徐科

纽约大学

Tandon工学院，纽约

kexu@nyu.edu

(+1) 3472219941

 (+86) 13681912504

教育背景

Sept 2015

- Aug 2019

Sept 2011

- Jul 2015

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

香港科技大学，香港特别行政区， 中国

* 导师: [屈华民教授](http://huamin.org/)
* 博士论文: Visual Anomaly Detection and Its Applications.

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

南京大学，南京，中国

* 排名: **1/217.**
* 论文: FPGA-based Design of FFT & FIR.

研究兴趣

Visual Analytics (可视分析), Big Data (大数据分析), Anomaly Detection (异常检测), Explainable AI (可解释AI), Time-series Analytics (时序分析), Healthcare (医疗)

研究 / 工作经历

Jan 2021

- Present

Jan 2020

- Sept 2020

May 2019

- Aug 2019

**华为， 杭州**，中国

大数据可视化技术专家，技术创新部

* 领导数据智能基础平台项目可视分析小组。
* 天才少年计划获得者

**纽约大学，** 纽约，美国

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

* 主导一项用可视化**解释机器学习**模型的调研工作，与Capital One合作。
* 主导开发了mTSeer，一个用于**评估多维时序数列预测**模型 (金融、新闻数据等)的交互式、可操作的可视分析系统。
* 作为主要开发者与Capital One合作一项为机器学习产生**合成数据**的项目。

**哈佛大学，** 波士顿，美国

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

* 设计和搭建了一项生物医学项目的部分可视化系统来提高辅助生殖技术中的受精卵选择，与哈佛医学院合作。

Jan 2019

Jan 2019

- May 2019

Feb 2017

- Sept 2017

Jun 2016

- Dec 2019

Jun 2014

- Sept 2014

Jun 2014

- Sept 2014

**微软亚洲研究院，** 北京，中国

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

* 主导开发了CloudDet，一个用于交互式分析**云计算平台**中的异常行为的可视化系统。
* 合作设计了Datashot，一个可以从表格数据**自动生成海报**的可视化系统。

**同济大学，**上海，中国

研究实习生 (advised [Prof. Nan Cao](https://nancao.org/)), iDVx Lab

* 主导开发了ECGLens，一个用于从心电图中检测**心率失常**的可视化**辅疗系统**。
* 设计开发了EventThread，一个用于总结**event sequence** 数据演变的可视分析系统。

**香港科技大学，**香港，中国

博士生, HKUST VIS Lab

* 开发了可视分析系统EnsembleLens，基于ensemble方法来评估不同的异常检测算法。
* 设计开发了一个可视分析系统，帮助香港物流及供應鏈多元技術研發中心 (LSCM) 综合分析香港天气，老人走失，和固定资产管理等问题。
* 作为主要贡献者负责一项香港研究基金申请 (Research Grant Council)，用于对时序数据的机器学习模型进行可解释性分析。

**麦吉尔大学，**蒙特利尔，加拿大

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

* 提供了一个模型来预测纳米生物传感器的筛选受限反应。

**南京大学，** 南京，中国

项目领导者 (advised [by Prof. Xinggan Zhang](https://ese.nju.edu.cn/72/82/c22541a356994/page.htm))

* 主导了一项**国家级创新训练项目** -- Microphone Array Acoustic Localization and Speech Enhancement.

论文

[ A+级] **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.

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

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

ICML 2020 (WHI).

[1区+ A级] **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]*

[1区+ A级] 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]*

[B级] 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.

[1区+ A级] **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]*

[A+级] **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]*

[1区+ A级] 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*

[ 1区] 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.**

TVCG.

奖励与荣誉

2020

2019

2019

2018

2018

2015

-2019

2015

2014

华为天才少年计划

海外交流奖学金, HKUST

参会奖学金, IEEE VIS 2019

最佳论文提名奖, ACM CHI Conference [A+]

获奖文章为ACM CHI 2018 ECGLens. 所有投稿的 top 5% 获奖

参会奖学金, IEEE VIS 2018, ACM SIGCHI 2018

博士奖学金, HKUST

南京大学优秀毕业生

红太阳奖学金一等奖

每年从整个南京大学选拔奖励30个学生

2014

2013

2012

2010

Canadian Globalink Research Internship Award

宝钢奖学金

奖励给2名南京大学二年级学生.

国家奖学金

每名学生只能获奖一次

江苏省化学奥林匹克竞赛一等奖

受邀演讲

Mar 2020

Oct 2019

Oct 2018

Apr 2018

Visual Anomaly Detection and Its Applications with Temporal Data

纽约大学，纽约，美国

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

IEEE VIS 会议， 温哥华， 加拿大

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

IEEE VIS 会议， 柏林， 德国

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

ACM CHI会议，蒙特利尔， 加拿大

教学经历

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

学术服务

2020

2018

- 2020

2019

2019, 2020

2018, 2019

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

（后附英文版）

Ke Xu

New York University

Tandon School of Engineering, New York kexu@nyu.edu

(+1) 3472219941

 (+86) 13681912504

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

- Present

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

[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.**

ICML 2020 (WHI).

[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*

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.**

TVCG.

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

Mar 2020

Oct 2019

Oct 2018

Apr 2018

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

2020

2018

- 2020

2019

2019, 2020

2018, 2019

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