

# Hongruixuan Chen

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## EDUCATION & GPA

<b>Graduate School of Frontier Sciences, The University of Tokyo</b>   Chiba, Japan	<i>Oct., 2022-Spet., 2025</i>
➤ <b>Ph.D.</b> in <i>Complexity Science and Engineering</i> <b>Supervisor:</b> Prof. Naoto Yokoya	
<b>State Key Laboratory of Information Engineering in Survey, Mapping and Remote Sensing, Wuhan University</b>   Wuhan, China	<i>Sept., 2019-June, 2022</i>
➤ <b>M.E</b> in <i>Photogrammetry and Remote Sensing</i> <b>Supervisor:</b> Prof. Chen Wu	
<b>School of Resources and Environmental Engineering, Anhui University</b>   Hefei, China	<i>Sept., 2015-June, 2019</i>
➤ <b>B.E</b> in <i>Geomatics Engineering</i> <b>GPA:</b> 94.4/100 (ranking: 1/230)	

## WORK/OVERSEAS EXPERIENCE

<b>Geoinformatics Team, RIKEN AIP</b>   Chiba, Japan	<i>Oct., 2024-Present</i>
➤ <b>Research Part-timer</b> <b>Host:</b> Prof. Naoto Yokoya	
<b>Photogrammetry and Remote Sensing, ETH Zürich</b>   Zürich, Switzerland	<i>Jan., 2024-July., 2024</i>
➤ <b>Academic Visitor</b> <b>Host:</b> Prof. Konrad Schindler	
<b>Geoinformatics Team, RIKEN AIP</b>   Chiba, Japan	<i>May, 2023-Apr., 2024</i>
➤ <b>Research Part-timer</b> <b>Host:</b> Prof. Naoto Yokoya	
<b>Beyond AI Project, The University of Tokyo</b>   Chiba, Japan	<i>Oct., 2022-Apr., 2023</i>
➤ <b>Research Assistant</b> <b>Host:</b> Prof. Masashi Sugiyama	
<b>The United Nations Satellite Centre (UNOSAT)</b>   Geneva, Switzerland	<i>May, 2021-May, 2022</i>
➤ <b>Trainee</b> <b>Host:</b> Mr. Lars Bromley, Dr. Sofia Vallecorsa	

## RESERCH INTERESTS

Multimodal Remote Sensing Image Interpretation and Analysis; GeoAI; Change Detection; Damage Assessment; Disaster Response; Land-Cover Mapping; Height Estimation; Deep Learning; Computer Vision; Machine Learning; Domain Adaptation; Weakly Supervised Learning

## ACADEMIC PAPERS

### JOURNAL

- [1] **H. Chen**, J. Song, C. Han, J. Xia, and N. Yokoya, “ChangeMamba: Remote Sensing Change Detection with Spatiotemporal State Space Model,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 62, pp. 1–20, 2024. [\[link\]](#) (ESI hot paper & ESI highly cited paper)
- [2] **H. Chen**, C. Lan, J. Song, C Broni-Bedaiko, J. Xia, and N. Yokoya, “ObjFormer: Learning land-cover changes from paired OSM data and optical high-resolution imagery via object-guided Transformer,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 62, pp. 1–22, 2024. [\[link\]](#)
- [3] **H. Chen**, J. Song, C. Wu, B. Du, and N. Yokoya, “Exchange means change: An unsupervised single-temporal change detection framework based on intra- and inter-image patch exchange,” *ISPRS Journal of Photogrammetry and Remote Sensing*, vol. 206, pp. 87–105, 2023. [\[link\]](#)
- [4] **H. Chen**, N. Yokoya, and M. Chini, “Fourier Domain Structural Relationship Analysis for Unsupervised Multimodal Change Detection,” *ISPRS Journal of Photogrammetry and Remote Sensing*, vol. 198, pp. 99–114, 2023. [\[link\]](#) (ESI highly cited paper)
- [5] **H. Chen**, N. Yokoya, C. Wu, and B. Du, “Unsupervised Multimodal Change Detection Based on Structural Relationship Graph Representational Learning,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 60, pp. 1–18, 2022. [\[link\]](#)
- [6] C. Wu, **H. Chen**, B. Du, and L. Zhang, “Unsupervised Change Detection in Multitemporal VHR Images Based on Deep Kernel PCA Convolutional Mapping Network,” *IEEE Transactions on Cybernetics*, vol. 52, no. 11, pp. 12084–12098, 2022. [\[link\]](#)
- [7] **H. Chen**, C. Wu, B. Du, L. Zhang, and L. Wang, “Change Detection in Multisource VHR Images via Deep Siamese Convolutional Multiple-Layers Recurrent Neural Network,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 58, no. 4, pp. 2848–2864, 2020. [\[link\]](#) (ESI highly cited paper)
- [8] C. Wu, L. Zhang, B. Du, **H. Chen**, J. Wang and H. Zhong, “UNet-Like Remote Sensing Change Detection: A review of current models and research directions,” *IEEE Geoscience and Remote Sensing Magazine*, pp. 2–31, 2024. [\[Early access link\]](#)
- [9] C. Broni-Bediako, J. Xia, J. Song, **H. Chen**, M. Siam and N. Yokoya, “Generalized Few-Shot Semantic Segmentation in

