Wenlong Deng

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EDUCATION BACKGROUND

University of British Columbia(UBC) **Sep. 2022 - Sep. 2026(expected)**
Ph.D. in Electrical and Computer Engineering *Vancouver, Canada*
Supervisors: Prof. Xiaoxiao Li & Prof. Christos Thrampoulidis

Vector Institute **Sep. 2023 - Sep. 2025(expected)**
Ph.D. Researcher *Toronto, Canada*

Swiss Federal Institutes of Technology in Lausanne **Sep. 2017 - Nov. 2019**
MSc in Electrical Engineering *Lausanne, Switzerland*
GPA: **5.4/6.0** Rank: **7/42** Specialization in Data and Information Technology

University of Electronic Science and Technology of China **Sep. 2013 - June 2017**
B.E. in Electronic Information Engineering *Chengdu, China*
GPA **3.9/4.0** Rank: **5/368**

SELECT PUBLICATIONS & SUBMISSIONS

- Ruinan Jin, **Wenlong Deng**, Minghui Chen, and Xiaoxiao Li. Universal debiased editing for fair medical image classification. *under review at MICCAI*, 2024
- **Wenlong Deng**, Blair Chen, Xiaoxiao Li and Christos Thrampoulidis. Content Conditional Debiasing for Fair Text Embedding. *under review at ACL*
- **Wenlong Deng**, Christos Thrampoulidis, and Xiaoxiao Li. Unlocking the potential of prompt-tuning in bridging generalized and personalized federated learning. *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2024
- **Wenlong Deng**, Yuan Zhong, Qi Dou, and Xiaoxiao Li. On fairness of medical image classification with multiple sensitive attributes via learning orthogonal representations. In *International Conference on Information Processing in Medical Imaging*, pages 158–169. Springer, 2023 (Accept rate 25%)
- Jiaxi Yang, **Wenlong Deng**, Benlin Liu, Yangsibo Huang, and Xiaoxiao Li. GMValuator: Similarity-based Data Valuation for Generative Models. *(Appeal in CVPR due to clear error)*, 2024
- Beidi Zhao, **Wenlong Deng**, Zi Han, Chen Zhou, Zuhua Gao, Gang Wang, Xiaoxiao Li, et al. Less: Label-efficient multi-scale learning for cytological whole slide image screening. *Medical Image Analysis (IF:10.9)*, 2024
- Anushree Bannadabhavi, Soojin Lee, **Wenlong Deng**, Rex Ying, and Xiaoxiao Li. Community-aware transformer for autism prediction in fmri connectome. In *International Conference on Medical Image Computing and Computer-Assisted Intervention*, pages 287–297. Springer, 2023
- Jiaxi Yang, **Wenlong Deng**, Benlin Liu, Yangsibo Huang, and Xiaoxiao Li. Matching-based data valuation for generative model. *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, 2023
- **Wenlong Deng**, Lang Lang, Zhen Liu, and Bin Liu. Sml: Enhance the network smoothness with skip meta logit for ctr prediction. *arXiv preprint arXiv:2210.10725*, 2022
- **Wenlong Deng**, Lorenzo Bertoni, Sven Kreiss, and Alexandre Alahi. Joint human pose estimation and stereo 3d localization. In *2020 IEEE International Conference on Robotics and Automation (Rank A)*, pages 2324–2330, 2020
- **Wenlong Deng**, Y. Mou, T. Kashiwa, S. Escalera, K. Nagai, K. Nakayama, Y. Matsuo, and H. Prendinger. Vision based pixel-level bridge structural damage detection using a link aspp network. *Automation in Construction (IF:10.5)*, 110:102973, 2020

RESEARCH EXPERIENCE

Stereo-based Pedestrian Depth Estimation with uncertainty **March. 2019 - July 2019**
Research Assistant, EPFL, Switzerland *Advisor: Alexandre Alahi, VITA Lab*

- Synthetic stereo data by following the domain invariance at the feature level of human keypoint detection to fill empty of the stereo human keypoint dataset .
- Use Laplacian loss to model uncertainty and adaptively Detect human pose on stereo images with the association field method and associate the corresponding joints to have the 3D pose and person location.
- Without 3D supervision, we outperform all image-based pedestrian depth estimation methods on the KITTI dataset. Paper Accepted to *ICRA 2020 for oral presentation.*

WORK EXPERIENCE

Google - Student Researcher **Oct 2023 – Now**
Document Embedding AI *Google Cloud*

Fair Document Embedding: We achieve fairness while maintaining utility trade-off by ensuring conditional independence between sensitive attributes and text embeddings conditioned on the content. Specifically, we enforce that embeddings of texts with different sensitive attributes but identical content maintain the same distance toward the embedding of their corresponding neutral text. Furthermore, we address the issue of lacking proper training data by using Large Language Models (LLMs) to augment texts into different sensitive groups.

TikTok - Ads Algorithm Engineer **March 2021 – April 2022**
CVR Estimation Optimization *TikTok Ads*

- Auto Feature Interaction: Optimize TikTok ads cvr model with the self-ensemble neural network and skip connect with row feature to introduce low-level feature interaction. Furtherly introduced high-level interactions by using element-wise multiplication/V-DCN within/in the ensemble networks. Algorithm improved offline AUC by 0.3%, brought 7.5% advertisement value(revenue) to TikTok AEO Ads and got 1.4% revenue gain for overall TikTok Ads.
- Model Smoothness Optimization: Proposed a SML module to introduce skip connection mechanism into the CTR prediction model thus improving DNN's optimization ability and fully stimulating DNN's expressive ability. With the help of theoretical proof and experimental analysis, the benefit of the proposed module is supported. By incrementally adding the SML module to the selected state of the art methods, consistent performance gains are observed.

TikTok - Search Algorithm Engineer **Feb. 2020 – Feb. 2021**
Search Relevation Optimization *TikTok Search*

- Content Embedding Implement SOTA text+video understanding methods to produce content embedding. Insert the obtained embedding into ctr estimation model and improve the NDCG performance of search results.
- Unsupervised Text Classification with Graph-Cut: Built a graph with lyric words as nodes and search query as prior information, combing with the user behavior information, trained a graph-cut model to extract completed lyrics from video titles. Linked lyric-like search queries with videos whose audio contains the lyric. Boost the search performance by 5%.

TECHNICAL SKILLS

Languages: Proficient: Python, SQL. Intermediate: C++, Java, MATLAB
Technical Tool: Pytorch, Tensorflow, Android Studio, Pyspark, Git, DSI Studio
Language: Chinese (Native), IELTS 7.5, GRE(V158, Q169, W3.0), German (B1)

AWARDS

Graduate Support Initiative (GSI) Award *2023*
Faculty of Applied Science Graduate Award *2022*
TikTok Bi-Monthly Technology Star (top 1%) *2021*
Radio Hacking Europe Competetion 2nd Prize (#2) *2019*
Outstanding Graduate of University of Electronic Science and Technology of China (Top 5%) *2017*
Best Graduation Paper Work Prize of University of Electronic Science and Technology of China *2017*
People's First Scholarship (Top 5%) *2015-2017*
China Undergraduate Mathematical Contest in Modeling First Prize (Top 1%) *2015*

SERVES

IEEE Signal Processing Letters Reviewer *2023*
MICCAI Reviewer *2023*