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

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 **3.90/4.0** Rank: **5/368**

PUBLICATIONS SUBMISSIONS

1. Wenlong Deng, Lang Lang, Hongyi Zhang, Zhen Liu, Wenchao Xiao, and Bin Liu. Sml: Enhance the network smoothness with skip meta logit for ctr prediction. In *Submitted to the International ACM SIGIR Conference on Research and Development in Information Retrieval (Rank A)*, 2022

2. 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

3. Wenlong Deng, Yongli Mou, Takahiro Kashiwa, Sergio Escalera, Kohei Nagai, Kotaro Nakayama, Yutaka Matsuo, and Helmut Prendinger. Vision based pixel-level bridge structural damage detection using a link aspp network. *Automation in Construction (IF:7.7)*, 110:102973, 2020

4. Rúben Geraldes, Artur Gonçalves, Tin Lai, Mathias Villerabel, Wenlong Deng, Ana Salta, Kotaro Nakayama, Yutaka Matsuo, and Helmut Prendinger. Uav-based situational awareness system using deep learning. *IEEE Access (IF:3.37)*, 7:122583–122594, 2019

5. Juan Jose Rubio, Takahiro Kashiwa, Teera Laiteerapong, Wenlong Deng, Kohei Nagai, Sergio Escalera, Kotaro Nakayama, Yutaka Matsuo, and Helmut Prendinger. Multi-class structural damage segmentation using fully convolutional networks. *Computers in Industry (IF:7.64)*, 112:103121, 2019

WORK EXPERIENCE

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. Paper submitted to *SIGIR 2022*.

- System Uncertainty Estimation: Introduce evidential deep learning and design regulation to uniformly model the delayed time of positive label and consider false-negative samples. Estimate the epistemic uncertainty to break the data loop of the ads system. Successfully got an accurate uncertainty estimation model to boost under-exploring ads. Influenced about 7% daily revenue.

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 with searching queries as prior information. Linked lyric-like search queries with video whose audio contain the lyric. Boost the search performance by 5%.

PROJECT EXPERIENCE

Stereo-based Pedestrian Depth Estimation **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.*

Bridge Damage Segmentation **Oct. 2018 - Feb. 2019**

Research Assistant, National Institute of Informatics, Japan *Advisor: Helmut Prendinger*

- Create a dataset for delamination and rebar exposure that has been collected from inspection records of bridges in Niigata Prefecture, which allows us to estimate the performance of our method based on regions of agreement.
- Trained a refined Link-Net on an extremely small dataset and designed an IOU loss to solve the large false positive that brought by weight balance on the unbalanced classes.
- Furtherly design a system to allow engineers to correct the prediction to be a new groundtruth. It has been used in industry to segment bridge damages. Papers Accepted to *Computer in Industry* and *Automation in Construction.*

UAV-based Activity Detection **Oct. 2018 - Feb. 2019**

Research Assistant, National Institute of Informatics, Japan *Advisor: Helmut Prendinger*

- Based on mobile-net, designed a corner regression object detection method. The model outperforms SSD and YOLO methods on our UVA dataset in detection F1 score and Accuracy by more than 10%
- Then cropped person on higher resolution videos and use batch normalized LSTM to understand human activities. This also has been implemented in the real world. Paper accepted to *IEEE Access*

TECHNICAL SKILLS

Languages: Proficient: Python, SQL. Intermediate: C, 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)

HONORS AWARDS

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*

EXTRACURRICULAR

AiZhiYi Charity Group **Dec. 2013 – April 2015**

Minister of Practice *Chengdu, China*

- Built a new volunteering teaching spot in Anshun, Guizhou and spent 2 months to teach left home children
- Raised more than 20000 Yuan funds and 50000 yuan equipments for the left home children school