

Curriculum Vitae

Prof. Dr. Peng Yue

Ph.D. and Professor

Deputy Dean, School of Remote Sensing and Information Engineering

Director, Hubei Province Engineering Center for Intelligent Geoprocessing (HPECIG)

Director, Institute of Geospatial Information and Location Based Services (IGILBS)

Wuhan University, China

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1. Education:

Ph.D., Geographic Information System, 2007, Wuhan University.

September 2003 - June 2004, Wuhan University, China;

July 2004 - May 2007, George Mason University, USA.

M.S., Geodesy and Survey Engineering, 2003, Wuhan University

B.S., Geodesy and Survey Engineering, 2000, Wuhan Technical University of Surveying and Mapping, China

2. Working Experience

Professor, October 2015-Present, School of Remote Sensing and Information Engineering, Wuhan University, China

Visiting Professor, February 2017-February 2018, Center for Spatial Information Science and Systems – College of Science, George Mason University, Fairfax, VA, USA

Professor, November 2011- October 2015, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing (LIESMARS), Wuhan University, China

Research Associate Professor, July 2011-February 2013, Center for Spatial Information Science and Systems – College of Science, George Mason University, Fairfax, VA, USA

Associate Professor, November 2008-November 2011, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing (LIESMARS), Wuhan University

Lecturer, June 2007-November 2008, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing (LIESMARS), Wuhan University, China

Research Assistant, July 2004-May 2007, Center for Spatial Information Science and Systems – College of Science, George Mason University, Fairfax, VA, USA

Software Engineer (concurrent with educational pursuits), September 2000-June 2004, Wuda Geoinformatics Co., Ltd. (GeoStar) – Wuhan, China

3. Research Interests

Web-based Geographic Information System (GIS) and Services, Geospatial Data Management, Interoperability, Standards, GIS software and engineering, High-Definition Map for Autonomous Driving

4. Teaching

Web GIS
GIS theory and technologies
Spatial-Temporal Big Data Analytics and Data Science
Geographic Information Services
High Performance GeoComputation

5. Publications

- [1] Yuan, M., **Yue, P.**, Yang, C., Li, J, Yan, K., Cai, C., & Wan, C., 2023. Generating lane-level road networks from high-precision trajectory data with lane-changing behavior analysis, *International Journal of Geographical Information Science*, DOI: 10.1080/13658816.2023.2279977
- [2] Cao, Z., Jiang, L., **Yue, P.**, Gong, J., Hu, X., Liu, S., Tan, H., Liu, C., Shangguan, B., & Yu, D., 2023. A large scale training sample database system for intelligent interpretation of remote sensing imagery, *Geo-spatial Information Science*, DOI: 10.1080/10095020.2023.2244005
- [3] Zhang, M., **Yue, P.**, Hu, L., Wu, H., Zhang, F., 2023. An interoperable and service-oriented approach for real-time environmental simulation by coupling OGC WPS and SensorThings API, *Environmental Modelling & Software*, 165(7), 105722.
- [4] Fang, Z., **Yue, P.**, Zhang, M., Xie, J., Wu, D., Jiang, L., 2023. A service-oriented collaborative approach to disaster decision support by integrating geospatial resources and task chain, *International Journal of Applied Earth Observations and Geoinformation*, 117, 103217.
- [5] Xu, M., **Yue, P.**, Yu, F., Yang, C., Zhang, M., Li, S., and Li, H., 2023. Multi-agent reinforcement learning to unify order-matching and vehicle-repositioning in ride-hailing services, *International Journal of Geographical Information Science*, 37(2), pp. 380-402
- [6] Wang, M., Yu, D., He, W., **Yue, P.**, Liang, Z., 2023. Domain-incremental learning for fire detection in space-air-ground integrated observation network, *International Journal of Applied Earth Observations and Geoinformation*, 118(4), 103279.
- [7] Yu, D., **Yue, P.**, Ye, F., Tapete, D., Liang, Z., 2023. Bidirectionally greedy framework for unsupervised 3D building extraction from airborne-based 3D meshes, *Automation in Construction*, 152(8), 104917.
- [8] Li, H., **Yue, P.**, Li, S., Zhang, C., Yang, C., 2023. Spatio-temporal intention learning for recommendation of next point-of-interest, *Geo-spatial Information Science*, DOI: 10.1080/10095020.2023.2179428
- [9] Gao, F., **Yue, P.**, Cao, Z., Zhao, S., Shangguan, B., Jiang, L., Hu, L., Fang, Z., Liang, Z., 2022. A multi-source spatio-temporal data cube for large-scale geospatial analysis, *International Journal of Geographical Information Science*, 36(9), pp. 1853-1884
- [10] **Yue, P.**, Shangguan, B., Hu, L., Jiang, L., Zhang, C., Cao, Z., Pan, Y., 2022. Towards a training data model for artificial intelligence in earth observation. *International Journal of Geographical Information Science*, 36(11), pp. 2113-2137
- [11] Zhang, C., Feng, Y., Hu, L., Tapete, D., Pan, L., Liang, Z., Cigna, F., **Yue, P.**, 2022. A domain adaptation neural network for change detection with heterogeneous optical and SAR remote sensing images. *International Journal of Applied Earth Observation and Geoinformation*, 109(5), 102769
- [12] Zhang, M., Jiang, L., **Yue, P.**, and Gong, J., 2020. Interoperable web sharing of environmental models using OGC web processing service and Open Modeling Interface (OpenMI).

