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| * **EDUCATION** |  | | |  | |
| **M.A.Sc. in Electrical & Computer Engineering** | | | | 2021.9-Present | |
| University of British Columbia (UBC), Vancouver, BC, Canada   * Average Grade: 94% Supervisor: Dr. Rafeef Garbi * Research Assistant in the Biomedical Signal and Image Computing Laboratory (BiSICL) | | | | | |
| **B.Eng in Automation (Pattern Recognition Direction)** | | | | 2017.9-2021.7 | |
| Beihang University, Beijing, China   * GPA: 3.84/4.0 (Ranking: Top 5), GRE: 327+3.5 * Undergraduate Research Assistant in the Intelligent Computing & Machine Learning Laboratory (ICMLL) | | | | | |
| * **PUBLICATION** |  | | |  | |
| * **Du, S.** and Hers, B. and Bayasi, N. and Hamarneh, G. and Garbi, R., FairDisCo: Fairer AI in Dermatology via Disentanglement Contrastive Learning. *European Conference on Computer Vision (ECCV 2022) Workshops (Seventh ISIC Skin Image Analysis Workshop)*, **Accepted** * Jiang, X. and **Du, S.** and Qin, Z. and Sun, Y. and Yu, J., KBGN: Knowledge-Bridge Graph Network for Adaptive Vision-Text Reasoning in Visual Dialogue, *The 28th Association for Computing Machinery International Conference on Multimedia (ACM MM2020)*, **Published** | | | | | |
| * RESEARCH EXPERIENCE |  | | |  | |
| Multi-domain Learning for Skin Lesion Segmentation based on Transformer | | | | 2022.8-Present | |
| BiSICL, UBC Supervisor: Prof. Rafeef Garbi   * Propose a multi-domain learning strategy that aggregates knowledge from multiple skin lesion segmentation datasets to alleviate the insufficiency of single-domain samples for training a data-hungry transformer * Design a domain-guidance self-attention mechanism to adaptively focus on different heads across domains | | | | | |
| Deep Learning Fairness in Skin Lesion Classification | | | | 2021.1-2022.8 | |
| BiSICL, UBC Supervisor: Prof. Rafeef Garbi   * Was one of the first to investigate ethic disparity and various fairness algorithms in skin lesion classification task * Proposed a disentanglement network with contrastive learning to mitigate skin-tone unfairness and avoid accuracy deterioration, achieving the best performance on the Fitzpatrick17k and DDI datasets (Increased average accuracy and fairness score by up to 5.96% and 15.22% compared with the baseline) * Investigated common pre-processing and in-processing strategies and adapted two fairness metrics to better compare models, showing the the existence of skin-tone unfairness * Accepted as a full paper in *ECCV ISIC Workshop 2022* | | | | | |
| Multi-modal Visual Dialogue Based on Deep Learning | | | | 2020.4-2021.5 | |
| ICMLL, Beihang University Supervisor: Prof. Zengchang Qin   * Proposed a novel model using graph neural network (GNN) to bridge the cross-modal gap and was the first to apply graph structure to capture implicit dependence between two modalities in fine granularity * Developed a more flexible information selection mode to adaptively retrieve information from vision and text knowledge, and utilized discriminative and generative decoders to generate the answer in the visual dialogue * Implemented models on VisDial v1.0 and VisDial-Q datasets and achieved the state-of-the-art results (outperformed previous SOTA model by 0.62% on R@1) * Accepted as a full paper in *ACM MM 2020* | | | | | |
| Data Bias in Visual Dialogue Task | | | | | 2020.10-2021.6 |
| ICMALL, Beihang University Supervisor: Prof. Zengchang Qin   * Introduced a language branch and cost sensitive loss into a data bias mitigating model based on Transformer to encourage predictive answers using vision and language modalities together * Achieved the best results on VisDialConv and a self-designed data bias mitigating test set split from VisDial v1.0 * Combined experiments and results as a bachelor thesis | | | | | |
| * INTERNSHIP | | | | | |
| Adaptation of Robot to New Environment Based on Self-Supervised Learning | | 2020.3-2020.10 | | | |
| Summer Research Intern, Cognitive Robotics and AI Lab, Kent State university Supervisor: Prof. Rui Liu   * Designed a novel encoder based on self-supervised learning to capture the high dimensional representation of objects’ features related to similar physics laws in both old and new environments. * Devised a policy decision module to generate action sequences based on representations extracted by the encoder | | | | | |
| * COURSE PORJECT | | | | | |
| 3D Ultrasound Segmentation using Transformer | | 2022.1-2022.4 | | | |
| UBC Supervisor: Prof. Renjie Liao   * Combined CNN and Transformer to create a hybrid model with an axial attention to speed up computations * Outperformed previous SOTA methods by 1.3% in 3D DDH (Development dysplasia of the hip) dataset | | | | | |
| **Skin Lesion Semantic Segmentation based on Transformer** | | | 2022.1-2022.4 | | |
| UBC Supervisor: Prof. Helge Rhodin   * Developed a hybrid framework combining ResUnet and Transformer and utilized the prior boundary information to assist the model to distinguish ambiguous boundaries. * Outperformed Unet by 2% on IOU in the ISIC 2018 dataset and achieved better generalizability than the baseline | | | | | |
| * COMPETITION |  | | |  | |
| **Meritorious Winner, 2020 Mathematical Contest in Modeling in USA**  Design of the Longest Lasting Sandcastle Model Based on Cellular Automata (CA) | | | | Beijing, China  2020.3 | |
| * Wielded MATLAB to build a mathematical model of wet sand pile with liquid bridge force between each sand * Improved the traditional Cellular Automata algorithm via adding probability to simulate the process of sand loss * Utilized correlation analysis and linear regression to find the superior shape of sandcastle | | | | | |
| * OTHER INFORMATION |  | | |  | |
| **Honors:**   * The Research Assistant Scholarship in UBC * The International Tuition Awards in UBC * The 1st Prize of National Mathematics Competition for College Students * The National Encouragement Scholarship in China * The Prize of Outstanding Student in Beihang University   **Activities:**   * Teaching Assistant, Engineering Graphics, Beihang University * Teaching Assistant, Medical Imaging, UBC | | | | 2021-2022  2021-2022  2018.10  2018-2020  2018-2019  2018.9-2019.7  2022.9-Present | |
| **Computer Skills:** Python, C, MATLAB, Verilog HDL, AutoCAD, Assembly Language, SolidWorks | | | | | |