Tao Huang

Algorithm Engineer

Medical Data Analyst

https://huangtao36.github.io/

- **Gender:** Male
- **Birth:** 1994.01.06
- **Ethnicity:** Han
- **Phone:** 13533759854
- **Mail:** htao36@163.com
- **Local:** Qiantang, Hangzhou, Zhejiang Province

Education Background

- Master's Degree: September 2017 - June 2020, Guangdong Polytechnic Normal University, Control Science and Engineering
- Bachelor's Degree: September 2012 - June 2016, Guangdong Pharmaceutical University, Biomedical Engineering

Work Experience

Institute of Basic Medicine and Cancer, Chinese Academy of Sciences, Algorithm Engineer

October 2022 - Present:

Main Job Responsibilities:

- Developed an intelligent healthcare interaction platform, combining ChatGPT, knowledge graph, and local knowledge base.
- Project leader for the integration of medical data and intelligent interaction platform based on large-scale models.
- Responsible for team management, core algorithm design, and hospital data processing.

Clinical Research Department, The First Affiliated Hospital of Jinan University, Researcher

July 2020 - October 2022

Main Job Responsibilities:

- Development of clinical research methodologies and paper writing: Developed novel clinical research methodologies based on statistical, mathematical, and computer knowledge. Applied machine learning and deep learning methods to medical data processing. Published 7 first-author SCI papers with a total impact factor of 25.84.
- Medical database construction: Managed, mined, and analyzed structured data, imaging data, genetic data, and text data from databases such as MIMIC-III, eICU, and UK-Biobank. Built medical databases serving over 200 individuals in the hospital and assisted in generating more than 50 related papers.
- Establishment of medical platform servers: Set up high-performance Linux server platforms for genetic data and imaging data analysis, providing software and hardware support environments to expand the research scope of the team.
- Development of REDCap system: Constructed a clinical data collection system for multicenter studies and ensured its management and continuous maintenance.

Paper

1. **Huang T**, Huang L, Yang R, Li S, He N, Feng A, Li L, Lyu J. Machine learning models for predicting survival in patients with ampullary adenocarcinoma. Asia Pac J Oncol Nurs. 2022 Sep 5;9(12):100141.(IF: 2.220). https://pubmed.ncbi.nlm.nih.gov/36276885

2. Yang R, **Huang T**, Shen L, Feng A, Li L, Li S, Huang L, He N, Huang W, Liu H, Lyu J. The Use of Antibiotics for Ventilator-Associated Pneumonia in the MIMIC-IV Database. Front Pharmacol. 2022 Jun 13;13:869499. (Co-first author, IF: 5.988). https://pubmed.ncbi.nlm.nih.gov/35770093

3. **Huang T**, Yang R, Shen L, Feng A, Li L, He N, Li S, Huang L, Lyu J. Deep transfer learning to quantify pleural effusion severity in chest X-rays. BMC Med

Imaging. 2022 May 27;22(1):100. (IF: 2.795). https://pubmed.ncbi.nlm.nih.gov/35624426

4. Xu Y, Han D, **Huang T**, Zhang X, Lu H, Shen S, Lyu J, Wang H. Predicting ICU Mortality in Rheumatic Heart Disease: Comparison of XGBoost and Logistic Regression. Front Cardiovasc Med. 2022 Feb 28;9:847206. (Co-first author, IF: 5.846). https://pubmed.ncbi.nlm.nih.gov/35295254

5. Yu H, **Huang T**, Feng B, Lyu J. Deep-learning model for predicting the survival of rectal adenocarcinoma patients based on a surveillance, epidemiology, and end results analysis. BMC Cancer. 2022 Feb 25;22(1):210. (Co-first author, IF: 4.638). https://pubmed.ncbi.nlm.nih.gov/35216571

6. Zhang L, **Huang T**, Xu F, Li S, Zheng S, Lyu J, Yin H. Prediction of prognosis in elderly patients with sepsis based on machine learning (random survival forest). BMC Emerg Med. 2022 Feb 11;22(1):26.(Co-first author, IF: 2.485). https://pubmed.ncbi.nlm.nih.gov/35148680

7. Yang R, **Huang T**, Wang Z, Huang W, Feng A, Li L, Lyu J. Deep-Learning-Based Survival Prediction of Patients in Coronary Care Units. Comput Math Methods Med. 2021 Dec 24;2021:5745304. (Co-first author, IF: 2.809). https://pubmed.ncbi.nlm.nih.gov/34976110

Skillset

1. Proficient in cross-disciplinary studies, with a strong understanding of the fundamental principles, training, and fine-tuning methods of large models like ChatGPT.
2. Well-versed in the construction and utilization of medical knowledge graphs, integrating them with large-scale models.
3. Experienced in working with major public medical databases such as MIMIC, eICU, and UK Biobank.
4. Knowledgeable in statistical analysis models and methods including survival analysis, predictive modeling, machine learning, and deep learning.
5. Skilled in using the Ubuntu (Linux) operating system and proficient in utilizing GPU clusters.
6. Familiar with programming languages such as SQL Server, R, Python, and the PyTorch framework.

Honors and Certifications

- Annual Excellent Employee, April 2022
- First Prize in the Guangdong-Hong Kong-Macao Outstanding Graduate Thesis Competition, March 2020
- University-level Scholarship, November 2015
- National Inspirational Scholarship, October 2015