LaTeX, MS Word
Language	Korean, English, Japanese