

# Quang Truong

COMPUTER SCIENCE · RESEARCH ASSISTANT

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## Research Interests

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

## Education

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### Texas Christian University

Fort Worth, Texas

B.S. IN COMPUTER SCIENCE, MINOR IN MATHEMATICS

January. 2019 - Exp. May. 2022

- Bronze Medal - Ranked 12/60 in ACM-ICPC 2019 South Central USA Regional Contest.
- Full-tuition Scholarship.
- TCU Scholar (Spring 2020, Fall 2020).
- Dean's List (Fall 2019, Spring 2020, Fall 2020).
- GPA: 3.955/4.0, Major GPA: 4.0/4.0

### Mississippi State University (Incomplete)

Mississippi State, Mississippi

B.S. IN COMPUTER SCIENCE

August. 2017 - Dec. 2018

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

## Research Experience

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### UIC Department of Computer Science

Chicago, IL

RESEARCH INTERN - 3D OBJECT RECONSTRUCTION PROJECT

May. 2021 - Present

- Develop a novel 3D object reconstruction approach for holistic scene understanding.

### TCU Department of Computer Science

Fort Worth, TX

UNDERGRADUATE RESEARCH ASSISTANT - DOMAIN-INVARIANT NETWORK FOR VEHICLE

Dec. 2019 - May. 2021

RE-IDENTIFICATION PROJECT

- Design a Vehicle Re-identification pipeline powered by GAN for adaptive domain learning.
- Propose a novel image filtering algorithm that significantly reduces the learning duration of the model without compromising the performance.
- Achieve state-of-the-art results on VeRi-776 (mAP 85.78% and rank-1 97.14%).

### TCU Department of Computer Science

Fort Worth, TX

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

Dec. 2019 - May. 2020

CHALLENGE

- 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.

### TCU Department of Computer Science

Fort Worth, TX

UNDERGRADUATE RESEARCH ASSISTANT - BEIJING HOUSING PRICE PREDICTION PROJECT

Jun. 2019 - Dec. 2019

- 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 models.

### TCU Department of Computer Science

Fort Worth, TX

UNDERGRADUATE RESEARCH ASSISTANT - AI-2-GO PROJECT

Jan. 2019 - Sep. 2019

- Re-modeled Alpha Go Zero to discover the optimal solutions for Go game.
- Simulated Go matches between two AIs to find the better AI version.

- Simulated environments for testing obstacle avoidance features of robots using ROS.
- Delivered the final robot to the yearly NASA Robotic Mining Competition.

## Publications

### PEER-REVIEWED CONFERENCE PUBLICATIONS

- [1] Not All Data Matters: An Efficient Approach to Domain Learning in Vehicle Re-identification  
**Quang Truong** and Bo Mei. **2021**  
*Manuscript under review at IEEE ITSC 2021.*
- [2] Housing Price Prediction via Improved Machine Learning Techniques  
**Quang Truong**, Minh Nguyen, Hy Dang, and Bo Mei. **2020**  
*Procedia Computer Science*. 2019 International Conference on Identification, Information and Knowledge in the Internet of Things. Elsevier, pp. 433–442. DOI: <https://doi.org/10.1016/j.procs.2020.06.111>.

### TECHNICAL REPORTS

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

## Skills

<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

## Advanced Coursework

<b>Computer Science</b>	Operating Systems, Microprocessor-based Digital Systems, Object-Oriented Programming, Analysis of Algorithm, Unix/Linux System Administration, Data Mining and Visualization, Database Systems
<b>Math</b>	Applied Linear Algebra, Statistics, Discrete Mathematics, Linear Algebra, Calculus I-III

## Presentation

### Annual Industrial Board Meeting

Fort Worth, TX

PRESENTER FOR DOMAIN-INVARIANT NETWORK FOR VEHICLE RE-IDENTIFICATION PROJECT

Oct. 2020

- Introduced current progress of the research project on domain-invariant learning in vehicle re-identification.
- Illustrated methodology and compared it with other state-of-the-art approaches.

## Honors & Awards

2021	<b>Best Undergraduate Research Poster</b> , Student Research Symposium	Fort Worth, TX
2020	<b>Research Grant for Domain-invariant Network for Vehicle Re-identification - \$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>Scicom Award</b> , Student Research Symposium	Fort Worth, TX
2019	<b>1st Prize</b> , Calculus Bee	Fort Worth, TX