

徐科

纽约大学
Tandon 工学院, 纽约

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教育背景

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

- Aug 2019 香港科技大学, 香港特别行政区, 中国

- 导师: 屈华民教授
- 博士论文: Visual Anomaly Detection and Its Applications.

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

- Jul 2015 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 2020 **纽约大学**, 纽约, 美国

- Present 博士后 (advised by Prof. Claudio Silva & Prof. Enrico Bertini), VIDA Lab

- 主导一项可视化**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。

May 2019 **哈佛大学**, 波士顿, 美国

- Aug 2019 访问学者 (advised by Prof. 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 **微软亚洲研究院**, 北京, 中国

- May 2019 研究实习生 (advised Dr. Yun Wang), 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。

- Feb 2017 **同济大学**, 上海, 中国
 - Sept 2017 研究实习生 (advised Prof. Nan Cao), iDVx Lab
- 主导开发了 ECGLens, 一个用于从心电图检测**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。
- Jun 2016 **香港科技大学**, 香港, 中国
 - Dec 2019 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, 帮助香港物流及供应链多元技术研发中心 (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。
- Jun 2014 **麦吉尔大学**, 蒙特利尔, 加拿大
 - Sept 2014 暑期实习生 (advised by Prof. 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。
- Jun 2014 **南京大学**, 南京, 中国
 - Sept 2014 项目领导者 (advised by Prof. Xinggan Zhang)
- 主导了一项**国家级创新训练项目** -- "Microphone Array Acoustic Localization and Speech Enhancement."

论文

[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

[A+级] **Ke Xu**, Jun Yuan, Yifang Wang, Claudio Silva, Enrico Bertini.

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

CHI 2021.

[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

2019 海外交流奖学金, HKUST

2018 最佳论文提名奖, ACM CHI Conference [A+]

For "ECGLens: Interactive Visual Exploration of Large-Scale ECG Data for Arrhythmia Detection".

2015 博士奖学金, HKUST

-2019

2015 南京大学优秀毕业生

2014 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 Canadian Globalink Research Internship Award

2013 宝钢奖学金

奖励给 2 名南京大学二年级学生.

2012 国家奖学金

每个学生只能获奖一次

受邀演讲

Mar 2020 **Visual Anomaly Detection and Its Applications with Temporal Data**
纽约大学, 纽约, 美国

Oct 2019 **CloudDet: Interactive Visual Analysis of Anomalous Performances in Cloud Computing Systems**
IEEE VIS 会议, 温哥华, 加拿大

Oct 2018 **EnsembleLens: Ensemble-based Visual Exploration of Anomaly Detection Algorithms with Multidimensional Data**
IEEE VIS 会议, 柏林, 德国

Apr 2018 **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 Teaching Assistance, **Visualization: Connections with Machine Learning**, New York University

2017 Teaching Assistance, **Digital Circuit**, HKUST

2016 Teaching Assistance, **Signals and Systems**, HKUST

- 2018

学术服务

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

(后附英文版)

Ke Xu

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Tandon School of Engineering, New York
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☎ (+86) 13681912504

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 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

[C7] Brian Barr, **Ke Xe**, 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.

CHI 2021

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 **HKUST Oversea Research Award**

8K 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