Ao Ke

E-mail: sa21225249@mail.ustc.edu.cn ✻ *Telephone number:* +86 132-4687-9161
Place of birth: JiangXi, China ✻ *Date of birth:* 12-01-2000

Education

University of Science and Technology of China *Hefei, China*
M.Eng. in Software Engineering *September 2021 - Present*
Supervisor: Prof. Xike Xie.
Final grade: 88.2/100, Rank: 5/62
Thesis: Optimal Transport for Out-of-Distribution Detection

Sun Yat-sen University *Guangzhou, China*
B.Sc. in Materials Science and Engineering *September 2017 - June 2021*

Publications

1. Out-of-Distribution Detection in Test-time Adaptation. Ao Ke, Wenlong Chen, Chuanwen Feng, Xike Xie, S.Kevin Zhou. IJCAI 2024 (Under Review)

To mitigate the interference of OOD data to TTA methods, we propose an OOD detection method that utilizes prototypical optimal transport. Specifically, the transport cost between the source and target domains is harnessed as an indicator for ascertaining the qualification of a test sample as OOD. An auxiliary structure is proposed to maintain previously inferred OOD samples in formulating a more distinguishable score. Extensive experiments demonstrate that our proposed method outperforms competitive baselines by a large margin.

2. Detecting Out-of-Distribution Samples via Conditional Distribution Entropy with Optimal Transport. Chuanwen Feng, Wenlong Chen, Ao Ke, Yilong Ren, Xike Xie, S.Kevin Zhou. (arXiv:2401.11726)

In this work, we model OOD detection as a discrete optimal transport(OT) problem. Given the obtained OT plan matrix can be viewed as a joint probability distribution, the corresponding column of a test input is a conditional probability distribution. Therefore, we propose an OOD score function known as the conditional distribution entropy to estimate the uncertainty regarding the input belonging to OOD.

3. Out-of-Distribution Detection For Learning-based Chest X-ray Diagnosis. Wenlong Chen, Chuanwen Feng, Ao Ke, Xike Xike, S.Kevin Zhou. ICASSP 2024 (Accepted)
4. Boosting Out-of-Distribution Detection with Sample Weighting. Ao Ke, Wenlong Chen, Chuanwen Feng, Xike Xie. PRCV 2023 (Accepted)
∗ Two other collaborative articles are under review.

Academic Service

External Reviewer SIGIR, ICDE

Awards

Second Class Graduate Scholarship in USTC 2022, 2023

Technical Skills

Programming Languages/Tools Python, C/C++, LaTeX, etc
Language IELTS

Selected Readings

Machine Learning	cs229, cs224W (Stanford), etc.
Statistics	cs109(Stanford), etc.
Optimal Transport	Math 707-001 (NJIT), etc