- Remote Sensing: Challenge and Benchmark,” *IEEE Geoscience and Remote Sensing Letters*, pp. 1-5, 2024. [[Early access link](#)]
- [10] C. Han, C. Wu, M. Hu, J. Li and **H. Chen**, “C2F-SemiCD: A Coarse-to-Fine Semi-Supervised Change Detection Method Based on Consistency Regularization in High-Resolution Remote Sensing Images,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 62, pp. 1-21, 2024. [[link](#)]
- [11] X. Shao, **H. Chen**, K. Magson, J. Wang, J. Song, J. Chen, and J. Sasaki, “Deep Learning for Multilabel Classification of Coral Reef Conditions in the Indo-Pacific Using Underwater Photo Transect Method,” *Aquatic Conservation: Marine and Freshwater Ecosystems*, vol. 34, no. 9, pp. e4241. [[link](#)] ([Front cover article](#))
- [12] C. Han, C. Wu, H. Guo, M. Hu, J. Li, and **H. Chen**, “Change Guiding Network: Incorporating Change Prior to Guide Change Detection in Remote Sensing Imagery,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 16, pp. 8395-8407, 2023. [[link](#)]
- [13] C. Han, C. Wu, H. Guo, M. Hu, and **H. Chen**, “HANet: A Hierarchical Attention Network for Change Detection with Bitemporal Very-High-Resolution Remote Sensing Images,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 16, pp. 3867-3878, 2023. [[link](#)] ([ESI highly cited paper](#))
- [14] C. Wu, Y. Guo, H. Guo, J. Yuan, L. Ru, **H. Chen**, B. Du, and L. Zhang, “An Investigation of Traffic Density Changes inside Wuhan during the COVID-19 Epidemic with GF-2 Time-Series Images,” *International Journal of Applied Earth Observation and Geoinformation*, vol. 103, pp. 102503, 2021. [[link](#)]

## CONFERENCE

- [1] J. Song, **H. Chen**, W. Xuan, J. Xia, and N. Yokoya, “SynRS3D: A Synthetic Dataset for Global 3D Semantic Understanding from Monocular Remote Sensing Imagery,” *Thirty-Eighth Annual Conference on Neural Information Processing Systems (NeurIPS) 2024*. ([Spotlight](#)) [[link](#)]
- [2] **H. Chen**, J. Song, N. Yokoya, “Change Detection Between Optical Remote Sensing Imagery and Map Data via Segment Anything Model (SAM),” *Proceeding of the IEEE International Geoscience and Remote Sensing Symposium 2024*, Athens, Greece, pp. 1–4, 2024. (Oral) [[link](#)]
- [3] N. Yokoya, J. Xia, J. Song, and, C. Broni-Bediako, **H. Chen**, “OpenEarthMap Benchmark Suite and Its Applications,” *Proceeding of the IEEE International Geoscience and Remote Sensing Symposium 2024*, Athens, Greece, pp. 1–4, 2024. (Oral) [[link](#)]
- [4] J. Song, **H. Chen**, N. Yokoya, “SyntheWorld: A Large-Scale Synthetic Dataset for Land Cover Mapping and Building Change Detection,” *IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2024*, pp. 8287-8296, 2024. (Poster) [[link](#)]
- [5] **H. Chen**, E. Nemni, S. Vallecorsa, X. Li, C. Wu, L. Bromley, “Dual-Tasks Siamese Transformer Framework for Building Damage Assessment,” *Proceeding of the IEEE International Geoscience and Remote Sensing Symposium 2022*, Kuala Lumpur, Malaysia, pp. 1–4, 2022. (Oral) [[link](#)]
- [6] **H. Chen**, C. Wu, B. Du, and L. Zhang, “Deep Siamese Multi-scale Convolutional Network for Change Detection in Multi-Temporal VHR Images,” *2019 10th International Workshop on the Analysis of Multitemporal Remote Sensing Images*, Shanghai, China, pp. 1–4, 2019. (Oral) [[link](#)]

