

Jun Yuan

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EDUCATION

2017-2022 **PhD in Computer Science, New York University** | New York, NY
2013-2017 **BS in Software Engineering, Fudan University** | Shanghai

RESEARCH INTERESTS

Data Visualization, Explainable AI, Human Computer Interaction

SELECTED RESEARCH EXPERIENCE

2019-2020 **Interpreting Black-box ML Models By Visually Exploring High-Fidelity Surrogate Rules**
Advisor: Enrico Bertini, PhD
Surrogate rules are a set of decision rules that are trained to approximate the behaviors of a model to be explained. We propose an algorithm of generating high-fidelity surrogate rules without sacrificing interpretability. An empirical study has also been conducted to explore how to visualize rule sets to assist humans to understand rules. Based on the rule generation algorithm and the results of empirical study, an interactive visual analytics system has been developed.

2019 Summer **Visual Analytics For Debugging And Improving The Detection of Small Objects**
Mentor: Bilal Alsallakh, PhD
The detection of small objects in an image can be affected by the surroundings of the objects (e.g. trees, fences, shadow, etc.). We proposed an algorithm to extract the “noisy” surroundings that impact object detection performance and developed an user interface to assist semantic analysis of the “noisy” surroundings.

PUBLICATIONS

SuRE: Visual Exploration of High-Fidelity Surrogate Rules for Model Debugging and Understanding (in prep.)
[Jun Yuan](#), Enrico Bertini.

AdViCE: Aggregated Visual Counterfactual Explanations for Machine Learning Model Validation (submitted)
Steffen Holter, Oscar Gomez, [Jun Yuan](#), Enrico Bertini.

Visualizing Rule Sets: An Empirical Study (submitted)
[Jun Yuan](#), Oded Nov, Enrico Bertini.

Mind the Pad -- CNNs Can Develop Blind Spots (submitted)
Bilal Alsallakh, Narine Kokhlikyan, Vivek Miglani, [Jun Yuan](#), Orion Reblitz-Richardson

mTSeer: Interactive Visual Exploration of Models on Multivariate Time-series Forecast (submitted)
Ke Xu, [Jun Yuan](#), Yifang Wang, Claudio Silva, Enrico Bertini.

Explainable Clustering Through Surrogate Decision Trees (submitted)
Andrew Qu, [Jun Yuan](#), Enrico Bertini.

ViCE: Visual Counterfactual Explanations for Machine Learning Models
Steffen Holter, Oscar Gomez, [Jun Yuan](#), Enrico Bertini. ACM IUI 2020 [\[pdf\]](#)

SUBPLEX: Towards a Better Understanding of Black Box Model Explanations at the Subpopulation Level (second-round review)
Yeuk-Yin Chan, [Jun Yuan](#), Kyle Overton, Brian Brian, Kim Rees, Luis Gustavo Nonato, Enrico Bertini, Cláudio T. Silva. ACM Transactions on Interactive Intelligent Systems [\[pdf\]](#)

ECGLens: Interactive ECG Classification and Exploration

Jun Yuan, Siyao Fang, Xiang Huang, Nan Cao. Poster for IEEE VIS (2017) [[page](#)]

PRESENTATION

Interpreting Black-box Machine Learning Models By Visually Exploring High-Fidelity Surrogate Rules
Jun Yuan. IEEE Transactions on Visualization and Computer Graphics, Doctoral Colloquium 2020

PATENT

Visual Analytics Exposure of Semantic Image Segmentation Weakness (pending)
Bilal Alsallakh, Jun Yuan, Liang Gou, Axel Wendt, Liu Ren

WORK EXPERIENCE

- 2019 Summer Visual Analytic Intern Bosch, Sunnyvale
- Work with Dr. Bilal Alsallakh to generate multi-level counterfactual explanations for deep learning models of image segmentation and object detection tasks.
 - Using Python, Java, TensorFlow, TensorBoard, Javascript, React
 - A pending patent and a submitted paper for this work
- 2016-2017 Research Assistant NYU, Shanghai
- Work with Prof. Nan Cao to design interactive visual systems for anomaly detection of ECG data.
 - Using Python, Flask, Javascript
 - An IEEE VIS poster for this work
- 2016 Summer Technology Analyst Goldman Sachs, Hong Kong
- Data mining in client order data to find target clients and Designing and implementing predictive models (multi-layer perceptron) for sales traders.
 - Using Spark, Java
- 2015 Summer Engineering Practicum Intern Google, Shanghai
- Full-stack development of an advertising platform: *DoubleClick Sales Manager*.

SKILLS

Technology: Python, Java, Javascript, React, Flask, Docker, TensorFlow, TensorBoard

TEACHING EXPERIENCE (at NYU)

- 2019-2020 Visual Analytics
- 2019 Information Visualization