Environmental Modelling & Software, 133: 104838.

- [13] Yue, P., Gao, F., Shangguan, B., and Yan, Z., 2020. A machine learning approach for predicting computational intensity and domain decomposition in parallel geoprocessing. *International Journal of Geographical Information Science*, 34(11), 2243-2274.
- [14] Zhang, M., Jiang, L., Zhao, J., Yue, P., and Zhang, X., 2020. Coupling OGC WPS and W3C PROV for provenance-aware geoprocessing workflows. *Computers and Geosciences*, 138: 104419.
- [15] Zhang, C., Yue, P., Tapete, D., Jiang, L., Shangguan, B., Huang, L., and Liu, G., 2020. A deeply supervised image fusion network for change detection in high resolution bi-temporal remote sensing images. *ISPRS Journal of Photogrammetry and Remote Sensing*, 166, 183-200.
- [16] Zhang, C., Yue, P., Tapete, D., Shangguan, B., Wang, M., and Wu, Z., 2020. A multi-level context-guided classification method with object-based convolutional neural network for land cover classification using very high resolution remote sensing images. *International Journal of Applied Earth Observation and Geoinformation*, 88, 102086.
- [17] Zhang, X., Zhang, M., Jiang, L., and Yue, P., 2019. An interactive 4D spatio-temporal visualization system for hydrometeorological data in natural disasters. *International Journal of Digital Earth*, 1-21.
- [18] Shangguan, B., Yue, P., Yan, Z., and Tapete, D., 2019. A stream computing approach for live environmental models using a spatial data infrastructure with a waterlogging model case study. *Environmental Modelling & Software*, 119: 182-196.
- [19] Gao, F., Yue, P., Zhang, C., and Wang, M., 2019. Coupling components and services for integrated environmental modelling. *Environmental Modelling & Software*, 118: 14-22.
- [20] Zhang, X., Yue, P., Chen, Y., and Hu, L., 2019. An efficient dynamic volume rendering for large-scale meteorological data in a virtual globe. *Computers & Geosciences*, 126(5): 1-8.
- [21] Jiang, L., Yue, P., Kuhn, W., Zhang, C., Yu, C., and Guo, X., 2018. Advancing interoperability of geospatial data provenance on the web: Gap analysis and strategies. *Computers & Geosciences*, 117(8): 21-31.
- [22] Tan, Z., Yue, P., Di, L., Tang, J., 2018. Deriving high spatiotemporal remote sensing images using deep convolutional network. *Remote Sensing*, 2018, 10(7), 1066, 1-16.
- [23] Sun, Z., Di, L., Hao, H., Wu, X., Tong, D.Q., Zhang, C., Virgei, C., Fang, H., Yu, E., Tan, X. Yue, P., and Lin, L., 2018. CyberConnector: a service-oriented system for automatically tailoring multisource Earth observation data to feed Earth science models. *Earth Science Informatics*, 11(1): 1-17.
- [24] Zhang, M., Yue, P., Wu, Z., Ziebelin, D., Wu, H. and Zhang, C., 2017. Model provenance tracking and inference for integrated environmental modelling. *Environmental Modelling & Software*, 96: 95-105.
- [25] Tan, Z., Yue, P. and Gong, J., 2017. An Array Database Approach for Earth Observation Data Management and Processing. *ISPRS International Journal of Geo-Information*, 6(7), 220.
- [26] Gong, J., Yue, P., Woldai, T., Tsai, F., Vyas, A., Wu, H., Gruen, A., Wang, L., and Musikhin, I., 2017. Geoinformatics education and outreach: looking forward. *Geo-spatial Information Science*, 20(2): 209-217.
- [27] Zhang, M., Bu, X. and Yue, P., 2017. GeoJModelBuilder: an open source geoprocessing workflow tool. *Open Geospatial Data, Software and Standards*, 2, 1-8.

