

KEXIN DING

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Actively looking for 2023 full-time position in computer vision, deep learning and machine learning related fields

EDUCATION

University of North Carolina at Charlotte

Charlotte, NC

Ph.D. Candidate in Computer Science. GPA: 3.714/4.0

09/2019 – Expected 2023

- Advisor(s): Dr. Shaoting Zhang and Dr. Aidong Lu
- Research area: deep learning, machine learning, computer vision, medical image analysis.

Lehigh University

Bethlehem, PA

M.S. in Computer Science

09/2017 - 05/2019

- Coursework: Algorithm and data structure, Machine learning, deep learning, data mining.

Xidian University

Xi'an, China

B.S. in Intelligent Science Technology

09/2013 - 06/2017

WORK & RESEARCH EXPERIENCE

Amazon AWS Machine Learning Solution Lab Research Scientist Intern

United States, 05/2022-08/2022

- Designed unsupervised solution for HVAC unit health status detection via **50TB** time-series telemetry data.
- Developed a CNN-autoencoder framework for extracting cycle embeddings from the time-series data.
- Utilized the representative cycle embeddings to enable a variety of downstream modeling tasks.

SenseTime (Leading AI start-up company in Asia) Research Intern

Beijing, China, 06/2019-09/2019

- Implemented CNN models for gene mutation prediction using pathological images in colon cancer.
- Trained a tumor detection model to select the tumor region patches (e.g., **10k**) for gene mutation prediction.
- Implemented an image preprocessing pipeline including segmentation, foreground detection, and normalization.

Spatially-aware Graph Neural Networks Enable Cross-level Molecular Profile Prediction in Colon Cancer

- Achieved **5%-15%** prediction improvements (AUC) compared with other state-of-the-art studies.
- Implemented a GNN model for predicting a panel of molecular profiles in colon cancer while developed an image-graph transformation strategy to define the spatially-connected graph.
- Utilized a subgraph ensemble strategy to alleviate cancer heterogeneity and boost the prediction performance.
- Designed a tile importance interpretation method to select clinical-relevance tiles for outcome explanation.

Large-scale Synthetic Nuclei Segmentation Dataset Generation on Histopathological Images

- Designed a novel framework for generating large-scale (e.g., **20k**) synthetics histopathological image dataset for nuclei segmentation on breast cancer.
- Achieved **2%** nuclei segmentation performance improvements compared with other state-of-the-art studies by training the model on the synthetics dataset, and testing the trained model on the real image dataset.
- Achieved a further performance improvement (e.g., **1%**) by utilized self-training pretraining strategy.

PUBLICATION

[1] **Kexin Ding**, Qiao Liu, Edward Lee, Mu Zhou, Aidong Lu, and Shaoting Zhang, "Feature-Enhanced Graph Networks for Genetic Mutational Prediction Using Histopathological Images in Colon Cancer.", *In International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI2020)*, pp. 294-304. Springer, Cham, 2020. **Accepted by MICCAI2020.**

[2] Spatially-aware Graph Neural Networks Enable Cross-level Molecular Profile Prediction in Colon Cancer Histopathology: A Retrospective Multicentre Cohort Study. *Submitted to The LANCET Digital Health (Minor revision).*

[3] Graph Convolutional Networks in Multi-modality Medical Imaging: Concepts, Architectures, and Clinical Applications. *Submitted to Medical Image Analysis (Under Review).*

[4] SNOW: A Large-scale Synthetic Histopathological Dataset Generated by Off-the-shelf Models.

PROFESSIONAL SKILLS

Programming languages: Python, Matlab, SQL, Java, Javascript, C, Scala

Framework: PyTorch, Tensorflow, NumPy, Pandas, Matplotlib, sklearn, Pillow

Operation system: Linux, MacOS

Language: English, Mandarin