Chaofan Tao (陶超凡)

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Education

University of Electronic Science and Technology of China (UESTC) **985, 211, Double First Class**

Bachelor of Science in Mathematics and Physics Basic Science **09/2016-07/2020**

Overall GPA: 3.98 /4.0 Avg. score: 90.51/100

Experimental Class, Yingcai Honors College (An elite college for **top 2%** students)

National University of Singapore (NUS)

Industrial Innovation Design Program **08/2018**

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

Honors& Awards

Outstanding Student Scholarship (Top 15% **in the** Honors College) 2018

2nd Prize in Mathematical Contest and Interdisciplinary Contest in Modeling (Top 20%) 2018

Recommendation Letter of Management Programme, National University of Singapore, (Top 5%) 2018

Outstanding Student Scholarship (Top 15% **in the** Honors College) 2017

2nd Prize in the Undergraduate Physics Knowledge Competition in Sichuan Province (Top 2%) 2017

Prize for finishing National University Student Marathon League (Top 10%) 2017

Publications

Chaofan Tao, Fengmao Lv, Lixin Duan and Min Wu. "Minimax Entropy Network: Learning Categorical- Invariant Features for Domain Adaptation", arXiv:1904.09601v2, 2019. [pdf]

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, acceptance rate in 2019: **16.2**%). [pdf]

Research Experiences

Vehicle Intention Prediction with Social Modeling **Jul. 2019 - Present**

Research Intern, supervised by Qinhong Jiang at SenseTime, Shanghai

- SenseTime is an AI unicorn valued over 3 billion USD. It's the fifth China's National Open Innovation Platform for Next-Generation Artificial Intelligence
- Studied on the image-level and video-level vehicle intention prediction for self-driving cars
- Took the social model (e.g. socialGAN) into consideration to explicitly model the intention prediction further

Learning Categorical-Invariant Features for Domain Adaptation **Nov. 2018 - Mar. 2019**

Research Assistant, supervised by Prof. Lixin Duan at Data Intelligence Group, Chengdu

- Proposed a novel method for unsupervised domain adaptation by adversarially injecting target categorical knowledge into the model for fine-grained feature alignment.
- The proposed model enjoys a concise framework and a clear training procedure, which is effective and efficient
- 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 **Feb. 2018 - Oct. 2018**

Research Assistant, supervised by Prof. Yang Yang at Center for Future Media, Chengdu

- 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 **Sept. 2017 - Jan. 2018**

Research Assistant, supervised by Prof. Yang Yang, at Center for Future Media, Chengdu

- 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

Research Projects

Mathematical Contest In Interdisciplinary Contest In Modeling [project] **Nov. 2017 - Feb. 2018**

Team Leader, awarded "Honorable Mention"

- 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 [pdf] **Feb. 2018 - Jun. 2018**

Team Leader

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

Using Algorithm in Machine Learning for Feature Learning [project] **Jul. 2017 - Sept. 2017**

Independent Study

- 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

Design of Anti-lost Tracker for Tracking Monitored Items **Mar. 2018 - Sept. 2018**

Participant

- 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 [pdf] **Apr. 2018 - Jun. 2018**

Independent Study

- Designed a circuit that keeps silent and provides no visual signal in normal circumstance. Once the temperature reaches an abnormal value, the circuit rings the buzzer and light the LED
- Tuned the sensitivity or the temperature threshold easily through adjusting the variable resistor

Skills

Programming: C, C++, Python, Matlab, SQL, Shell
Tools: Mathcad, Multisim, Jupyter, SPSS, Latex

Interdisciplinary background in Mathematics, Computer Science and Physics

Major Courses in Mathematics

- Probability and Statistics
- Stochastic Processes
- Linear Algebra
- Advanced Algebra and Geometry
- Advanced Calculus I, II, III
- Abstract Algebra
- Combinatorial Mathematics
- Discrete Mathematics
- Functions of Complex Variables
- Computational Methods
- Mathematical Modeling

Major Courses in Computer Science

- Data Structure
- Algorithm Analysis and Design
- Database Fundamental
- Advanced Programming
- Operating System
- Foundations of Circuits and Electronics Illustrated
- Basic Academic Training
- Engineering Practice Innovation Project

Major Courses in Physics

- Quantum Mechanics
- Theoretical Mechanics
- Electrodynamical Mechanics
- Thermodynamics and Statistic Physics
- Atomic Physics
- University Physics I, II
- Physical Innovation Project