Ke Xu

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 (+86) 15921092715

Education

Sept 2015

- Aug 2019

Sept 2011

- Jul 2015

**Ph.D. in Electronic and Computer Engineering**

Hong Kong University of Science and Technology, Hong Kong, China

* Supervisor: [Prof. Huamin Qu](http://huamin.org/)
* Thesis: Visual Anomaly Detection and Its Applications.

**B.S. in Electronic Science and Technology**

Nanjing University, Nanjing, China

* Ranking: **1/217.**
* Thesis: FPGA-based Design of FFT & FIR.

Research Interests

Visual Analytics, Anomaly Detection, Explainable AI, Time-series Analytics, Healthcare

Research / Work Experience

Jan 2020

- Dec 2020

May 2019

- Aug 2019

Jan 2019

- May 2019

Feb 2017

- Sept 2017

**New York University,** New York, U.S.

Research Associate (advised by [Prof. Claudio Silva](https://vgc.poly.edu/~csilva/) & [Prof. Enrico Bertini](http://enrico.bertini.io/)), VIDA Lab

* Lead a survey on the use of visualization for **interpreting machine learning model**, a joint project collaborated with Capital One.
* Developed mTSeer, a visual analytic system for interactive and steerable exploration and evaluation of **multivariate time-series forecasting models** with Financial and News data.
* Participated as a major developer in a project that generates synthetic tabular data for ML.

**Harvard University,** Boston, U.S.

Visiting Scholar (advised [by Prof. Hanspeter Pfister](https://vcg.seas.harvard.edu/people/hanspeter-pfister)), Visual Computing Group

* Designed and built the visualization part of a biomedical project for improving embryo

selection in Assisted Reproductive Technologies, collaborated with Harvard Medical School.

**Microsoft Research Asia,** Beijing, China

Research Intern (advised [Dr. Yun Wang](https://www.microsoft.com/en-us/research/people/wangyun/)), Software Analytics Group

* Developed **CloudDet**, an interactive system for visually analyzing anomalous

performances in large **cloud computing** system.

* Cooperated in designing **DataShot**, a visualization system for **automatically generate**

**the poster** with the sheet data.

**Tongji University,** Shanghai, China

Visiting Scholar (advised [Prof. Nan Cao](https://nancao.org/)), iDVx Lab

* Designed **ECGLens**, a visualization tool for **arrhythmia detection** with large scale ECG data.
* Developed **EventThread**, a visual analytics system for **summarizing event sequence data.**

Jun 2016

- Dec 2019

Jun 2014

- Sept 2014

Jun 2014

- Sept 2014

**The Hong Kong University of Science and Technology,** Hong Kong, China

Graduate Student, HKUST VIS Lab

* Designed **EnsembleLens**, a visual system to evaluate different anomaly detection algorithms based on **ensemble analysis**.
* Design and build a visualization project for analyzing Hong Kong weather, elderly wandering and asset management, collaborated with LSCM Hong Kong.
* Lead a Research Grant Council (RGC) proposal application for Explainable Machine Learning for Time-Series Data Analysis.

**McGill University,** Montreal, Canada

Summer Intern (advised by [Prof. Kirk H. Bevan](https://www.mcgill.ca/materials/people-0/faculty/kirk-h-bevan)), Department of Material Engineering

* Provided a model to predict the screening-limited response of nanobiosensors.

**Nanjing University,** Nanjing, China

Project Leader (advised [by Prof. Xinggan Zhang](https://ese.nju.edu.cn/72/82/c22541a356994/page.htm))

* Lead “Microphone Array Acoustic Localization and Speech Enhancement”, which is a National Innovation Training Program.

Publications

[J5] Yifang Wang, Hongye Liang, Jiacheng Wang, **Ke Xu,** Xinhuan Shu, Cameron Campbell, Bijia Chen, Yingcai Wu, Huamin Qu.

**CareerFlow: Interactive Visual Analytics System for Large-Scale Longitudinal Career Mobility Data.**

IEEE Transactions on Visualization and Computer Graphics ,doi: 10.1109/TVCG.2021.3067200, IEEE, 2021.

[C8] **Ke Xu,** Jun Yuan, Yifang Wang, Claudio Silva, Enrico Bertini.

**mTSeer: Interactive Visual Exploration of Models on Multivariate Time-series Forecast.**

CHI'21: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.

[C7] Brian Barr, **Ke Xe,** Cudio Silva, Enrico Bertini, Robert Reilly, Jason Wittenbach.

**Towards Ground Truth Explainability on Tabular Data.**

.

[C6, J4] **Ke Xu,** Yun Wang, Leni Yang, Yifang Wang, Bo Qiao, Qin Si, Yong Xu, Haidong Zhang, Huamin Qu.

**CloudDet: Interactive Visual Analysis of Anomalous Performances in Cloud Computing Systems.**

IEEE Transactions on Visualization and Computer Graphics (VAST'19: Proceedings of the IEEE Visual

Analytics Science and Technology), doi: 10.1109/TVCG.2019.2934, IEEE, 2019. *[24.7% acceptance rate]*

[C5, J3] Yun Wang, Zhida Sun, Haidong Zhang, Weiwei Cui, **Ke Xu,** Xiaojuan Ma, Dongmei Zhang.

