

# TIANYUE CAO

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## EDUCATION

<b>Shanghai Jiao Tong University</b>	<b>Sep.2019 - Mar.2022 (Expected)</b>
Master's in Information and Communication Engineering	GPA: 3.91/4.00
<b>Shanghai Jiao Tong University</b>	<b>Sep.2015 - Jun.2019</b>
Bachelor's in Computer Science (IEEE Experimental Class)	GPA: 3.56/4.30

## PROFESSIONAL SKILLS

<b>Research Field</b>	Computer Vision, Weakly Supervised Object Detection
<b>Language</b>	Python (proficient), C++ (proficient)

## WORK EXPERIENCE

<b>Amazon – DGL&amp;Rekognition Group Applied Scientist Intern</b>	<b>Jun.2021 - Sep.2021</b>
<ul style="list-style-type: none"><li>Applied a Graph Neural Network based clustering approach to generate pseudo labels for semi-supervised learning to learn robust and high quality embedding.</li></ul>	
<b>Flexiv Ltd. – Deep Learning Development Intern</b>	<b>Jun.2018 - Sep.2018</b>
<ul style="list-style-type: none"><li>Used Mask R-CNN for keypoint detection (MXNet); added a keypoint detection branch and several backbones such as DetNet; enhanced the keypoint position by introducing Gaussian distribution. Achieved excellent detection performance on the enterprise automobile plug dataset, being used in the robot visual recognition task.</li></ul>	

## PROJECTS

<b>Automatic recognition hit algorithm of energy mechanism</b>	<b>Jun.2020 - Aug.2020</b>
<ul style="list-style-type: none"><li>Used monocular camera to recognize the rotating energy mechanism in different positions and angles, and predicted the hitting position. Leveraged DBSCAN clustering method to filter out the noise points interfering with ellipse fitting; Used Perspective-n-Point estimation algorithm to predict the camera pose of large angle pattern.</li><li><b>First prize</b> of RoboMaster University Championship (RMUC).</li></ul>	
<b>Multi-label image classification based on graph convolution network</b>	<b>Mar.2019 - Jun.2019</b>
<ul style="list-style-type: none"><li>Cooperated with <b>Shanghai Firstbrave Information Technology Co.Ltd</b>, designed and developed an multi-label image classification algorithm based on graph convolution network (GCN) on PyTorch for web image annotation.</li><li>Achieved SOTA <b>91.9% mAP</b> on Pascal VOC 07 dataset.</li></ul>	

## PUBLICATIONS

<b>“CaT: Weakly Supervised Object Detection with Category Transfer”</b>	First Author	<b>ICCV 2021 (Accepted)</b>
<ul style="list-style-type: none"><li>Used mean teacher and graph convolution network (GCN) to transfer category knowledge from a fully supervised dataset to achieve better performance on the weakly supervised dataset. Achieved SOTA <b>63.5% mAP</b> on Pascal VOC 07 dataset with 5 overlapping classes between the fully supervised and the weakly supervised dataset.</li></ul>		
<b>“Learning to Learn Graph Topologies”</b>	Second Author	<b>NeurIPS 2021 (In Cast)</b>
<ul style="list-style-type: none"><li>Proposed to learn a mapping from data to the graph based on learning to optimise (L2O). First unrolls an iterative primal-dual splitting algorithm into a neural network. The network is then stacked with a variational autoencoder that refines the estimated graph with enhanced structural properties.</li></ul>		
<b>“APRP: An Anonymous Propagation Method in Bitcoin Network”</b>	First Co-Author	<b>AAAI2019 Poster</b>
<ul style="list-style-type: none"><li>Proposed a novel propagation method that adopts PageRank as propagation delay factor and constantly adjusts PR-value of nodes to adapt to network dynamics.</li></ul>		

## HONORS AND AWARDS

Shenzhen Stock Exchange Scholarship (6 students in the Department)	<b>Jan.2020</b>
First Prize of RoboMaster University Championship - Leader of energy mechanism algorithm group	<b>Aug.2020</b>
Outstanding Graduates, Shanghai Jiao Tong University	<b>Sep.2019</b>
Second Prize of Mathematical Contest in Modeling, in Shanghai	<b>Jul.2019</b>