

# CARRIE WANG 王韵

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<https://carrieww.github.io>

HKU CS year-2 PhD specializing in **graph analytics** and **approximate statistical inference**, with VLDB and WWW publications on **scalable** and **arithmetic** solutions for attributed graph pattern mining and nearest-neighbor queries. Strong **Python/PyTorch** skills with solid **math/stat** background.

EDUCATION **School of Computing and Data Science, HKU** Hong Kong SAR  
*Ph.D. in Computer Science* 2023 - 2027 (*expected*)

- Advisor: Prof. Reynold Cheng
- Visiting at LIG - Université Grenoble Alpes (2024.05 - 2024.06)

**School of Computing and Data Science, HKU** Hong Kong SAR  
*B.Sc. in Mathematics and Decision Analytics* 2018 - 2022

- 1st Class Honor

PUBLICATIONS [4] **On Aggregation Queries over Predicted Nearest Neighbors.**  
Carrie Wang, Sihem Amer-Yahia, Laks V.S. Lakshmanan, Reynold Cheng.  
*arXiv preprint (Submitted to VLDB 2025).*

- Introduced Aggregation Queries over Nearest Neighbors (AQNNs), a novel type of aggregation queries over the predicted neighborhood of a designated object.
- Designed a framework, Sampler with Precision-Recall in Target (SPRinT), to support the answering of AQNNs and two algorithms, SPRinT-V and SPRinT-C, for value- and count-based aggregation functions.

[3] **A Sampling-Based Framework for Hypothesis Testing on Large Attributed Graphs.**

Carrie Wang, Chrysanthi Kosyfaki, Sihem Amer-Yahia, Reynold Cheng.  
*VLDB 2024.*

- Categorized hypotheses on attributed graphs into node, edge, and path types.
- Developed a sampling-based hypothesis testing framework to enable hypothesis testing on attributed graphs.
- Proposed a Path-Hypothesis-Aware SamplER called PHASE and its optimized version PHASE<sub>opt</sub> with a non-backtracking mechanism and fixed number of neighbors during random walks.

[2] **HINCare: An Intelligent Helper Recommender System for Elderly Care.**

Carrie Wang, Wentao Ning, Xiaoman Wu, Reynold Cheng.  
*WWW 2024.*

- Compared the applicability and effectiveness of graph recommendation algorithms in matching helpers with elder adults.
- Won the the Inno Show Award at the 7th Engineering Inno Show.

[1] **Using a Novel Clustered 3D-CNN Model for Improving Crop Future Price Prediction.**

Liege Cheung, Carrie Wang, Adela SM Lau, Rogers MC Chan.  
*Knowledge-Based Systems 2023.*

PROJECTS	<p><b>An Emotional AI Chatbot Using an Ontology and a Novel Audiovisual Emotion Transformer for Improving Nonverbal Communication.</b> 2022.08 - 2023.02  <i>HKU SAAS Data Science Lab</i> <span style="float: right;"><i>Supervisor: Dr. Adela Lau</i></span></p> <ul style="list-style-type: none"> <li>• Extracted facial features using OpenFace and 22 audio features from time and frequency domains as model inputs.</li> <li>• Designed a transformer-based lightweight audio-visual emotion detection model and experimented on three public video emotion datasets, RAVDESS, RML, and SAVEE, to validate our model's performance.</li> <li>• Deployed the model as a real-time/upload video emotion detection website using <b>Flask</b>.</li> </ul> <p><b>TCGConv - Edge Representation Learning in Temporal Graph.</b> 2022.05 - 2022.07  <i>NUS Institute for Mathematical Sciences</i> <span style="float: right;"><i>Supervisor: Dr. Zhang Wenjie</i></span></p> <ul style="list-style-type: none"> <li>• Designed a Temporal Conjugate Graph Convolution (TCGConv) framework for <b>edge representation learning</b> in <b>heterogeneous temporal graphs</b> using conjugate graph transformation and LSTM aggregators in message passing.</li> <li>• Constructed the model and baselines using <b>PyTorch</b> and <b>Geometrics</b>.</li> <li>• Ran extensive experiments on two public datasets, MOOC and Credit Card datasets, with two specially designed experimental settings according to industrial practices to alleviate the computational complexity.</li> </ul>
INTERNSHIPS	<p><b>Tech Consultant Intern   KPMG China   Hong Kong SAR</b> 2021.01 - 2021.08</p> <ul style="list-style-type: none"> <li>• Studied Robotic Processing Automation (RPA) in two weeks and applied it to migrate 4000+ legacy data with 98% success rate for a luxury company.</li> <li>• Got certified in Microsoft PowerApps to assist in the design phase of an internal web &amp; mobile app implementation for a leading insurance company, finishing the web prototype in two weeks.</li> <li>• Configured and tested system functionalities according to the business requirements from key users, raised business cases to the technical team.</li> <li>• Assisted in User Acceptance Testing (UAT) by preparing how-to documents and training materials for the key users and providing feedback during key user trainings.</li> </ul>
AWARDS	<ul style="list-style-type: none"> <li>• HKU Postgraduate Scholarships <span style="float: right;">2023 - 2027</span></li> <li>• First Class Honors <span style="float: right;">2023</span></li> <li>• Dean's Honors List <span style="float: right;">2019 &amp; 2022</span></li> <li>• Yu Kam Tim Chan Siu Hing Award in AI and DS <span style="float: right;">2020 - 2021</span></li> <li>• HKU Foundation Entrance Scholarship <span style="float: right;">2018 - 2022</span></li> </ul>
SKILLS	<p><b>Languages:</b> English, Cantonese (Intermediate).  <b>Programming:</b> Python, C++, R, MATLAB.  <b>Certificate:</b> Teaching and Learning in Higher Education.</p>
TEACHING	<ul style="list-style-type: none"> <li>• Introduction to Database Management Systems (TA) <span style="float: right;">Fall 2024</span></li> <li>• Big Data Management (TA) <span style="float: right;">Spring 2024</span></li> <li>• Probability and Statistics (TA) <span style="float: right;">Fall 2020</span></li> </ul>