Qingyu Li

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EDUCATION

04/2019 – 11/2022 **Dr.-Ing (Doctorate in Engineering)**, *Technical University of Munich, Germany*
Thesis: Deep learning for building footprint generation from optical imagery.

09/2015 – 11/2018 **Double M.Sc.** in Earth Oriented Space Science and Technology, *Technical University of Munich, Germany* & Photogrammetry and Remote Sensing, *Wuhan University, China*
Thesis: Building footprint generation using deep learning methods

09/2011 – 06/2015 **B. Eng** in Remote Sensing Science and Technology, *Wuhan University, China*
Thesis: Integrating multiple textural features for remote sensing image change detection

PROFESSIONAL APPOINTMENTS

11/2022 – Now **Postdoctoral researcher**, *Technical University of Munich, Germany*
Project: "Earth Care" (TUM Innovation Networks): Exploration of earth observation through different case studies and using AI and innovative modeling technologies

04/2019 – 11/2022 **Research associate**, *Technical University of Munich, Germany & German Aerospace Center*
Project: "So2Sat" (European Research Council)**:** Development of AI-based frameworks for global building footprint generation
Project: "Investigation of building cases using AI" (Bavarian Agency for Digitization, High-Speed Internet and Surveying): Development of AI-based frameworks for undocumented building detection

TEACHING EXPERIENCE

12/2022 - 05/2023 **Supervision of Master thesis:** Remote sensing intelligent monitoring and analysis of in-terrestrial aquaculture ponds under the background of "blue transformation"
10/2021 - 03/2022 **Teaching assistant**: Remote Sensing Seminar, Road extraction using deep learning methods
10/2019 - 03/2020 **Teaching assistant**: Remote Sensing Seminar, Instance segmentation of buildings using deep learning methods

SERVICE & LEADERSHIP

- **Session chair**
  (1) 2022 IEEE International Geoscience and Remote Sensing Symposium – WE3.O1: Image Segmentation and Mapping; (2) 2021 IEEE International Geoscience and Remote Sensing Symposium – WE1.O.3: Advanced Segmentation and Land Cover Methods for Optical Data
- **Reviewer** for Scholarly Journals
  (1) IEEE Transactions on Geoscience and Remote Sensing; (2) International Journal of Applied Earth Observation and Geoinformation; (3) ISPRS Journal of Photogrammetry and Remote Sensing; (4) Remote Sensing; (5) Photogrammetric Engineering & Remote Sensing; (6) IEEE Geoscience and Remote Sensing Letters; (7) IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing; (8) IEEE Transactions on Industrial Informatics; (9) Geo-Spatial Information Science

SELECTED AWARDS

10/2020 **Geodesy Award** of German Association for Geodesy, Geoinformation, and Land Management

LANGUAGE

Chinese, English, German

TALKS

05/2023	"Semi-supervised segmentation of individual buildings from SAR imagery." Oral presentation in 2023 Joint Urban Remote Sensing Event.
07/2022	"Feature and Output Consistency Training for Semi-supervised Building Footprint Generation." Oral presentation in 2022 IEEE International Geoscience and Remote Sensing Symposium.
07/2021	"End-to-End Semantic Segmentation and Boundary Regularization of Buildings from Satellite Imagery." Oral presentation in 2021 IEEE International Geoscience and Remote Sensing Symposium.
10/2020	"Mapping the land cover of Africa at 10 m resolution from multi-source remote sensing data with Google Earth Engine." Oral presentation in 2020 Phi-week, European Space Agency
09/2020	"Instance Segmentation of Buildings Using Keypoints." Oral presentation in 2020 IEEE International Geoscience and Remote Sensing Symposium.
09/2020	"Detection of Undocumented Buildings using Convolutional Neural Network and Official Geodata." Oral presentation in 2020 XXIVth ISPRS Congress.

PUBLICATIONS

Book chapters

[1] Roschlaub, R., Glock, C., Möst, K., **Li, Q.**, Auer, S., & Zhu, X. X. (2022). "Mit Deep Learning und amtlichen Daten zur landesweiten Detektion von Gebäuden und Gebäudeveränderungen." in Künstliche Intelligenz in Geodäsie und Geoinformatik - Potenziale und Best-Practice-Beispiele, edited by Grunau, Wilfried. Germany: Wichmann Verlag.

Journal papers

[2] **Li, Q.**, Mou, L., Hua, Y., Shi, Y., Chen, S., Sun, Y., & Zhu, X. X. (2023). 3DCentripetalNet: Building height retrieval from monocular remote sensing imagery. International Journal of Applied Earth Observation and Geoinformation, 120, 103311.

[3] **Li, Q.**, Krapf, S., Shi, Y., & Zhu, X. X. (2023). SolarNet: A convolutional neural network-based framework for rooftop solar potential estimation from aerial imagery. International Journal of Applied Earth Observation and Geoinformation, 116, 103098.

[4] **Li, Q.**, Taubenböck, H., Shi, Y., Auer, S., Roschlaub, R., Glock, C., Kruspe, A., & Zhu, X. X. (2022). Identification of undocumented buildings in cadastral data using remote sensing: Construction period, morphology, and landscape. International Journal of Applied Earth Observation and Geoinformation, 112, 102909.

[5] Roschlaub, R., Glock, C., Möst, K., Hümmer, F., **Li, Q.**, Auer, S., Kruspe, A., & Zhu, X. X. (2022). Implementierung einer KI-Infrastruktur zur automatisierten Erkennung von landesweiten Gebäudeveränderungen aus Luftbildern. ZfV-Zeitschrift für Geodäsie, Geoinformation und Landmanagement, (zfv 3/2022).