- [28] Sun, Z., Di, L., Heo, G., Zhang, C., Fang, H., **Yue, P.**, Jiang, L., Tan, X., Guo, L., & Lin, L., 2017. GeoFairy: Towards a one-stop and location based Service for Geospatial Information Retrieval. *Computers, Environment and Urban Systems*, 62, 156-167.
- [29] **Yue, P.**, Ramachandran, R., Baumann, P., Khalsa, S., Deng, M., and Jiang, L., 2016. Recent Activities in Earth Data Science. *IEEE Geoscience and Remote Sensing Magazine*, 4(4): 84-89.
- [30] Zhai, X., **Yue, P.**, and Zhang, M., 2016. A sensor web and web service-based approach for active hydrological disaster monitoring. *ISPRS International Journal of Geo-Information*, 5(10), 171.
- [31] Li, M., Zhu, X., Guo, W., **Yue, P.**, and Fan, Y., 2016. A case-based reasoning approach for task-driven remote sensing image discovery under spatial-temporal constraints. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 9(1), 454-466.
- [32] Sun, Z., Fang, H., Di, L., **Yue, P.**, Tan, X., and Bai, Y., 2016. Developing a web-based system for supervised classification of remote sensing images. *Geoinformatica*. 20(4), 629-649.
- [33] Sun, Z., Fang, H., Di, L., and **Yue, P.**, 2016. Realizing parameterless automatic classification of remote sensing imagery using ontology engineering and cyberinfrastructure techniques, *Computers & Geosciences*, 94: 56-67.
- [34] **Yue, P.**, Guo, X., Zhang, M., Jiang, L., and Zhai, X., 2016. Linked data and SDI: the case on web geoprocessing workflows. *ISPRS Journal of Photogrammetry and Remote Sensing*. 114: 245-257.
- [35] **Yue, P.**, Zhang, C., Zhang, M., Zhai, X., and Jiang, L., 2015. An SDI Approach for Big Data Analytics: The Case on Sensor Web Event Detection and Geoprocessing Workflow. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 8(10), 4720-4728.
- [36] **Yue, P.**, Baumann, P., Bugbee, K., and Jiang, L., 2015. Towards Intelligent GIServices. *Earth Science Informatics*, 8(3), 463-481.
- [37] **Yue, P.**, Zhang, M., and Tan, Z., 2015. A geoprocessing workflow system for environmental monitoring and integrated modelling. *Environmental Modelling & Software*. 69, 128-140.
- [38] Hu, L., **Yue, P.**, Zhang, M., Gong, J., Jiang, L., Zhang, X., 2015. Task-oriented Sensor Web data processing for environmental monitoring. *Earth Science Informatics*, 8(3), 511-525.
- [39] Sun, Z., Fang, H., Deng, M., Chen, A., **Yue, P.**, and Di, L., 2015. Regular Shape Similarity Index: A Novel Index for Accurate Extraction of Regular Objects from Remote Sensing Images. *IEEE Transactions on Geoscience and Remote Sensing*, 53(7), 3737-3748.
- [40] He, L., **Yue, P.**, Jiang, L., and Zhang, M., 2015. Fuzzy spatial relation ontology driven detection of complex geospatial features in a web service environment. *Earth Science Informatics*, 8(1), 63-76.
- [41] **Yue, P.**, Ramachandran, R., Baumann, P., 2015. Editorial: intelligent GIServices. *Earth Science Informatics*, 8(3), 461-462.
- [42] He, L., **Yue, P.**, Di, L., Zhang, M., and Hu, L., 2015. Adding geospatial data provenance into SDI - a service-oriented approach. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 8(2), 926-936.
- [43] Sun, Z., Peng, C., Deng, M., Chen, A., **Yue, P.**, Fang, H., and Di, L., 2014. Automation of customized and near-real-time vegetation condition index generation through

