Ke Xu

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Education

Sept 2015
- Aug 2019

Ph.D. in Electronic and Computer Engineering
Hong Kong University of Science and Technology, Hong Kong, China

- Supervisor: Prof. Huamin Qu
- Thesis: Visual Anomaly Detection and Its Applications.

Sept 2011
- Jul 2015

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
- Present

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

May 2019
- Aug 2019

Harvard University, Boston, U.S.
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
- May 2019

Microsoft Research Asia, Beijing, China
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
- Sept 2017

Tongji University, Shanghai, China
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.**

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

Jun 2016
- 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.

McGill University, Montreal, Canada

Jun 2014
- 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.

Nanjing University, Nanjing, China

Jun 2014
- 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

[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   **Oversea Research Award, HKUST**
      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   **Excellent Student of Nanjing University**

2014   **First Prize of Red Sun Scholarship**
      Awarded to **30** students in Nanjing University (**10000+**) each year.

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