Jia-Kai CHOU, Ph.D.

Post-doctoral Researcher, Dept. of Computer Science, University of California-Davis

https://jjkai.github.io   +1 626-566-5381
https://www.linkedin.com/in/jjkai/   jiakai.chou@gmail.com

SUMMARY

I am a computer scientist who designs data visualizations and implements interactive systems to support effective data analytics. I work closely with domain experts, identifying their needs and developing prototypes that help them find new insights from data more efficiently. To assess the effectiveness of the tools that I create, I employ user-centered design principles for both quantitative and qualitative evaluation. I also focus on the privacy preserving aspect of user information while sharing, processing, and making sense of the data.

COMPUTER SCIENCE SKILLS

UX: Controlled user study design, Quantitative analysis (within-subjects, between-subjects and mixed design and analysis: ANOVA, t-test, error correction, etc.), Qualitative analysis (think-aloud, expert interviews), Survey/Questionnaire design (Qualtrics), Usability study, Complete/incomplete block design and analysis, Counter-balancing (Latin Square)
Web: Javascript, Node.js, Express.js, D3.js, CSS
Programming: Python, Matlab, C/C++
Data Analysis: Python (Pandas, NumPy, scikit-learn), TensorFlow, R, SQL
Other: OpenGL, Qt, Git

EMPLOYMENT & EXPERIENCE

Post-Doctoral Researcher, Dept. of CS, University of California, Davis — Jan. 2015 - Present

Supervised more than 10 student researchers, including 5 Ph.D. students and 4 Master's students, in various research projects. Conduct research in designing and developing visual approaches and systems for supporting effective data analysis. Primary topics include:

- Introduced novel visualization techniques for performing event sequence analysis.
- Developed visual interfaces that allow for identifying, reviewing, and addressing privacy concerns in different types of data, such as event sequence, social network, and tabular data.
- Incorporated data mining and statistical algorithms to interactive systems for enabling domain experts, such as neuroscientists and clinicians, analyze their data at scale.
- Conducted quantitative and qualitative user studies to evaluate and verify research hypotheses.

Assistant IT Coordinator, Dept. of IT, Taipei City Government, Taiwan — Oct. 2013 - Nov. 2014

Coordinated with FISU's IT&C consultant for planning a $1-billion NTD budget on IT&C equipment and software systems for 2017 Taipei Universiade.

Visiting Student, Dept. of CS, University of California, Davis — Feb. 2012 - Oct. 2012

Augmented text-to-speech audios to a timeline-based visualization and tested its effectiveness.

Summer Intern, Trend Micro, Inc., Taipei, Taiwan — Summer 2010

Integrated multiple visualization toolkits for network user behavior analysis.

Graduate Student Researcher, Dept. of Information Management, National Taiwan University of Science and Technology — Sep. 2007 - Jul. 2013

Designed algorithms and developed systems for multimedia applications:

- Interactive systems for simulating facial features and hairstyle swapping in images.
- Privacy aware image, video, and volumetric data storage and processing.
- Visual analysis of time-varying network data.

EDUCATION

Ph.D., Information Management | Advisor: Prof. Chuan-Kai Yang   Jul. 2013
National Taiwan University of Science and Technology
Dissertation: Privacy Preserving Multimedia Data Processing

M.S., Information Management | Advisor: Prof. Chuan-Kai Yang   Jul. 2009
National Taiwan University of Science and Technology
Thesis: Virtual Haircut and Hairstyle Cloning

B.S., Information Management   Jul. 2007
National Taiwan University of Science and Technology

HONORS & AWARDS

Winner of PacificVis 2017 Visual Storytelling Contest

Best Paper Honorable Mention Award, Siggraph Asia 2016 Symposium on Visualization

Winner of Originality in IEEE 2015 VGTC VPG International Data-Visualization Contest

PUBLICATIONS

[P16] Xumeng Wang, **Jia-Kai Chou**, Wei Chen, Huihua Guan, Wenlong Chen, Tianyi Lao, and Kwan-Liu Ma. A Utility-aware Visual Approach for Anonymizing Multi-attribute Tabular Data. IEEE Transactions on Visualization and Computer Graphics (in Proceedings of IEEE VAST 2017), 24(1):351-360, 2018

[P15] Maksim Gomov, **Jia-Kai Chou**, Jianping Kelvin Li, Soman Sen, Kiho Cho, Nam Tran, and Kwan-Liu Ma. Aiding Infection Analysis and Diagnosis Through Temporally-Contextualized Matrix Representations. IEEE VIS 2017 Workshop on Visual Analytics in Healthcare (VAHC 2017)