- cyberinfrastructure-based geoprocessing workflows. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 7(11), 4512-4522.
- [44] Zhai, X., **Yue, P.**, Jiang, L., Wang, L., 2014. Three-dimensional geospatial information service based on cloud computing, *Journal of Applied Remote Sensing*, 8(1): 085195.
- [45] **Yue, P.**, Jiang, L., Hu, L., 2014. Google Fusion Tables for managing soil moisture sensor observations. *IEEE Journal of Selected Topics in Applied Earth Observations And Remote Sensing*, 7(11), 4414-4421.
- [46] Li, D., Gong, J., and **Yue, P.**, 2014. Geoinformatics education in China. *Geo-spatial Information Science*, 17(4), 208-218.
- [47] Han, W., Yang, Z., Di, L., and **Yue, P.**, 2014. A Geospatial Web Service Approach for Creating On-demand Cropland Data Layer Thematic Maps. *Transactions of the ASABE*, 57(1), 239-247.
- [48] Yuan, J., **Yue, P.**, Gong, J., and Zhang, M., 2013. A linked data approach for geospatial data provenance. *IEEE Transactions on Geoscience and Remote Sensing*, 51(11), 5105-5112.
- [49] **Yue, P.**, Di, L., Wei, Y., and Han, W., 2013. Intelligent services for discovery of complex geospatial features from remote sensing imagery. *ISPRS Journal of Photogrammetry and Remote Sensing*. 83: 151-164.
- [50] Sun, Z., **Yue, P.**, Hu, L., Gong, J., Zhang, L., Lu, X., 2013. GeoPWProv: interleaving map and faceted metadata for provenance visualization and navigation. *IEEE Transactions on Geoscience and Remote Sensing*, 51(11), 5131-5136.
- [51] **Yue, P.**, Zhou, H., Gong, J., and Hu, L., 2013. Geoprocessing in cloud computing platforms – a comparative analysis. *International Journal of Digital Earth*. 6(4): 404-425.
- [52] Di, L., **Yue, P.**, Ramapriyan, H.K., and King, R., 2013. Introduction to the special issue on geoscience data provenance. *IEEE Transactions on Geoscience and Remote Sensing*, 51(11), 5062-5064.
- [53] Di, L., **Yue, P.**, Ramapriyan, H.K., and King, R., 2013. Geoscience data provenance: an overview. *IEEE Transactions on Geoscience and Remote Sensing*, 51(11), 5065-5072.
- [54] Zhai, X., Zhu, X., Lu, X., Yuan, J., Li, M., and **Yue, P.**, 2012. Metadata harvesting and registration in a geospatial sensor web registry. *Transactions in GIS*. 16(6): 763-780.
- [55] **Yue, P.**, Di, L., Han, W., Zhao, P., Yang, W., and He, L., 2012. Service-oriented approach for geospatial feature discovery. *Earth Science Informatics*, 5(3-4): 153-165.
- [56] Sun, Z., **Yue, P.**, Lu, X., Zhai, X., and Hu, L., 2012. A task ontology driven approach for live geoprocessing in a service oriented environment. *Transactions in GIS*. 16(6): 867-884.
- [57] Zhao, P., Foerster, T., and **Yue, P.**, 2012. The geoprocessing web. *Computers & Geosciences*, 47 (10): 3-12.
- [58] **Yue, P.**, Gong, J., Di, L., and He, L., 2012. Automatic geospatial metadata generation for Earth science virtual data products, *Geoinformatica*, 16(1): 1-29.
- [59] Sun, Z., **Yue, P.**, and Di, L., 2012. GeoPWTManager: a task-oriented web geoprocessing system. *Computers & Geosciences*, 47 (10): 34-45.
- [60] **Yue, P.**, Wei, Y., Di, L., He, L., Gong, J., and Zhang, L., 2011. Sharing geospatial provenance in a service-oriented environment, *Computers, Environment and Urban Systems*, 35 (4): 333-343.
- [61] **Yue, P.**, Gong, J., Di, L., He, L., and Wei, Y., 2011. Integrating semantic web technologies and geospatial catalog services for geospatial information discovery and processing in

