Penghui YANG

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EDUCATION

Nanjing University of Aeronautics and Astronautics   Nanjing, China
Bachelor in Computer Science and Engineering; GPA: 3.8/5.0   *Sep. 2019 – Jun. 2023*
Relevant Courses:

Linear Algebra (91), Data Structure and Algorithm Design (95),

Pattern Recognition (94), Machine Learning (93), Multivariate Statistical Analysis (94)

RESEARCH INTEREST

Multi-Label Learning, Weakly Supervised Learning, Knowledge Distillation

PUBLICATIONS

Penghui Yang[*], Ming-Kun Xie[*], Chen-Chen Zong, Lei Feng, Gang Niu, Masashi Sugiyama, Sheng-Jun Huang. Multi-Label Knowledge Distillation (ICCV'2023)

Ming-Kun Xie[*], Penghui Yang[*], Sheng-Jun Huang. On the Robustness of Loss Functions for Learning with Class-Conditional Multi-Label Noise (To Be Submitted)

RESEARCH EXPERIENCE

Data Poisoning for Knowledge Distillation   NTU, Singapore
Research Project at AMI Group | Advisor: Prof. Bo An & Prof. Lei Feng   *Dec. 2022 – Apr. 2023*

- Introduce a new learning task called data poisoning for knowledge distillation

Multi-Label Knowledge Distillation   NTU, Singapore
Research Project at AMI Group | Advisor: Prof. Bo An & Prof. Lei Feng   *Dec. 2021 – Nov. 2022*

- Introduce a new learning task called multi-label knowledge distillation
- Propose a novel method for this problem which exploits the semantic knowledge from the logits by label decoupling and the structural information of label-wise embeddings
- Outperform all comparing methods significantly on multiple datasets and validate the effectiveness of the proposed label-wise embeddings distillation

A New Method for Class-Conditional Multi-Label Noise (CCMN)   NTU, Singapore
Research Project at AMI Group | Advisor: Prof. Bo An   *Jun. 2022 – Aug. 2022*

- Propose a novel method for learning with CCMN based on entropy maximization and DivideMix
- Achieve comparable performance to baseline models on multiple datasets

Robustness of Loss Functions for Class-Conditional Multi-Label Noise   NUAA, Nanjing
Research Project at AL Group | Advisor: Prof. Sheng-Jun Huang   *Oct. 2021 - Mar.2022*

- Disclose that the balanced hamming loss (BHL) and ranking loss (RL) are robust under CCMN
- Show that by using symmetric surrogate losses, the BHL and RL minimization can be achieved efficiently with ordinary SGD optimizer only based on corrupted data without knowing the noise rates

Pairwise LDAM Loss for Long-Tailed Multi-Label Classification   NUAA, Nanjing
Research Project at AL Group | Advisor: Prof. Sheng-Jun Huang   *Sep. 2021 - Dec. 2021*

- Generalize label-distribution-aware margin loss to ranking loss by minimizing margin-based generalization bound
- Achieve comparable performance to baseline models on multiple datasets

Robust AUC Maximization for Classification with Pairwise Confidence Comparisons   NUAA, Nanjing
Research Project at AL Group | Advisor: Prof. Sheng-Jun Huang   *Apr. 2021 - Sep. 2021*

- Propose a robust method called PC-AUC to solve pairwise comparison (Pcomp) classification problems by minimizing pairwise surrogate losses
- Prove that there exists a linear dependence between the proposed loss and AUC
- Provide the estimation error bound for the proposed method and prove its consistency with respect to AUC
- Validate the effectiveness of our method after comparing performance to baseline models on multiple datasets

SKILLS

Programming Languages: Python
Deep Learning Framework: PyTorch