

# Ke Xu

✉ lukexuke@gmail.com

☎ (+86) 15921092715

🏠 <https://lukexuke.github.io>

## Education

Sept 2015 **Ph.D. in Electronic and Computer Engineering**

- Aug 2019 **Hong Kong University of Science and Technology**, Hong Kong, China

- Supervisor: [Prof. Huamin Qu](#)
- Thesis: Visual Anomaly Detection and Its Applications.

Sept 2011 **B.S. in Electronic Science and Technology**

- Jul 2015 **Nanjing University**, Nanjing, China

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

## Research Interests

Data Intelligence, Visual Analytics, Business Intelligence (BI), LLM+AI+BI, Big Data, HCI, Anomaly Detection, Explainable AI, Time-series Analytics, Healthcare

## Research / Work Experience

Jan 2021 **Huawei Cloud**, Hangzhou, China

- present **Head of Visual Analytics Center, Asst. Chief Expert, Data Intelligence Innovation Lab**

- Hired by Huawei "**Genius Youth**" scheme (the **only "genius youth"** in the field of visualization at Huawei Cloud, **the second "genius youth"** among the 10+ labs and 1000+ employees of the Huawei Cloud Innovation Lab).
- Lead the incubation of **DataArts Insight, Huawei's first business intelligence (BI)** cloud service, and work with **Pangu** Model to conduct POC at ICBC, Didi, etc, improve Huawei data analysis efficiency by 10+ times, with an estimated sales target of 100 million in 2024.
- Lead the creation of **Achart**, Huawei Cloud's **first chart library brand**, with 4,000+ downloads in half a year
- Developed 10+ intelligent analysis capabilities such as **BI Copilot** in the field of Huawei cloud data intelligence, 15+ businesses implemented, **2 top papers** and 7 patents published.
- **Head** of visual analytics & data insights platform. (team size: expanded from 5 to 13 people, including 3 PhDs and 7 masters).

Jan 2021 **New York University**, New York, U.S.

- Dec 2020 **Research Associate (advised by [Prof. Claudio Silva](#) & [Prof. Enrico Bertini](#))**, 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.

- May 2019 **Harvard University**, Boston, U.S.  
 - Aug 2019 **Visiting Scholar (advised by Prof. 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.
- Jan 2019 **Microsoft Research Asia**, Beijing, China  
 - May 2019 **Research Intern (advised Dr. Yun Wang)**, 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.
- Feb 2017 **Tongji University**, Shanghai, China  
 - Sept 2017 **Visiting Scholar (advised Prof. Nan Cao)**, 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 **The Hong Kong University of Science and Technology**, Hong Kong, China  
 - Dec 2019 **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.
- Jun 2014 **McGill University**, Montreal, Canada  
 - Sept 2014 **Summer Intern (advised by Prof. Kirk H. Bevan)**, Department of Material Engineering
- Provided a model to predict the screening-limited response of nanobiosensors.
- Jun 2014 **Nanjing University**, Nanjing, China  
 - Sept 2014 **Project Leader (advised by Prof. Xinggan Zhang)**
- Lead "Microphone Array Acoustic Localization and Speech Enhancement", which is a National Innovation Training Program.

## Publications

Qiaomu Shen, Zhengxin You, Xiao Yan, Chaozu Zhang, **Ke Xu**, Jianbin Qin, Dan Zeng, Bo Tang.

### **QEVIS: Multi-grained Visualizing of Distributed Query Execution.**

IEEE Transactions on Visualization and Computer Graphics (VAST'23: Proceedings of the IEEE Visual Analytics Science and Technology), IEEE, 2023. [24.68% acceptance rate]

Yang Shi, Bingchang Chen, Ying Chen, Zhuochen Jin, **Ke Xu**, Xiaohan Jiao, Tian Gao, Nan Cao.

### **Supporting Guided Exploratory Visual Analysis on Time Series Data with Reinforcement Learning.**

IEEE Transactions on Visualization and Computer Graphics (VAST'23: Proceedings of the IEEE Visual Analytics Science and Technology), IEEE, 2023. [24.68% acceptance rate]

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

**Interactive Visual Exploration of Longitudinal Career Mobility Data.**

IEEE Transactions on Visualization and Computer Graphics, doi: 10.1109/TVCG.2021.3067200, IEEE, 2022.

**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, doi: 10.1145/3411764.3445083, ACM CHI, 2021.

Brian Barr, **Ke Xu**, Claudio Silva, Enrico Bertini, Robert Reilly, Jason Wittenbach.

**Towards Ground Truth Explainability on Tabular Data.** ICML workshop on Human Interpretability in Machine Learning (WHI), 2020.

**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]

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]

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. (\* indicates the corresponding author hereafter)

**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]

**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]

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.

Xingbo Wang, Furui Cheng, Yong Wang, **Ke Xu**\*, Jiang Long, Hong Lu, Huamin Qu.