- cyberinfrastructure. *Geoinformatica*, 15 (2): 273-303.
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- [63] Yue, P., Gong, J., Xiang, L. and Chen, J., 2010. Analysis-enhanced virtual globe for digital Earth. *Science China Technological Sciences*, 53 (s1): 61-67.
- [64] Yue, P., Gong, J., and Di, L., 2010. Augmenting geospatial data provenance through metadata tracking in geospatial service chaining. *Computers & Geosciences*, 36 (3): 270-281.
- [65] Boulos, M.N.K., Warren, J., Gong, J., and Yue, P., 2010. Web GIS in practice VIII: HTML5 and the canvas element for interactive online mapping. *International Journal of Health Geographics*, 2010, 9:14-26.
- [66] Gong, J., Xiang, L., Chen, J., and Yue, P., 2010. Multi-source geospatial information integration and sharing in virtual globes. *Science China Technological Sciences*, 53 (s1): 1-6.
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- [69] Yue, P., Di, L., Yang, W., Yu, G. and Zhao, P., 2007. Semantics-based automatic composition of geospatial Web services chains. *Computers & Geosciences*, 33 (5): 649-665.
- [70] Yue, P., Tan, Z., 2018. GIS Databases and NoSQL Databases. *Comprehensive Geographic Information Systems*. Vol. 1, pp. 50–79. Oxford: Elsevier Publication.
- [71] Gong, J., Woldai, T., Fairbairn, D., and Yue, P. (eds.), 2014. ISPRS Archives Volume XL-6 for ISPRS Technical Commission VI Symposium, 19–21 May 2014, Wuhan, China.
- [72] Yue P., 2013. **Semantic Web-based Intelligent Geospatial Web Services**, Springer publication.
- [73] Gong, J., Xiang, L., Chen, J., Yue, P., and Liu, Y., 2011. GeoGlobe: A Virtual Globe for Multi-Source Geospatial Information Integration and Service. *Advances in Web-based GIS, Mapping Services and Applications*, Taylor & Francis Publication.
- [74] Yue, P., He, L., and Di, L., 2010. Semantic Web Enabled Intelligent Geoprocessing Service Chaining. *Geospatial Web Services: Advances in Information Interoperability*, IGI Global publication.
- [75] Yue, P., Di, L., Zhao, P., Yang, W., Yu, G., and Wei, Y., 2010. Semantic Augmentations to an ebRIM Profile of Catalogue Service for the Web. *Standards-Based Data and Information Systems for Earth Observations*, Springer Publication.
- [76] Gong, J., Wu, H., Gao, W., Yue, P., and Zhu, X., 2009. Geospatial Service Web. *Geospatial Technology for Earth Observation*, Springer Publication.
- [77] Yue, P., Di, L., Yang, W., Yu, G., and Zhao, P., 2009. Towards Automatic Composition of Geospatial Web Services. *Handbook of Research on Geoinformatics*, IGI Global publication.
- [78] Yu, G., Di, L., Yang, W., Zhao, P., and Yue, P., 2009. Multi-agent Systems for Distributed Geospatial Modeling, Simulation and Computing. *Handbook of Research on Geoinformatics*, IGI Global publication.
- [79] Zhao, P., Di, L., Yang, W., Yu, G., and Yue, P., 2009. Geospatial Semantic Web: Critical Issues. *Handbook of Research on Geoinformatics*, IGI Global publication.

