Qi Ming

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Education

Ghent University **Oct. 2022 – Oct.2023 (Expected)**
Visiting Ph.D. in Faculty of Engineering and Architecture, *Ghent, Belgium*
supervisor: Prof. Aleksandra Pizurica

Beijing Institute of Technology **Sep. 2019 – Jul.2024 (Expected)**
Ph.D. in Guidance, Navigation, and Control, supervisor: Prof. Lingjuan Miao *Beijing, China*
GPA: 4.0/4.0

Beijing Institute of Technology **Sep. 2018 – Jul. 2019**
M.Eng. in Guidance, Navigation, and Control, supervised: Prof. Lingjuan Miao *Beijing, China*
GPA: 3.8/4.0

Beijing Institute of Technology **Sep. 2014 – Jul. 2018**
B.Eng. in Automation *Beijing, China*
GPA: 3.6/4.0

Publications & Manuscripts

Journal Papers

- Task Interleaving and Orientation Estimation for High-Precision Oriented Object Detection in Aerial Images
  Q. Ming, L. Miao, Z. Zhou, J. Song, Y. Dong, X. Yang,
  *ISPRS Journal of Photogrammetry and Remote Sensing (**ISPRS**&**RS**)* (SCI Q1 Top, IF=11.774) , 2023.
- CFC-Net:A Critical Feature Capturing Network for Arbitrary-Oriented Object Detection in Remote Sensing Images
  Q. Ming, L. Miao, Z. Zhou, Y. Dong,
  *IEEE Transactions on Geoscience and Remote Sensing (**TGRS**)* (SCI Q1 Top, IF=8.125) , 2021.
- Sparse Label Assignment for Oriented Object Detection in Aerial Images
  Q. Ming, L. Miao, Z. Zhou, J. Song, X. Yang,
  *Remote Sensing (**RS**)* (SCI Q2 Top, IF=5.349) , 2021.
- Optimization for Arbitrary-Oriented Object Detection via Representation Invariance Loss
  Q. Ming, Z. Zhou, L. Miao, X. Yang, Y. Dong.
  *IEEE Geoscience and Remote Sensing Letters (**GRSL**)* (SCI Q2, IF=5.343) , 2021.
- Fine-Grained Object Detection in Remote Sensing Images via Adaptive Label Assignment and Refined-Balanced Feature Pyramid Network
  J. Song, L. Miao, **Q. Ming**, Z. Zhou, Y. Dong, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (**JSTARS**)* (SCI Q3, IF=4.715) , 2022.

Conference Papers

- Deep Dive into Gradients: Better Optimization for 3D Object Detection with Gradient-Corrected IoU Supervision
  Q. Ming, L. Miao, Z. Ma, L. Zhao, Z. Zhou, X. Huang, Y. Chen, Y. Guo
  *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2023.
- Dynamic Anchor Learning for Arbitrary-Oriented Object Detection
  Q. Ming, Z. Zhou, L. Miao, H. Zhang, L. Li,
  *Proceedings of the Thirty-Five AAAI Conference on Artificial Intelligence (**AAAI**)*, 2021.
- Rethinking Rotated Object Detection with Gaussian Wasserstein Distance Loss
  X. Yang, J. Yan, **Q. Ming**, W. Wang, X. Zhang, Q. Tian
  *Proceedings of the Thirty-eighth International Conference on Machine Learning (**ICML**)*, 2021.
- Learning High-Precision Bounding Box for Rotated Object Detection via Kullback-Leibler Divergence
  X. Yang, X. Yang, J. Yang, **Q. Ming**, W. Wang, Q. Tian, J. Yan. *Proceedings of the Thirty-fifth Annual Conference on Neural Information Processing Systems (**NeurIPS**)*, 2021.

Manuscripts

- Gradient Calibration Loss for Fast and Accurate Oriented Bounding Box Regression
  Q. Ming, L. Miao, Z. Zhou, J. Song,
  Under review, submitted to *IEEE Transactions on Image Processing* (**TIP**) (**SCI Q1 top**, IF=11.041)
- Towards Accurate Medical Image Segmentation with Gradient-optimized Dice Loss
  Q. Ming, X. Xiao,
  Under review, submitted to *IEEE Transactions on Instrumentation and Measurement* (**TIM**) (**SCI Q2**, IF=5.332)

- A Novel Object Detector Based on High-quality Rotation Proposal Generation and Adaptive Angle Optimization
  Y. Qiao, L. Miao, Z. Zhou, **Q. Ming**,
  Under review, submitted to *IEEE Transactions on Geoscience and Remote Sensing (**TGRS**)* (**SCI Q1 Top**, IF=8.125)
- AdaL: Adaptive Gradient Transformation Contributes to Convergences and Generalizations
  Under review at a conference.
- UsmDetector: Unsupervised Mark Detection in Scatter Images by Simulated Annealing on Clustering-based Re-visualization
  Under review at a conference.
- Oriented Feature Alignment for Fine-grained Object Recognition in High-Resolution Satellite Imagery
  Q. Ming, J. Song. (*Technical report*)

Experience

GAIM group in University Gent **Oct. 2022 – Oct. 2023**
Exchange Ph.D student *Ghent, Belgium*

- Conduct research on optimization methods for face verification based on artworks.
- Apply probabilistic graphical model and causal reasoning in the post-processing of object detection framework.
- Learn about Physics Informed Neural Network (PINN) and explore its promise on remote sensing topics.

X-LAB in Second Research Academy of CASIC **Sep. 2022 – Oct. 2023**
Research intern *Beijing, China*

- Conduct research related to 3D object detection based on point cloud data. An IoU-based loss was designed to perform gradient correction.
- Conduct research on spiking neural networks and their application to object detection.

Institute of Navigation, Guidance, and Control **Sep. 2018 – Present**
Ph.D. candidate *Beijing, China*

- Participated in 2022 RoboMaster University AI Challenge (RMUA) and won the **3rd** prize.
- Participated in 2022 iFLYTEC A.I. Developer Competition on remote sensing object extraction. **Rank**: 9/416 (top 2%)
- Participate in 2022 GaoFen Challenge on Automated High-Resolution Earth Observation Image Interpretation. **Rank**: wining team, 6/220

Selected Awards

- Outstanding Doctoral Research Project Fund of the Navigation, Guidance and Control Engineering Center of Beijing Institute of Technology, 2022
- National Scholarship, 2022
- CSC Scholarships, 2022
- 3rd prize in ICRA University AI Challenge, 2022
- 6th place winning team (6/220, top 3%) in Gaofen Challenge on Automated High-Resolution Earth Observation Image Interpretation, 2021

Service

Journal Review

IEEE Transactions on Geoscience and Remote Sensing (TGRS), IEEE Geoscience and Remote Sensing Letters (GRSL),International Journal of Digital Earth (IJDE),Journal of Visual Communication and Image Representation (JVCI)

Conference Review

CVPR2022, ECCV2022, 3DV2022, CVPR2023, ICCV2023