

# Peng YIN

## Postdoctoral Researcher

[in linkedin.com/in/maxtom](https://www.linkedin.com/in/maxtom) [github.com/maxtomCMU](https://github.com/maxtomCMU)  
☎ +412 320 5786 @ pyin2@andrew.cmu.edu  
📍 5000 Forbes Ave, PA 15213  
🌐 <https://maxtomcmu.github.io/>



I am interested in research position related to 3D perception, reinforcement learning for mobile/legged robots.

## PUBLICATIONS

- 
- FUSIONMAPPING : LEARNING DEPTH PREDICTION WITH MONOCULAR IMAGES AND 2D LASER SCANS** PRE-PRINT  
Peng Yin, Jianing Qian, Yibo Cao, David Held and Howie Choset  
[🔗 website](#) [🔗 paper](#)  
In this paper, we introduce a 2D/3D fusion-based depth prediction method, FusionMapping.  
Depth Prediction Auto-encoder
- LPD-NET : 3D POINT CLOUD LEARNING FOR LARGE-SCALE PLACE RECOGNITION AND ENVIRONMENT ANALYSIS** ICCV 2019  
Zhe Liu, Shunbo Zhou, Chuanzhe Suo, Yingtian Liu, Peng Yin, Hesheng Wang, Yun-Hui Liu.  
[🔗 website](#) [🔗 paper](#)  
In this paper, we introduce a point cloud-based place recognition method, LPD-Net.  
Place Recognition PointNet
- MRS-VPR : A MULTI-RESOLUTION SAMPLING BASED GLOBAL VISUAL PLACE RECOGNITION METHOD** ICRA 2019  
Peng Yin, Rangaprasad Arun Srivatsan, Yin Chen, Xueqian Li, etc.  
[🔗 website](#) [🔗 paper](#)  
In this work, we introduce a multi-resolution sampling-based global visual place recognition method (MRS-VPR), which can significantly improve the matching efficiency and accuracy in sequential matching.  
Place Recognition Sequence Matching
- A MULTI-DOMAIN FEATURE LEARNING METHOD FOR VISUAL PLACE RECOGNITION** ICRA 2019  
Peng Yin, Lingyun Xu, Xueqian Li, Chen Yin, Yingli Li, etc.  
[🔗 website](#) [🔗 paper](#)  
In this work, we introduced an environmental condition-invariant feature extraction method for visual place recognition  
Visual Place Recognition Condition-invariant
- STABILIZE AN UNSUPERVISED FEATURE LEARNING FOR LIDAR-BASED PLACE RECOGNITION** IROS 2018  
Peng Yin, Lingyun Xu, Zhe Liu, Lu Li, Hadi Salman, Yuqing He.  
[🔗 website](#) [🔗 paper](#)  
In this work, we introduced a stabilization mechanism for LiDAR-based place recognition  
LiDAR Place Recognition Stabilization
- SYNCHRONOUS ADVERSARIAL FEATURE LEARNING FOR LIDAR BASED LOOP CLOSURE DETECTION** ACC 2018  
Peng Yin, Yuqing He, Lingyun Xu, Yan Peng, Jianda Han and Weiliang Xu.  
[🔗 website](#) [🔗 paper](#)  
In this work, we introduced a synchronous adversarial feature learning method for LiDAR based place recognition  
LiDAR Place Recognition Adversarial Feature Learning
- ENHANCED ICP FOR THE REGISTRATION OF LARGE-SCALE 3D ENVIRONMENT MODELS : AN EXPERIMENTAL STUDY** SENSORS  
Jianda Han, Peng Yin, Yuqing He, Feng Gu.  
[🔗 website](#) [🔗 paper](#)  
In this work, we introduce a multi-resolution particle-filter framework for UAV/USV coordinate localization.  
Global 3D registration Multi-robot Cooperative localization
- MULTI-RELATION OCTOMAP BASED HEURISTIC ICP FOR AIR/SURFACE ROBOTS COOPERATION** ROBIO 2015  
Peng Yin, Feng Gu, Yuqing He, Jianda Han.  
[🔗 website](#) [🔗 paper](#)  
In this work, we introduce a multi-resolution particle-filter method for global 3D registration  
Global 3D registration Multi-resolution Particle Filter

## FORMATION

- 
- 2019 University of Chinese Academy of Sciences, China, Doctoral Degree. (Major in 3D perception and Artificial Intelligence)  
2013 Harbin Institute of Technology University, China, Bachelor Degree. (Major in Robotics and Control)

## PROJECT EXPERIENCES

---

- Now**  
**September 2019** | **3D Semantic Mapping, CMU, RI**  
> Developing 3D Segmentation method with Sparse Annotations.  
[Semantic Mapping](#)
- Now**  
**September 2019** | **Large-scale 3D Map Merging, CMU, RI**  
> Develop rotation-invariant place features for LiDAR inputs.  
> Achieve Large Scale place recognition under variant orientation difference.  
[LiDAR Place Recognition](#) [Large-scale Mapping](#)
- May 2019**  
**April 2018** | **Vision-based Place Recognition Method, CMU, RI**  
[website](#) [video1](#) [video2](#) [video3](#)  
> Developing conditional-invariant features for place recognition (illumination, weather, etc).  
> Developing fast matching mechanism for efficient and accurate place recognition.  
[Visual Place Recognition](#) [Adversarial Feature Learning](#)
- June 2018**  
**September 2017** | **LiDAR-based Place Recognition Method, CMU, RI**  
[website](#) [video1](#) [video2](#)  
> Developing Unsupervised LiDAR features for place recognition.  
> Improve Feature Extraction ability via adversarial feature learning.  
> Fusion multi-view information for feature extraction.  
[3D Perception](#) [3D LiDAR SLAM](#) [Autonomous Driving](#)
- May 2017**  
**April 2016** | **Field Autonomous Driving, UCAS, Shenyang**  
[website](#) [video1](#) [video2](#) [video3](#)  
> Developing Autonomous Software Structure.  
> Developing Terrain Analysis Algorithm.  
> Developing Local Planning Method.  
[Autonomous Driving](#) [Terrain Analysis](#)
- September 2016**  
**April 2016** | **DJI Developer Challenge 2016, UCAS, Shenyang**  
[website](#) [video](#)  
> Develop Visual Tracking algorithm for UAV.  
> Develop Autonomous Navigation algorithm for UAV.  
[3D Registration](#) [Global Localization](#) [GPU-enhanced](#)
- April 2016**  
**June 2015** | **Crossing Area Multi-Robot Cooperation System, UCAS, Shenyang**  
[website](#) [video](#)  
> Developing Global Registration method for multiple type robots.  
> Developing GPU-enhanced multi-resolution particle filter to speed up matching efficiency.  
[3D Registration](#) [Global Localization](#) [GPU-enhanced](#)

## SKILLS

---

- Programming** C++, Python, ROS, tensorflow, PyTorch.  
**Algorithm** 3D LiDAR Mapping and Localization, 3D Semantic Segmentation and Object Detection.  
**Framework** Software System design for Mobile/Legged robot systems.

## LANGUAGES

---

Chinese ●●●●●  
English ●●●●●

## INTERESTS

---

- > Movie
- > Cooking
- > Game