Tian Tan

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EDUCATION

Boston University, Boston, MA — Jan. 2023

- **M.S.** in Electrical and Computer Engineering — GPA: 3.76/4.0
- Relevant Coursework: Machine Learning (A-), Deep Learning (A), Data Science Tools and Applications (A)

Macau University of Science and Technology, Macau — Jun. 2021

- **B.S.** in Computer Technology and Application, **First Class Honors** — GPA: 3.68/4.0 (Top 2%)

RESEARCH INTERESTS

Artificial Intelligence, Biomedical Informatics, and Data Science.

PUBLICATIONS

- Subrota Kumar Mondal*, **Tian Tan***, Sadia Khanam, Keshav Kumar, Hussain Mohammed Dipu Kabir, Kan Ni.
  Security Quantification of Container-Technology-Driven E-Government Systems
  Electronics, 2023.
- Subrota Kumar Mondal, Rui Pan, H M Dipu Kabir, **Tan Tian**, Hong-Ning Dai.
  Kubernetes in IT Administration and Serverless Computing: An empirical study and research challenges
  The Journal of Supercomputing, 2022.
- **Tian Tan**, Zeyu Huang, Xiaozhu Yu.
  Handwritten Digit Recognition Application Based on Google Cloud Platform
  International Conference on Video, Signal and Image Processing, 2020. (Presentation only)
- **Tian Tan**, Xuepin Ma, Jun Liu, Zuren Li.
  Photocatalytic Degradation of Residual Orthene in Vegetables by Nano-TiO_2
  China Science & Technology Education, 2017.

Note: * above denotes equal contribution.

RESEARCH EXPERIENCE

Boston University Bio-Imaging & Informatics Lab — Mar. 2023 - Jul. 2023

Research Assistant, Advisor: Prof. Bang-Bon Koo

- Explored effective feature selection algorithms for medical datasets with nearly 800 features, ultimately implementing a reinforcement learning-based bee swarm optimization approach.
- Constructed an automatic pipeline for data science and regression models to help medical staff mine potential relationships between diffusion magnetic resonance imaging (MRI) measures and cognitive scores.
- Employed PyTorch to establish neural networks for training medical scans to predict brain age, achieving optimal results with a global-local transformer.
- Developed shell and Python scripts to automate the execution of HCP (Human Connectome Project) processing, with a primary focus on structural and diffusion analysis.
- Integrated and interpreted medical data tables from the UK Biobank to uncover their related information.

Boston University Bio-Imaging & Informatics Lab — Jan. 2022 - Jun. 2022

Research Assistant, Advisor: Prof. Bang-Bon Koo

- Established machine learning models for early diagnosis of Alzheimer's disease and a co-training and SVM model yielded the best performance, closely approaching the highest accuracy within the academic community.
- Implemented data dimensionality reduction and visualization to find connections in extensive multi-modal datasets, and discovered the effectiveness of UMAP algorithm in preserving data structure.
- Carried out data preprocessing on 18 data sheets, each containing thousands of samples with nearly 100 features per sample, including outlier detection and dataset balancing, etc.

Macau University of Science and Technology — Sep. 2020 - Jun. 2021

Research Assistant, Advisor: Prof. Subrota Kumar Mondal

- Worked on the design of secure intelligent systems and security quantification.
- Proposed a novel security quantification method and introduced a new architectural intelligence system, a container-driven e-government system.
- Published two articles and my thesis was awarded as one of the best papers in the college.

UC Berkeley School of Information Jun. 2020 - Aug. 2020

Remote Research Intern, Advisor: Prof. Noah Gift

- Topic: Cloud Computing for Data Analysis
- Submitted a project abstract and it was accepted for presentation at the 2nd VSIP conference (First Author).

Macau University of Science and Technology Jan. 2019 - Jun. 2019

Research Assistant, Advisor: Prof. Zhiyao Liang

- Topic: How to Utilize Artificial Intelligence in Social Life
- Led a team in a modeling competition to optimize smart urban traffic systems using artificial intelligence.

High School Research: Hunan Academy of Agricultural Sciences May 2015 - Jan. 2017

Research Assistant, Advisor: Dr. Lifeng Wang, Consultant: Dr. Longping Yuan (National Academy of Sciences member)

- Topic: How to Reduce Pesticide Residues in Vegetables
- Won a national award and was presented it by the Vice President and the Minister of Science and Technology.

WORK EXPERIENCE

Social Media Data Analyst Intern, Boston USWOO Realty LLC, MA Aug. 2023 - Present

- Analyzed social media data to discover user psychological preferences and developed products interactively.
- Conducted misinformation detection using machine learning, neural networks, and natural language processing.
- Harnessed artificial intelligence to create or optimize advertisements for product promotion.

Teaching Assistant, EC 414 Introduction to Machine Learning Jan. 2022 - May 2022

Advisor: Prof. Prakash Ishwar, Boston University College of Engineering

- Implemented machine learning algorithms in MATLAB and took charge of the office hour.

