Quang **Truong**

Computer Science · Research Assistant

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Research Interests

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

Education

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.
- 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

Mississippi State University (Incomplete)

Mississippi State, Mississippi

B.S. in Computer Science, Minor in Mathematics — *August. 2017 - Dec. 2018*

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

Research Experience

TCU Department of Computer Science

Fort Worth, TX

Undergraduate Research Assistant - Domain-invariant Network for Vehicle Re-identification Project — *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

Fort Worth, TX

Undergraduate Research Assistant - Image-based Vehicle Re-identification - AI City Challenge — *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

Fort Worth, TX

Undergraduate Research Assistant - Beijing Housing Price Prediction Project — *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 *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.
- 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.

MSU Department of Computer Science and Engineering *Mississippi State, MS*

Technical Team Member - MSU State Space Robotics Team *Oct. 2017 - Dec. 2018*

- 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.

Publications

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

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

Coursework

Computer Science	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
Math	Discrete Mathematics, Elementary Statistics, Linear Algebra, Calculus I-III
Coursera	Introduction to Deep Learning & Neural Networks with Keras, Machine Learning with Python

Honors & Awards

2020	**Research Grant for Domain-invariant Network for Vehicle Re-identification - $1471**, SERC Undergraduate Research Grant	*Fort Worth, TX*
2019	**Research Grant for Beijing Housing Price Prediction - $1500**, SERC Undergraduate Research Grant	*Fort Worth, TX*
2019	**Research Grant for AI-2-Go - $1500**, SERC Undergraduate Research Grant	*Fort Worth, TX*
2019	**Best Undergraduate Research Poster**, Student Research Symposium	*Fort Worth, TX*
2019	**Departmental Nominee**, Student Research Symposium	*Fort Worth, TX*
2019	**1st Prize**, Calculus Bee	*Fort Worth, TX*