**Interactive Data Analysis with Next-step Natural Language Query Recommendation.**

IEEE Transactions on Visualization and Computer Graphics [under review], 2023

Wenchao Li, Zhuochen Jin, Jiang Zhang, Huamin Qu, **Ke Xu**\*

**Narrator: Leveraging Natural Language to Support the Authoring of Visual Network Story.**

IEEE Transactions on Visualization and Computer Graphics [*under review*], 2023

## Patents

**Ke Xu.**

**A Chart Selection Method and Data Visualization Device.** Application No. CN116541456A, 2022.

**Ke Xu,** Nan Cao, Zhuochen Jin, Yang Shi, Bingchang Chen.

**Data Analysis Methods, Devices and Computing Equipment Clusters based on Cloud Services.** Application No. CN202211650218.2, 2022.

**Ke Xu,** Kangzhan Wang, Chen Yang, Jiang Long, Hong Lu.

**Data Query Method, Device, Electronic Equipment and Computer-readable Storage Medium.** Application No. CN202211523534.3, 2022.

**Ke Xu,** Datong Wei, Zhuochen Jin.

**Methods, Devices and Storage Media for Displaying Data.** Application No. CN202311083420.6, 2023

Changhe Yang, **Ke Xu.**

**Insight Data Generation And Other Methods and Devices.** Application No. PCT/CN2023/109267, 2022

Zhuochen Jin, Yanda Li, **Ke Xu,** Jiang Long, Hong Lu.

**A Chart Construction Method and Related Equipment.** Application No. CN202211446392.5, 2022

Changhe Yang, **Ke Xu,** Datong Wei, Jiannan Wang, Jiang Long.

**A Data Method and Related System.** Application No. CN202311075219.3, 2023

## Honors and Awards

2022 Pioneer Award, Huawei Hangzhou Research Insititude

2022 Hongshan Award, Huawei Cloud

2021 Huawei "Genius Youth" Scheme, Huawei

The only one in the field of visualization at Huawei, the 2nd one among the 10+ labs and 1000+ employees of the Huawei Innovation Lab.

2021 HKUST Oversea Research Award

8K HKD per month for an overseas research.

2019 Research Travel Grant: IEEE VIS 2019, Vancouver, Canada

2018 Research Travel Grant: IEEE VIS 2018, Berlin, Germany

2018 Research Travel Grant: ACM SIGCHI 2018, Montreal, Canada

2018 Best Paper Honorable Mention Award, ACM CHI Conference

For ECGLens. top 5% of all submissions,

2015-2019 Postgraduate Studentship

2015 Excellent Student of Nanjing University

- 2014 **First Prize of Red Sun Scholarship**  
Awarded to **30** students in Nanjing University (**10000+**) each year.
- 2014 **Canadian Globalink Research Internship Award**
- 2013 **Baosteel Scholarship**  
Awarded to **2 Sophomores** (3000+) in Nanjing University each year.
- 2012 **National Scholarship**  
Only awarded once to students with top **1%** academic performance each year.
- 2010 **First Prize, Chinese Chemistry Olympiad (Jiangsu Province)**

## Invited Talks

- Aug 2023 **Analysis of Huawei Cloud's Next-generation Business Intelligence Capabilities**  
Tongji University, Shanghai, China
- Jul 2022 **DataArts Studio: Typical Scenario Application Preview**  
Huawei Partner and Developer Conference (HDPC), Hangzhou, China
- May 2022 **Visualization Research at Huawei**  
HKUST, Hong Kong, China
- May 2021 **mTSeer: Interactive Visual Exploration of Models on Multivariate Time-series Forecast**  
*ACM CHI Conference*, Yokohama, Japan.
- Mar 2020 **Visual Anomaly Detection and Its Applications with Temporal Data**  
*New York University*, New York, U.S.
- Oct 2019 **CloudDet: Interactive Visual Analysis of Anomalous Performances in Cloud Computing Systems**  
*IEEE VIS Conference*, Vancouver, Canada.
- Oct 2018 **EnsembleLens: Ensemble-based Visual Exploration of Anomaly Detection Algorithms with Multidimensional Data**  
*IEEE VIS Conference*, Berlin, Germany.
- Apr 2018 **ECGLens: Interactive Visual Exploration of Large Scale ECG Data for Arrhythmia**  
*ACM CHI Conference*, Montreal, Canada.

## Teaching Experience

- 2019 Teaching Assistance, **Visualization: Connections with Machine Learning**, New York University
- 2017 Teaching Assistance, **Digital Circuit**, HKUST
- 2016 Teaching Assistance, **Signals and Systems**, HKUST
- 2018

## Services

Committee Member of CSIG-TCVIS

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

**Reviewer** of Computer Science Review (CSR), Elsevier

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