

Chaofan Tao

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🌐 Homepage

👤 ChaofanTao

"Let us solve problems larger than ourselves!"

Research Interests

Machine Learning | Computer Vision | Transfer Learning | Deep Learning

Education

University of Electronic Science and Technology of China (UESTC)

Chengdu, P.R.China

Mathematics and Physics Basic Science

Sept 2016 - Present

Experimental Class, Honors College, Elite College of 2% students

GPA: 3.98/4.00 Avg. score: 90.45/100 Core courses grades (as follows)

Mathematics: probability and statistics:94, stochastic processes:95, linear algebra:89, advanced algebra and geometry:90, calculus i:89, advanced calculus ii:91, advanced calculus iii:95, Modern Algebra:89, Combinatorial Mathematics:100, Discrete Mathematics:91, functions of complex variables:91, mathematical modeling:90.

Computer Science: data structure:92, algorithm analysis and design:90, database fundamental:90, foundations of circuits and electronics illustrated:89, basic academic training i:98, advanced programming (C languages):86, Operating System 86 engineering practice innovation project:98.

Physics: quantum mechanics:99, theoretical mechanics:98, electrodynamical mechanics:90, thermodynamics and statistic physics:97, atomic physics:92.

Skills

Programming: C, C++, Python, Matlab, SQL, Shell

Tools: Mathcad, Multisim, Jupyter, SPSS, Latex

English: IELTS: 7.5 (R:8.5 L:8.5 W:6.5 S:6.0), GRE: 321 + 3

Research Experience

Learning Categorical-Invariant Features for Domain Adaptation

Chengdu, P.R.China

Research Assistant with Prof. Lixin Duan, at Data Intelligence Group

Nov. 2018 - Mar. 2019

- Proposed a novel method for unsupervised domain adaptation by injecting target categorical knowledge directly into the model in an adversarial fashion.
- Provided theoretical insights about why the proposed model enables fine-grained domain invariance within each category based on the relations between decision boundaries of classifiers and objective functions.
- Implemented all the experiments in the proposed method and obtained improved performance against state-of-the-art transfer learning methods.

Exploiting Mutual Relation for Visual Relationship Detection

Chengdu, P.R.China

Research Assistant with Prof. Yang Yang, at Center for Future Media

Feb. 2018 - Oct. 2018

- Co-proposed an intuitive algorithm for visual relationship detection by exploiting mutual relation in a siamese network and incorporating semantic information in the model.
- Formulated objective functions and conducted part of experiments (preprocessing, object detection et al).
- Visualized our comparable results and wrote part of the paper.

Multi-Clue based Representation Learning for Doctors Clustering

Chengdu, P.R.China

Research Assistant with Prof. Yang Yang, at Center for Future Media

Sept. 2017 - Jan. 2018

- Proposed a method to mitigate the problem of data sparsity for doctors clustering by utilizing various types of clue (e.g. rating number and comment text) .
- Crawled various types of data and built an auto-encoder for discriminative representation learning.

Publications

- **Chaofan Tao**, Fengmao Lv, Lixin Duan and Min Wu. "Minimax Entropy Network: Learning Categorical-Invariant Features for Domain Adaptation" (under review).
- Yi Bin, Yang Yang, **Chaofan Tao**, Zi Huang, Jingjing Li and Heng Tao Shen. "MR-NET: Exploiting Mutual Relation for Visual Relationship Detection" , AAAI-19 (CCF A tier).

Selected Projects

Mathematical Contest In Interdisciplinary Contest In Modeling

Chengdu, P.R.China

Team leader in competitions, Awarded 'Honorable Mention'

Nov. 2017 - Feb. 2018

- Project 1: Evaluation on Climate-based Fragile State Index Project
- Project 2: The Dynamic Path Planning of Drone Clusters Based on the Improved Artificial Potential Field
- Project 3: Measuring the Evolution and Influence in Society's Information Networks Project
- Project 4: An Evaluation System for Smart Growth of a City

Assessment of Undergraduates' Stress Level Based on Data Mining

Chengdu, P.R.China

Team lead in a psychological data-analysis project

Feb. 2018 - Jun. 2018

- Evaluate the level of mental stress in undergraduates and analyse factors that contribute to it by principal component analysis and entropy weight method.

Using Algorithm in Machine Learning for Feature Learning

Chengdu, P.R.China

Intern at Center for Future Media, UESTC

July. 2017 - Sept. 2017

- Finished Stanford Unsupervised Feature Learning and Deep Learning (Stanford-UFLDL) tutorials
- Finished corresponding code assignments, including data dimension reduction, stacked auto-encoder, image preprocessing, regression, etc.

Design of Anti-lost Tracker for Tracking Monitored Items

Chengdu, P.R.China

Team member of a 3-people team in competition

Mar. 2018 - Sept. 2018

- Made contributions to design an anti-lost tracker with wireless communication chips in Undergraduates Innovation and Entrepreneurship Competition.
- Won a prize of 1500 RMB (top 15%).

Fire Alarm Circuit Based on Temperature with Tunable Sensitivity

Chengdu, P.R.China

Course project for Analog Circuits

April. 2018 - June. 2018

- Designed a the circuit that keeps silent and provide no visual signal in normal circumstance. Once the temperature reach an abnormal value, the circuit rings the buzzer and light the LED.
- The sensitivity or the temperature threshold could be easily tuned through adjusting the variable resistor.

Awards and Honors

- Outstanding Student Scholarship, Year 2018
- 2nd Prize in Mathematical Contest and Interdisciplinary Contest in Modeling, Year 2018
- Recommendation Letter of Management Programme, National University of Singapore, Year 2018
- Outstanding Student Scholarship, Year 2017
- Prize for finishing National University Student Marathon League, Year 2017
- 2nd Prize in the Undergraduate Physics Knowledge Competition in Sichuan Province, Year 2017

Extracurricular Activities

- Assistant of the director of student affairs office, Yingcai Honors College
- Commissioner of student administration committee, Yingcai Honors College
- Player of Basketball Team, Yingcai Honors College