## PREPRINT / IN PEER REVIEW

- [1] D. Wang, M. Hu, Y. Jin, Y. Miao, J. Yang, Y. Xu, X. Qin, J. Ma, L. Sun, C. Li, C. Fu, **H. Chen**, C. Han, N. Yokoya, J. Zhang, M. Xu, L. Liu, L. Zhang, C. Wu, B. Du, D. Tao, and L. Zhang, “HyperSIGMA: Hyperspectral Intelligence Comprehension Foundation Model,” Submitted to *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2024. [[link](#)]
- [2] Z. Gong, Z. Wei, D. Wang, X. Ma, **H. Chen**, Y. Jia, Y. Deng, Z. Ji, X. Zhu, N. Yokoya, J. Zhang, B. Du, and L. Zhang, “CrossEarth: Geospatial Vision Foundation Model for Domain Generalizable Remote Sensing Semantic Segmentation,” Submitted to *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2024. [[link](#)]

## RESEARCH FUNDINGS

- AI Center Fusion Research Promotion Fund (**PI**, 1,600,000 JPY) [[link](#)] Sept., 2024
- Grant-in-Aid for JSPS Research Fellows (**PI**, 1,500,000 JPY) [[link](#)] Apr., 2024
- AI Center Fusion Research Promotion Fund (**PI**, 2,000,000 JPY) [[link](#)] Sept., 2023
- Challenging New Area Doctoral Research Grant (**PI**, 600,000 JPY) [[link](#)] June, 2023
- 2023 GSFS Challenging New Area Doctoral Research Grant (600,000 JPY) [[link](#)] June, 2023
- Microsoft Research Asia Collaborative Research Grant (**PI**, 10,000 USD)[[link](#)] Mar., 2023

## AWARDS & HONORS

- JSPS Research Fellowships for Young Scientists DC2 (**Selection ratio: 17.1%**) [[link](#)] Apr., 2024
- Japanese-Swiss Young Researchers’ Special Exchange Grant [[link](#)] Dec., 2023

➤ The University of Tokyo Fellowship <a href="#">[link]</a>	Oct., 2022
➤ Outstanding Graduates of Wuhan University	June, 2022
➤ Wang Zhizhuo Innovation Talent Scholarship ( <b>Top 1%</b> ) <a href="#">[link]</a>	Dec., 2021
➤ National Scholarship for Postgraduates ( <b>Top 1%</b> ) <a href="#">[link]</a>	Oct., 2021
➤ National Scholarship for Postgraduates ( <b>Top 1%</b> ) <a href="#">[link]</a>	Oct., 2020
➤ First Prize of Wuhan University Scholarship for Excellent Postgraduate ( <b>Top 5%</b> )	Oct., 2020
➤ LIESMARS Scholarship for Excellent First-Year Postgraduates ( <b>Top 9 in 169</b> )	Sept., 2019
➤ Excellent Graduate of Anhui Province, China ( <b>Top 1%</b> )	May, 2019
➤ First Prizes of Academic Scholarship of Anhui University ( <b>Top 3%</b> )	Oct., 2018
➤ National Scholarship for Undergraduates ( <b>Top 1%</b> )	Oct., 2017
➤ Second Prize of Esri Cup GIS Software Development Contest in China ( <b>Top 5%</b> )	Nov., 2018
➤ Outstanding Prize of National Geomatics Contest in Programming ( <b>Top 2%</b> )	July, 2018
➤ Meritorious Winner of the U.S. Mathematical Contest in Modeling	Apr., 2018
➤ Second Prize of China National Mathematical Contest in Modeling ( <b>Top 5%</b> )	Nov., 2017

## SKILLS, ACTIVITIES & INTERESTS

- **Reviewer Service:** *IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Image Processing, IEEE Transactions on Neural Networks and Learning Systems, ISPRS Journal of Photogrammetry and Remote Sensing, Pattern Recognition, IEEE Transactions on Geoscience and Remote Sensing, IEEE Geoscience and Remote Sensing Letters, International Journal of Applied Earth Observation and Geoinformation, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Artificial Intelligence Review, Geo-spatial Information Science, International Journal of Digital Earth, Neurocomputing, Remote Sensing, Geocarto International, European Journal of Remote Sensing, Transactions on Emerging Telecommunications Technologies, Scientific Reports, IEEE Access, Computers, Information; 2024 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW)*
- **Editorial Service:** Guest Editor Assistant of the [Special Issue on Recent Advances in Deep Learning-based High-Resolution Image Processing and Analysis](#) in *Remote Sensing*
- **Organizer:** [OpenEarthMap Land Cover Mapping Few-Shot Challenge](#) in CVPR Workshop 2024
- **Language Test:** *IELTS* - 7.5, *TOEFL* - 101, *GRE* - 333.5
- **Programming:** Python, Java, Android, VB.Net, C#, C/C++, R, SQL (PostgreSQL+PostGIS), Latex
- **Deep Learning Framework:** Pytorch, Tensorflow, Keras
- **Software:** MATLAB, ENVI, ArcGIS, eCognition, GoogleEarth, SPSS, Lingo, Geoda, AutoCAD, Photoshop, CityEngine, SketchUp, proficient in PowerPoint