[6] **Li, Q.**, Shi, Y., & Zhu, X. X. (2022). Semi-supervised building footprint generation with feature and output consistency training. IEEE Transactions on Geoscience and Remote Sensing, 60, 1-17.

[7] **Li, Q.**, Zorzi, S., Shi, Y., Fraundorfer, F., & Zhu, X. X. (2022). RegGAN: An end-to-end network for building footprint generation with boundary regularization. Remote Sensing, 14(8), 1835.

[8] **Li, Q.**, Mou, L., Hua, Y., Shi, Y., & Zhu, X. X. (2022). CrossGeoNet: A framework for building footprint generation of label-scarce geographical regions. International Journal of Applied Earth Observation and Geoinformation, 111, 102824.

[9] **Li, Q.**, Mou, L., Hua, Y., Shi, Y., & Zhu, X. X. (2021). Building footprint generation through convolutional neural networks with attraction field representation. IEEE Transactions on Geoscience and Remote Sensing, 60, 1-17.

[10] **Li, Q.**, Shi, Y., Auer, S., Roschlaub, R., Möst, K., Schmitt, M., Glock, C., & Zhu, X. X. (2020). Detection of undocumented building constructions from official geodata using a convolutional neural network. Remote Sensing, 12(21), 3537.

[11] **Li, Q.**, Shi, Y., Huang, X., & Zhu, X. X. (2020). Building footprint generation by integrating convolution neural network with feature pairwise conditional random field (FPCRF). IEEE Transactions on Geoscience and Remote Sensing, 58(11), 7502-7519.
[12] **Li, Q.**, Qiu, C., Ma, L., Schmitt, M., & Zhu, X. X. (2020). Mapping the land cover of Africa at 10 m resolution from multi-source remote sensing data with Google Earth Engine. Remote Sensing, 12(4), 602.
[13] Roschlaub, R., **Li, Q.**, Auer, S., Möst, K., Glock, C., Schmitt, M., Shi, Y & Zhu, X. X. (2020). KI-basierte Detektion von Gebäuden mittels Deep Learning und amtlichen Geodaten zur Baufallerkundung. ZFV-Zeitschrift für Geodasie, Geoinformation und Landmanagement, (3), 180-189.
[14] Shi, Y., **Li, Q.**, & Zhu, X. X. (2020). Building segmentation through a gated graph convolutional neural network with deep structured feature embedding. ISPRS Journal of Photogrammetry and Remote Sensing, 159, 184-197.
[15] Shi, Y., **Li, Q.**, & Zhu, X. X. (2018). Building footprint generation using improved generative adversarial networks. IEEE Geoscience and Remote Sensing Letters, 16(4), 603-607.
[16] **Li, Q.**, Huang, X., Wen, D., & Liu, H. (2017). Integrating multiple textural features for remote sensing image change detection. Photogrammetric Engineering & Remote Sensing, 83(2), 109-121.
[17] Huang, X., **Li, Q.**, Liu, H., & Li, J. (2016). Assessing and improving the accuracy of GlobeLand30 data for urban area delineation by combining multisource remote sensing data. IEEE Geoscience and Remote Sensing Letters, 13(12), 1860-1864.

Conference papers
[18] **Li, Q.**, Sun, Y., Mou, L., Shi, Y., & Zhu, X. X. (2023). Semi-supervised segmentation of individual buildings from SAR imagery. In 2023 Joint Urban Remote Sensing Event (JURSE) (pp. 1-4). IEEE.
[19] **Li, Q.**, Shi, Y., & Zhu, X. X. (2022). Feature and Output Consistency Training for Semi-Supervised Building Footprint Generation. In IGARSS 2022-2022 IEEE International Geoscience and Remote Sensing Symposium (pp. 171-174). IEEE.
[20] **Li, Q.**, Zorzi, S., Shi, Y., Fraundorfer, F., & Zhu, X. X. (2021). End-to-end semantic segmentation and boundary regularization of buildings from satellite imagery. In 2021 IEEE international geoscience and remote sensing symposium IGARSS (pp. 2508-2511). IEEE.
[21] Chen, S., Mou, L., **Li, Q.**, Sun, Y., & Zhu, X. X. (2021). Mask-height R-CNN: An end-to-end network for 3D building reconstruction from monocular remote sensing imagery. In 2021 IEEE International Geoscience and Remote Sensing Symposium IGARSS (pp. 1202-1205). IEEE.
[22] Shi, Y., **Li, Q.**, & Zhu, X. X. (2020). Building extraction by gated graph convolutional neural network with deep structured feature embedding. In IGARSS 2020-2020 IEEE International Geoscience and Remote Sensing Symposium (pp. 3509-3512). IEEE.
[23] **Li, Q.**, Mou, L., Hua, Y., Sun, Y., Jin, P., Shi, Y., & Zhu, X. X. (2020). Instance segmentation of buildings using keypoints. In IGARSS 2020-2020 IEEE International Geoscience and Remote Sensing Symposium (pp. 1452-1455). IEEE.
[24] **Li, Q.**, Shi, Y., Auer, S., Roschlaub, R., Möst, K., Schmitt, M., & Zhu, X. X. (2020). Detection of Undocumented Buildings Using Convolutional Neural Network and Official Geodata. ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences, 2, 517-524.
[25] Shi, Y., **Li, Q.**, & Zhu, X. X. (2019). Building footprint extraction with graph convolutional network. In IGARSS 2019-2019 IEEE International Geoscience and Remote Sensing Symposium (pp. 5136-5139). IEEE.
[26] Shi, Y., **Li, Q.**, & Zhu, X. X. (2019). BFGAN–building footprint extraction from satellite images. In 2019 Joint Urban Remote Sensing Event (JURSE) (pp. 1-4). IEEE.