**DataShot: Automatic Generation of Fact Sheet from Tabular Data.**

IEEE Transactions on Visualization and Computer Graphics (InfoVis'19: Proceedings of the IEEE

Information Visualization), doi: 10.1109/TVCG.2019.2934398, IEEE, 2019. *[25.8% acceptance rate]*

[C4] Xing Mu**\*, Ke Xu\*,** Qing Chen, Fan Du, Yun Wang, Huamin Qu.

**MOOCad: Visual Analysis of Anomalous Learning Activities in Massive Open Online Courses.**

EuroVis’19: Proceedings of The Eurographics Conference on Visualization, pages: 91-95, doi: 10.2312/evs.20191176, EuroVis, 2019.

[C3, J2] **Ke Xu,** Meng Xia, Xing Mu, Yun Wang, Nan Cao.

**EnsembleLens: Ensemble-based Visual Exploration of Anomaly Detection Algorithms with**

**Multidimensional Data.**

IEEE Transactions on Visualization and Computer Graphics (VAST'18: Proceedings of the IEEE Visual

Analytics Science and Technology), doi: 10.1109/TVCG.2018.2864825, IEEE, 2018. *[25.6% acceptance rate]*

[C2] **Ke Xu,** Shunan Guo, Nan Cao, David Gotz, Aiwen Xu, Huamin Qu, Zhenjie Yao, Yixin Chen.

**ECGLens: Interactive Visual Exploration of Large-scale ECG Data for Arrhythmia Detection.**

CHI'18: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, p. 663, doi: 10.1145/3173574.3174237, ACM, 2018. **(\*Best Paper Honorable Mention).** *[top 5% of all submissions]*

[C1, J1] Shunan Guo, **Ke Xu,** Rongwen Zhao, David Gotz, Hongyuan Zha, Nan Cao.

**EventThread: Visual Summarization and Stage Analysis of Event Sequence Data.**

IEEE Transactions on Visualization and Computer Graphics (VAST'17: Proceedings of the IEEE Visual

Analytics Science and Technology), doi: 10.1109/TVCG.2017.2745320, IEEE, 2017.

Honors and Awards

2019

2019

2018

2018

2018

2015

-2019

2015

2014

2014

2013

2012

2010

HKUST Oversea Research Award

8K HKD per month for an overseas research.

Research Travel Grant: IEEE VIS 2019, Vancouver, Canada

Research Travel Grant: IEEE VIS 2018, Berlin, Germany

Research Travel Grant: ACM SIGCHI 2018, Montreal, Canada

Best Paper Honorable Mention Award, ACM CHI Conference

For ECGLens. top 5% of all submissions,

Postgraduate Studentship

Excellent Student of Nanjing University

First Prize of Red Sun Scholarship

Awarded to **30** students in Nanjing University (**10000+**) each year.

Canadian Globalink Research Internship Award

Baosteel Scholarship

Awarded to **2 Sophomores** (3000+) in Nanjing University each year.

National Scholarship

Only awarded once to students with top **1%** academic performance each year.

First Prize, Chinese Chemistry Olympiad (Jiangsu Province)

Invited Talks

May 2021

Mar 2020

Oct 2019

Oct 2018

Apr 2018

mTSeer: Interactive Visual Exploration of Models on Multivariate Time-series Forecast

*ACM CHI Conference,* Yokohama, Japan.

Visual Anomaly Detection and Its Applications with Temporal Data

*New York University*, New York, U.S.

CloudDet: Interactive Visual Analysis of Anomalous Performances in Cloud Computing Systems

*IEEE VIS Conference*, Vancouver, Canada.

EnsembleLens: Ensemble-based Visual Exploration of Anomaly Detection Algorithms with Multidimensional Data

*IEEE VIS Conference*, Berlin, Germany.

ECGLens: Interactive Visual Exploration of Large Scale ECG Data for Arrhythmia

*ACM CHI Conference,* Montreal, Canada.

Teaching Experience

2019

2017

2016

- 2018

Teaching Assistance, **Visualization: Connections with Machine Learning,** New York University

Teaching Assistance**, Digital Circuit,** HKUST

Teaching Assistance, **Signals and Systems,** HKUST

Services

2021

2020

2018

- 2020

2019

2019, 2020

2018, 2019

Reviewer of IEEE Transactions on Visualization and Computer Graphics (TVCG)

Program Committee of IEEE VIS 2020

Reviewer of IEEE Transactions on Visualization and Computer Graphics (TVCG)

Reviewer of IEEE VIS (VAST, InfoVis, and SciVis) Conference

Reviewer of ACM Conference on Human Factors in Computing Systems (CHI)

Reviewer of The Visual Computer Journal (TVCJ), Springer

Volunteer of IEEE VIS (VAST, InfoVis, and SciVis) Conference