6. Professional Services

- [1] ISO/TC211 WG 4 Convenor
- [2] Chair of OGC Training Data Markup Language for Artificial Intelligence (TrainingDML-AI) Standards Working Group (2021-Present)
- [3] Co-Chair of OGC Environmental Data Retrieval API Standards Working Group (EDR API SWG) (2020-Present)
- [4] WG member of OGC Analysis Ready Data Standards Working Group (ARD SWG) (2023-Present)
- [5] China expert in ISO 19176-1 project (2023-Present)
- [6] China expert in ISO 19115-3 review project (2020-2022)
- [7] China expert in ISO/TC211 (2020-Present)
- [8] Leading Editor, OGC Disasters Resilience Pilot User Guide: Flood - Emergency Response and Impact Assessment (OGC 19-061)
- [9] Conference Chair of the 2018 IEEE International Workshop on Big Geospatial Data and Data Science (BGDDS 2018)
- [10] Chair of OGC China Forum (2017-Present)
- [11] Co-Chair of the IEEE Geoscience and Remote Sensing Society (GRSS) Earth Science Informatics Technical Committee (2017-2019)
- [12] Chair of the IEEE Geoscience and Remote Sensing Society (GRSS) Earth Science Informatics Technical Committee (2015-2017)
- [13] Co-Chair of the IEEE Geoscience and Remote Sensing Society (GRSS) Earth Science Informatics Technical Committee (2013-2015)
- [14] China national committee member of International Society for Digital Earth(2017-Present)
- [15] OGC-Wuhan University, Business/Technical Representative (2012-Present)
- [16] Secretary of Surveying and Mapping discipline, the Academic Degrees Board of the National Council of China (2009-2020)
- [17] Secretary of ISPRS Commission VI – “Education, Technology Transfer and Capacity Development” (2012-2016)
- [18] Secretary of ISPRS Working Group IV/4 – “Virtual Globes and Context-Aware Visualisation/Analysis”, within ISPRS Commission IV Geodatabases and Digital Mapping, (2008-2012)
- [19] Invited journal reviewer of International Journal of Geographical Information Science, Environmental Modelling & Software, GeoInformatica, IEEE Transactions on Geoscience and Remote Sensing, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Computers & Geosciences, International Journal of Digital Earth, Journal of Applied Remote Sensing, Earth Science Informatics, ISPRS International Journal of Geo-Information, Remote Sensing Letters, Future Generation Computer Systems, International Journal of Health Geographics, International Journal of Production Research, Social Science Research, Remote Sensing, Annals of GIS, KSCE Journal of Civil Engineering, Geo-spatial Information Science, Applied Geomatics, Journal of Electronic Imaging, China Communications, etc.
- [20] Guest Editor of Earth Science Informatics - Special Issue on Intelligent GIServices
- [21] Guest Editor of IEEE Transactions on Geoscience and Remote Sensing - Special Issue on Geoscience Data Provenance

