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 *Jan. 2019 - Exp. May 2022*

- TCU Scholar (Spring 2020, Fall 2020, Spring 2021).
- Dean's List (Fall 2019, Spring 2020, Fall 2020, Spring 2021).
- GPA: 3.955/4.0, Major GPA: 4.0/4.0

Mississippi State University (Incomplete) *Mississippi State, Mississippi*

B.S. in Computer Science *Aug. 2017 - Dec. 2018*

- President's Scholar (Fall 2017, Spring 2017, Fall 2018).
- GPA: 4.0/4.0

Research Experience

Research Intern at Vision Lab, University of Illinois at Chicago *Chicago, IL*

3D Object Reconstruction Project *May 2021 - Present*

Advisor: Dr. Wei Tang

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

Research Assistant at Machine Learning Lab, Texas Christian University *Fort Worth, TX*

Domain-invariant Network for Vehicle Re-identification Project *Dec. 2019 - May 2021*

Advisor: Dr. Bo Mei

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

Image-based Vehicle Re-identification - AI City Challenge Project *Dec. 2019 - May 2020*

Advisor: Dr. Bo Mei

- 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.

Beijing Housing Price Prediction Project *Jun. 2019 - Dec. 2019*

Advisor: Dr. Bo Mei

- 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.

Technical Member at State Space Robotics Team, Mississippi State University *Mississippi State, MS*

NASA Robotic Mining Competition *Oct. 2017 - Dec. 2018*

- Simulated environments for testing obstacle avoidance features of robots using ROS.

Publications

Peer-reviewed Conference Publications

[1] Not All Data Matters: An Efficient Approach to Multi-Domain Learning in Vehicle Re-identification
Quang Truong and Bo Mei. **2021**
2021 IEEE 24th International Conference on Intelligent Transportation Systems (ITSC).

[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].

Presentation

2021	**Poster for Domain-Invariant Learning in Vehicle Re-identification Task Powered by Deep Neural Networks**, TCU Student Research Symposium	*Fort Worth, TX*
2020	**Presentation for Domain-invariant Network for Vehicle Re-identification Project**, Annual Industrial Board Meeting of TCU Department of Computer Science	*Fort Worth, TX*
2019	**Poster for AI-2-Go**, TCU Student Research Symposium	*Fort Worth, TX*

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

Relevant Coursework

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

Honors & Awards

2021	**Best Undergraduate Research Poster**, TCU Student Research Symposium	*Fort Worth, TX*
2020	**Research Grant for Domain-invariant Network for Vehicle Re-identification - $1471**, TCU SERC Undergraduate Research Grant	*Fort Worth, TX*
2019	**Bronze Medal**, ACM-ICPC South Central USA Regional Contest	*Baylor, TX*
2019	**Research Grant for Beijing Housing Price Prediction - $1500**, TCU SERC Undergraduate Research Grant	*Fort Worth, TX*
2019	**1st Prize**, Calculus Bee	*Fort Worth, TX*
2019	**Best Undergraduate Research Poster**, TCU Student Research Symposium	*Fort Worth, TX*
2019	**Scicom Award**, TCU Student Research Symposium	*Fort Worth, TX*
2019	**Research Grant for AI-2-Go - $1500**, TCU SERC Undergraduate Research Grant	*Fort Worth, TX*
2019	**Transfer Faculty Scholarship**, Texas Christian University	*Fort Worth, TX*
2017	**Freshmen Academic Excellence Scholarship**, Mississippi State University	*Mississippi State, MS*