Electrical Engineer Intern, Han's Laser Technology Industry Group Co., Ltd., China Jul. 2019 - Aug. 2019

- Designed 3D printed models of mechanical parts and tested 3D printing slicing software.

Pre-sales Assistant Engineer Intern, Tencent Cloud Co., Ltd., China Jun. 2019 - Jul. 2019

- Contributed to the development of the first smart healthcare system in Changsha city.
- Completed industrial data statistics, demand boundary management, and product designing.

PROJECTS

Boston City Services Project: Relief Funds Equity Sep. 2022 - Dec. 2022

- Ensured that the City of Boston equitably distributed relief funds across demographics during the pandemic.
- Performed data analysis of business relief data and census data to determine the scope and adequacy of aid.

Apple iCloud Project: Encrypted Search over FoundationDB Sep. 2022 - Dec. 2022

- Created a cloud-based database cluster ensuring data privacy and encrypted search functionality.
- Deployed Clusion and Dory encrypted search algorithms and contrasted them along different dimensions.

Amazon Movie Review for Rating Prediction (Kaggle Competition | Top 10%) Oct. 2022 - Nov. 2022

- Executed One-Hot Encoding for categorical features and analyzed text by TF-IDF algorithm.
- Engineered regression models and tuned hyper-parameters with GridSearchCV method.

Intelligent Suspicious Vehicle Detection Mar. 2022 - May 2022

- Captured real time video frames with FFMPEG and cropped it with OpenCV.
- Detected unauthorized vehicle parking in specific areas using machine learning and deep learning (YOLOv5x).

Dimensionality Reduction for Data Visualization Oct. 2021 - Dec. 2021

- Realized different dimensionality reduction algorithms (PCA, T-SNE, ISOMAP, UMAP) on classic datasets.
- Accomplished the visualization of the dimensionally reduced data and analyzed the performance.

RSNA-MICCAI Brain Tumor Radiogenomic Classification Sep. 2021 - Dec. 2021

- Determined the presence of MGMT promoter methylation to predict a specific type of brain tumor.
- Trained and tested deep learning models (EfficientNet, ResNet, DenseNet) and assessed their performance.

SKILLS

Programming: Python, MATLAB, Java, SQL, C/C++, HTML, JavaScript, LaTex

Data Science: Pandas, Numpy, Matplotlib, Sklearn, Folium, PyTorch, TensorFlow

Software: Sublime, PyCharm, Visual Studio, Eclipse, Dev-C++, Jupyter Notebook, Anaconda, Git, Vim, Shell, Overleaf

Languages: Mandarin, Cantonese, English (IELTS score 7/9: Listening: 7, Reading: 9, Writing: 6, Speaking: 6)

CERTIFICATIONS

- 'Database Administration Fundamentals' certified by Microsoft Technology Associate (MTA).
- 'Programming using Java' certified by MTA.
- 'Programming using JavaScript' certified by MTA.
- 'Data Security' certified by Collaborative Institutional Training Initiative (CITI).
- 'Medical Campus Biomedical Researchers' certified by CITI.
- 'Artificial Intelligence' certified by Huawei Cloud.

HONORS AND AWARDS

- First Class Honors, Macau University of Science and Technology.
- Provincial Second Prize, 2019 China Undergraduate Mathematical Contest in Modeling (CUMCM).
- Excellence Award, The Stanford CGCP Student Writing Contest.
- 3rd Class China Regional Award, RoboMaster 2018 Robotics Competition.
- First Prize, China Adolescents Science & Technology Innovation Contest (CASTIC).
- Chairman Award of China Association for Science and Technology, CASTIC.
- Grand Prize, The "CST CUP" National Scientific Literacy Competition.
- Provincial Bronze Medal, World Mathematics Olympiad (China region).
- International Silver Award, World Robot Olympiad (WRO).
- Second Place, The 7th Changsha Sports Games Tennis Competition.
- Excellent Volunteer, Macau Youth Artistic Ability Volunteer Association.

ACTIVITIES

Volunteer, Chinese Red Cross — Jul. 2016 - Jul. 2021

- Participated in many volunteer activities to provide services to those in need.

Volunteer & Deputy Director, Macau Youth Artistic Ability Volunteer Association — Sep. 2018 - Sep. 2020

- Organized volunteer activities and served as a volunteer teacher in a rural primary school (News Video).

Journalist, Changsha Evening News — Mar. 2009 - Jul. 2020

- Wrote and published articles about social issues, such as educational equality, human rights, etc.

Deputy Director, Department of Finance, Tennis Club — Sep. 2017 - Jun. 2019

- Managed and supervised the financial funds and organized tennis charity events.

Director & Screenwriter, "Dream Market" - HD Short Film — Jan. 2018 - Dec. 2018

- Received the Excellence Award in the 2018 Campus English Short Film Competition.

INTERESTS

- **Sports**: Tennis (7 years of professional training), Basketball, Badminton, Swimming, Skateboarding.
- **Art**: Painting (proficient in watercolor and sketching, recipient of national awards).
- **Music**: Guitar.
- **Culinary**: Baking.
- **Adventure**: Traveling, Hiking, Diving, Drift Activities.