[22] Senior Member of IEEE and IEEE GRSS since 2012

7. Awards

- [1] 2023 OGC Community Impact Award
- [2] A top prize from Chinese Society for Geodesy, Photogrammetry and Cartography, 2022
- [3] OpenMI association Award for outstanding contributions, 2017
- [4] Excellent Young Scientist programme from National Natural Science Foundation of China(NSFC), 2017
- [5] Outstanding Young Scientist programme from Natural Science Foundation of Hubei Province, China, 2017
- [6] "Yellow Crane (Special) Talents Program"of Wuhan, China, 2016
- [7] First prize award of 2016 Hubei Province Natural Science Award
- [8] New Century Excellent Talents in Ministry of Education of China, 2013
- [9] First prize award of 2013 Hubei Province Natural Science Award
- [10] First prize award of 2014 Natural Science Award in Ministry of Education of China
- [11] First place award with the Crystal Bull Award in the 2013 Europa Challenge at the 2013 INSPIRE conference

8. Research Projects

- [1] **PI**, National Natural Science Foundation of China, "Research on using machine learning for computational intensity prediction and load balance in parallel geoprocessing", 01/2021-12/2024.
- [2] **Business&Technical POC**, OGC API-GDC Instance, and Data Client, WHU participation in OGC Testbed 19, Open Geospatial Consortium, 2023.
- [3] **Business&Technical POC**, Instance: Persistent Demonstration – Singapore, WHU participation in OGC Federated Marine Spatial Data Infrastructure Pilot 2023, Open Geospatial Consortium, 2023.
- [4] **Business&Technical POC**, Client Instance, WHU participation in OGC Climate Resilience Pilot 2022, Open Geospatial Consortium, 2022.
- [5] **Business&Technical POC**, Analysis Ready Data Component, Decision Ready Information Components, and Analysis, Visualization, Collaboration Components, WHU participation in OGC Disaster Pilot 2021, Open Geospatial Consortium, 2021.
- [6] **Business&Technical POC**, Geo Data Cube Service, WHU participation in OGC OGC Testbed 17, Open Geospatial Consortium, 2021.
- [7] **Business&Technical POC**, Flood Scenario User Guide, WHU participation in OGC Disaster Resilience Pilot 2019, , Open Geospatial Consortium, 2019.
- [8] **PI**, National Natural Science Foundation of China, "Geographical Information Service", 01/2018-12/2020.
- [9] **PI**, National Key Research and Development Program of China, "Development of an integrated platform for emergency communication and information services for major natural disasters", 2017-2021.
- [10] **PI**, National Natural Science Foundation of China, "Service-driven Geospatial Provenance Modeling, Tracking, and Sharing", 01/2013-12/2016.

- [11] **PI**, Hubei Science and Technology Support Program of China, “Key Technologies and Applications of Intelligent Geoprocessing Cloud Services for Smart Cities”, 01/2015-12/2017.
- [12] **Co-Investigator**, National Basic Research Program of China, Ministry of Science and Technology of China, “Task-oriented Information Aggregation Service Model in Earth Observation Sensor Web”, 01/2011-12/2015.
- [13] **PI**, Fundamental Research Funds for the Central Universities of China, “Intelligent Geospatial Services”, 01/2014-12/2015.
- [14] **PI**, Program for New Century Excellent Talents in University, 01/2014-12/2016.
- [15] **PI**, National Natural Science Foundation of China, “Metadata Tracking in Geospatial Service Chaining and Geospatial Data Provenance”, 01/2009-12/2011.