

Ke Xu

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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

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

Research / Work Experience

- Jan 2020 **New York University**, New York, U.S.
- Present **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 developed 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

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

Towards Ground Truth Explainability on Tabular Data.

ICML 2020 (WHI). [accepted]

[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.

Submitted

Ke Xu, Jun Yuan, Yifang Wang, Claudio Silva, Enrico Bertini.

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

VAST 2020

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.

VAST 2020.

Honors and Awards

2019 **HKUST Oversea Research Award**

1,000 HKD per month for an overseas research.

2018 **Best Paper Honorable Mention Award, ACM CHI Conference**

For “ECGLens: Interactive Visual Exploration of Large Scale ECG Data for Arrhythmia Detection”.

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.

Invited Talks

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

- 2020 **Program Committee** of IEEE VIS 2020
- 2018 **Reviewer** of IEEE Transactions on Visualization and Computer Graphics (TVCG)
- 2020 **Reviewer** of IEEE VIS (VAST, InfoVis, and SciVis) Conference
- 2019 **Reviewer** of ACM Conference on Human Factors in Computing Systems (CHI)
- 2019, 2020 **Reviewer** of The Visual Computer Journal (TVCJ), Springer
- 2018, 2019 **Volunteer** of IEEE VIS (VAST, InfoVis, and SciVis) Conference