

# XINYU LIU

E-mail: [jeffreylxy@outlook.com](mailto:jeffreylxy@outlook.com) | Tel.: +86 15776612709 | Homepage: <https://xinyuliu-jeffrey.github.io/>  
Address: 92 West DaZhi Street, Harbin Institute of Technology, Harbin 150001, P. R. China

## EDUCATION

### CITY UNIVERSITY OF HONG KONG

*Ph.D. in Electrical Engineering*

Advisor: [Dr. Yixuan Yuan](#)

Hong Kong SAR, China

*Expected to start at Sep. 2020*

### HARBIN INSTITUTE OF TECHNOLOGY

*M.Sc. in Control Science & Engineering*

Thesis: Research on Anchor-free Object Detection and Instance Segmentation Algorithms

Advisor: [Dr. Xiaoguang Di](#)

GPA: 86.6/100 (3.7/4.0), 87.1/100 (Major, 3.7/4.0)

Harbin, China

*Sep. 2018 - Jul. 2020*

### HARBIN INSTITUTE OF TECHNOLOGY

*B.Sc. (Hons.) in Automation*

Thesis: Research on Disparity Map Acquisition Algorithms Based on Binocular Vision

GPA: 79.1/100 (3.1/4.0)

Harbin, PR China

*Sep. 2014 - Jun. 2018*

## RESEARCH INTEREST

My research interest lies on **Computer Vision and Pattern Recognition, Medical image Processing**. I focus on **object detection** and **segmentation** tasks.

## SELECTED HONORS & AWARDS

- Scholarship for Postgraduates, First-Class, Ministry of Education, PR China, 2018–2020.
- Postgraduate Annual Scholarship, Second-Class, Harbin Institute of Technology, PR China, 2019.
- Honorable Graduate, Harbin Institute of Technology, PR China, 2018.
- 2017 International Aerial Robotics Competition, Second-Class, Association for Unmanned Vehicle Systems International, 2017.
- National Grants, Ministry of Education, PR China, 2014-2015.
- People's Scholarship, Third-Class (Twice), Harbin Institute of Technology, PR China, 2014, 2018.

## INTERNSHIP EXPERIENCE

### DEEPPWIS AI LAB

*Machine Learning Intern*

Advisor : [Fandong Zhang](#) [Prof. Dr. Yizhou Yu](#)

Beijing, PR China

*Apr. 2019 - Aug. 2019*

- **Topic: Research on Anchor-Free Object Detection and Improving Results through Data Augmentation and Backbone Substitution:**
  - ◊ Working on improving the precision of object detection in various datasets through anchor-free methods. Implementing data augmentation for object detection and altering the backbone to obtain better results.

## RESEARCH EXPERIENCE

Some of the selected research details is available on [LINK](#).

### OBJECT DETECTION AND INSTANCE SEGMENTATION, DEEPPWIS AI LAB & HARBIN INSTITUTE OF TECHNOLOGY

Beijing & Harbin, PR China

*Machine Learning Intern, Graduate Research Assistant*

*Apr. 2019 - Present*

- \* **Topic 1: Anchor-Free Object Detection Methods on Public and Private Datasets (Ongoing):**
  - ◊ Working on improving the precision of object detection in various datasets through anchor-free methods.
- \* **Topic 2: Anchor-Free Instance Segmentation Methods on Public and Private Datasets (Ongoing):**
  - ◊ Working on presenting a novel method of instance segmentation based on anchor-free methods.

### DEVELOPING A NOVEL ACTIVATION FUNCTION FOR IMAGE CLASSIFICATION, HARBIN INSTITUTE OF TECHNOLOGY

Harbin, PR China

*Graduate Research Assistant*

*Aug. 2019 - Sep. 2019*

- \* **Topic 1: A Presentation of A Smooth and Non-Linear Activation Function:**
  - ◊ Worked on a summary of current activation functions and present a novel one which avoids the existing drawbacks.
- \* **Topic 2: Demonstration of The Effectiveness on Image Classification Task:**
  - ◊ Experiments were carried out on various image classification datasets.

### FULLY-SUPERVISED SEMANTIC SEGMENTATION BASED ON CNN AND RNN, HARBIN INSTITUTE OF TECHNOLOGY

Harbin, PR China

*Graduate Research Assistant*

*Dec. 2018 - Jul. 2019*

- \* **Topic 1: Merging Multi-Scale Features Through Recurrent Neural Network:**
  - ◊ Design and implementation of a RNN involved semantic segmentation architecture.

### REAL TIME AUTOMATIC WELDING SPOT QUALITY INSPECTION METHOD, HARBIN INSTITUTE OF TECHNOLOGY

Harbin, PR China

*Graduate Research Assistant*

*Jun. 2018 – Dec. 2019*

- \* **Topic 1: Welding Spot Quality Dataset Establishing:**
  - ◊ Compiling an automatic labeling tool for data labeling.
- \* **Topic 2: Design of A Real-Time Segmentation Architecture for Welding Spots:**
  - ◊ Using deep neural network to train a segmentation network, meanwhile utilizing post-processing for defects detection.

INTERNATIONAL AERIAL ROBOTICS COMPETITION, HARBIN INSTITUTE OF TECHNOLOGY

Harbin, PR China

Undergraduate Research Assistant

Dec. 2016 - Aug. 2017

- \* **Topic 1: Trajectory Planning and Implementing of Ground Robots:**
  - ◊ Wrote the code of the trajectory of the robot based on the Arduino board.

## PUBLICATION

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### ◦ Journal Papers:

- [1] Haoxin Zhang, Xiaoguang Di, **Xinyu Liu**, "Merging Multi-Scale Features through Recurrent Neural Network for Semantic Segmentation," *Submitted*, 2019.
- [2] **Xinyu Liu**, Xiaoguang Di, "TanhExp: A Smooth Activation Function with High Convergence Speed for Lightweight Neural Networks," *arXiv 2003.09855*, 2020.
- [3] **Xinyu Liu**, Xiaoguang Di, Junde Wu, and Jiehao Huang, "Vector Encoded Bounding Box Regression for Detecting Remote Sensing Objects with Anchor-free Methods," *Submitted*, 2020.
- [4] **Xinyu Liu**, Xiaoguang Di, "Global Context Parallel Attention for Anchor-free Instance Segmentation in Remote Sensing Images," *Submitted*, 2020.

## IN-SCHOOL POSITIONS

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- \* Vice-minister of The Department of Propaganda, Student Union
- \* Teaching Assistant for Undergraduates
- \* Commissary in Charge of Science and Technology

## TECHNICAL & PROGRAMMING SKILLS

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- \* Programming: Python (Pytorch, Tensorflow, Numpy), C++, MATLAB, Arduino, HTML5, LaTeX
- \* Tools: Git, Jupyter Notebook, Robot Operating System (ROS)

## ENGLISH PROFICIENCY

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- \* **IELTS**, Score: **7.0** (Listening: 7.5 Reading: 8.0 Writing: 6.5 Speaking: 6.0)

## REFERENCES AVAILABLE TO CONTACT

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- \* **Dr. Xiaoguang Di**, Associate Professor, Harbin Institute of Technology, Harbin, China. ✉: [dixiaoguang@hit.edu.cn](mailto:dixiaoguang@hit.edu.cn)