

# Quang Truong

COMPUTER SCIENCE · RESEARCH ASSISTANT

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## Research Interests

Computer Vision, Image Processing, Pattern Recognition, Machine Learning.

## Education

### Texas Christian University

B.S. IN COMPUTER SCIENCE, MINOR IN MATHEMATICS

- Bronze Medal - Ranked 12/60 in ACM-ICPC 2019 South Central USA Regional Contest.
- Transfer Faculty Scholarship (Full-tuition Scholarship).
- TCU Scholar (Spring 2020, Fall 2020).
- Dean's List (Fall 2019, Spring 2020, Fall 2020).
- GPA: 3.94/4.0, Major GPA: 4.0/4.0

Fort Worth, Texas

January. 2019 - Exp. May. 2022

### Mississippi State University (Incomplete)

B.S. IN COMPUTER SCIENCE, MINOR IN MATHEMATICS

- Freshmen Academic Excellence Scholarship.
- President's Scholar (2017, 2018).
- GPA: 4.0/4.0

Mississippi State, Mississippi

August. 2017 - Dec. 2018

## Research Experience

### TCU Department of Computer Science

UNDERGRADUATE RESEARCH ASSISTANT - DOMAIN-INVARIANT VEHICLE RE-IDENTIFICATION NETWORK PROJECT

Fort Worth, TX

Dec. 2019 - Present

- Design a Vehicle Re-identification pipeline which is powered by GAN for adaptive domain learning.
- Propose a novel feature extraction algorithm that significantly reduces the learning duration of the model without compromising the performance.
- Achieve state-of-the-art results on VeRi-776 (mAP 85.61% and rank-1 96.42%).

### TCU Department of Computer Science

UNDERGRADUATE RESEARCH ASSISTANT - IMAGE-BASED VEHICLE RE-IDENTIFICATION - AI CITY CHALLENGE

Fort Worth, TX

Dec. 2019 - May. 2020

- Designed a Vehicle Re-identification pipeline to compete in 2020 AI City Challenge - CVPR 2020 workshop.
- Adopted Detectron2 (Faster-RCNN) developed by Facebook to effectively crop image for noise reduction.
- Proposed adaptive attention-driven model with ResNet50 backbone for Vehicle Re-identification.
- Proposed metadata re-ranking method that takes color and type features extracted by ResNeXt101 into consideration when performing k-reciprocal re-ranking.
- Evaluated model on CityFlow Dataset.

### TCU Department of Computer Science

UNDERGRADUATE RESEARCH ASSISTANT - BEIJING HOUSING PRICE PREDICTION PROJECT

Fort Worth, TX

Jun. 2019 - Dec. 2019

- Researched different Machine Learning and Deep Learning methods used to forecast housing price.
- Applied multiple techniques such as Stack Generalization or Hybrid Regression to enhance the prediction.
- Visualized the housing price distribution of Beijing to find the correlation between price and other features.
- Evaluated the performance of tree-based regression models on feature-rich datasets.
- Investigated the enhancement of prediction results after combining Machine Learning and Deep Learning models.

## TCU Department of Computer Science

### UNDERGRADUATE RESEARCH ASSISTANT - AI-2-GO PROJECT

- Re-modeled Alpha Go Zero to discover the optimal solutions for Go game.
- Calculated the winning probability of each move using Monte Carlo Tree Search.
- Simulated Go matches between two AIs to find the better AI version.
- Contributed to the open source project of Alpha Go Zero, Leela Zero.

Fort Worth, TX  
Jan. 2019 - Sep. 2019

## MSU Department of Computer Science and Engineering

### TECHNICAL TEAM MEMBER - MSU STATE SPACE ROBOTICS TEAM

- Simulated environments for testing obstacle avoidance features of robots using ROS.
- Visualized movements of multiple minibots in 2D using Python.
- Visualized the environments in 3D using Gazebo.
- Delivered the final robot to the yearly NASA Robotic Mining Competition.

Mississippi State, MS  
Oct. 2017 - Dec. 2018

## Publications

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### TECHNICAL REPORTS

- [1] Image-based Vehicle Re-identification Model with Adaptive Attention Modules and Metadata Re-ranking  
Quang Truong, Hy Dang, Zhankai Ye, Minh Nguyen, Bo Mei  
*The Boller Review*. TCU Press, 2020. arXiv: 2007.01818 (cs.CV)

### PEER-REVIEWED CONFERENCE PUBLICATIONS

- [2] Housing Price Prediction via Improved Machine Learning Techniques  
Quang Truong, Minh Nguyen, Hy Dang, Bo Mei  
*International Conference on Identification, Information and Knowledge in the Internet of Things (IIKI), Procedia Computer Science*  
pp. 433–442. Elsevier, 2020. DOI: <https://doi.org/10.1016/j.procs.2020.06.111>

## Skills

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<b>Programming</b>	Python, C/C++, Java, SQL, R, Scala
<b>Computer Vision and ML</b>	Pytorch, Scikit-learn, MxNet, Gluon, Tensorflow, Keras, Matplotlib, Numpy, Pandas
<b>Robotics</b>	ROS
<b>Languages</b>	English, Vietnamese

## Coursework

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<b>Computer Science</b>	Object-Oriented Programming, Analysis of Algorithm, Unix/Linux System Administration, Data Mining and Visualization, Database Systems, Computer Organization, Computer System Fundamental, Programming Language Concepts, Digital Devices, Data Structures
<b>Math</b>	Discrete Mathematics, Elementary Statistics, Linear Algebra, Calculus I-III
<b>Coursera</b>	Introduction to Deep Learning & Neural Networks with Keras, Machine Learning with Python

## Honors & Awards

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2020	<b>Research Grant for Domain-invariant Network Project - \$1471</b> , SERC Undergraduate Research Grant	Fort Worth, TX
2019	<b>Research Grant for Beijing Housing Price Prediction - \$1500</b> , SERC Undergraduate Research Grant	Fort Worth, TX
2019	<b>Research Grant for AI-2-Go - \$1500</b> , SERC Undergraduate Research Grant	Fort Worth, TX
2019	<b>Best Undergraduate Research Poster</b> , Student Research Symposium	Fort Worth, TX
2019	<b>Departmental Nominee</b> , Student Research Symposium	Fort Worth, TX
2019	<b>1st Prize</b> , Calculus Bee	Fort Worth, TX