[P14] **Jia-Kai Chou**, Yang Wang, and Kwan-Liu Ma. Privacy Preserving Visualization: A Study on Event Sequence Data. Invited submission to Computer Graphics Forum (under revision)

[P13] **Jia-Kai Chou**, Chris Bryan, and Kwan-Liu Ma. Privacy Preserving Visualization for Social Network Data with Ontology Information. In Proceedings of 2017 IEEE Pacific Visualization Symposium

[P12] Takanori Fujiwara, **Jia-Kai Chou**, Andrew M McCullough, Charan Ranganath, and Kwan-Liu Ma. A Visual Analytics System for Brain Functional Connectivity Comparison across Individuals, Groups, and Time Points. In Proceedings of 2017 IEEE Pacific Visualization Symposium

[P11] **Jia-Kai Chou**, Yang Wang, and Kwan-Liu Ma. Privacy Preserving Event Sequence Data Visualization using a Sankey Diagram-like Representation. ACM SIGGRAPH ASIA 2016 Symposium on Visualization (Best Paper Honorable Mention Award)

[P10] **Jia-Kai Chou** and Chuan-Kai Yang. Obfuscated Volume Rendering. The Visual Computer 32(12):1593-1604, 2016

[P9] **Jia-Kai Chou**, Chuan-Kai Yang, and Hsing-Ching Chang. Encryption Domain Content-based Image Retrieval and Convolution through a Block-based Transformation Algorithm. Multimedia Tools and Applications 75(21):13805-13832, 2016

[P8] Chien-Hsin Hsueh, **Jia-Kai Chou**, and Kwan-Liu Ma. A Study of using Motion for Comparative Visualization. In Proceedings of 2016 IEEE Pacific Visualization Symposium

[P7] Tsailing Fung, **Jia-Kai Chou**, and Kwan-Liu Ma. A Design Study of Personal Bibliographic Data Visualization. In Proceedings of 2016 IEEE Pacific Visualization Symposium

[P6] Chuan Wang, **Jia-Kai Chou**, Kwan-Liu Ma, Arpad Karsai, Gang-Yu Liu, Ying X. Liu, Evgeny Ogorodnik, and Victoria Tran. An Interactive Visual Analysis Tool for Cellular Behavior Studies using Large Collections of Microscopy Videos. 2016 IEEE International Conference on Multimedia Big Data

[P5]   Kelvin Li, **Jia-Kai Chou**, and Kwan-Liu Ma. High Performance Heterogeneous Computing for Collaborative Visual Analysis. ACM SIGGRAPH ASIA 2015 Symposium On Visualization In High Performance Computing

[P4]   **Jia-Kai Chou**, Issac Liao, Kwan-Liu Ma, and Chuan-Kai Yang. A Study on Enhancing Timeline-Like Visualization with Verbal Text. Cyberworlds 2013

[P3]   **Jia-Kai Chou** and Chuan-Kai Yang. Simulation of Face/Hairstyle Swapping in Photographs with Skin Texture Synthesis. Multimedia Tools and Applications 63(3):729-756, 2013

[P2]   **Jia-Kai Chou**, Chuan-Kai Yang, and Sing-Dong Gong. Face-off: Automatic Alteration of Facial Features. Multimedia Tools and Applications 56(3):569-596, 2012

[P1]   **Jia-Kai Chou** and Chuan-Kai Yang. PaperVis: Literature Review Made Easy. Computer Graphics Forum (EuroVis 2011), 30(3):721-730, 2011

SUPERVISION EXPERIENCE

Maksim Gomov, Master's Student, UC DAVIS	Mar. 2017
On supplementing clinical decision making, such as sepsis diagnosis, with computational models and interactive visualizations [P15]	- Present
Suraj Kesavan, Master's Student, UC DAVIS	Jul. 2017
On designing scalable visual representation for event sequence data analysis	- Present
Jing Li, Ph.D. Student, UC DAVIS	Jul. 2017
On gaining a better understanding of differential privacy through visualization	- Present
Meng Du, Ph.D., BEIJING FOREST UNIVERSITY	Mar. 2017
On augmenting visualization with sound for improving user engagement	- Dec. 2017
Xumeng Wang, Ph.D. Student, ZHEJIANG UNIVERSITY	Oct. 2016
On balancing between privacy and utility of multi-attribute tabular datasets with direct visual feedback [P16]	- Mar. 2017
Takanori Fujiwara, Ph.D. Student, UC DAVIS	Feb. 2016
On supporting quick and flexible visual comparison and examination of large amounts of brain networks [P12]	- Sep. 2016
Chuan Wang, Ph.D. Student, UC DAVIS	May 2015
On summarizing long-lasting cellular evolution videos for fast cellular behavior comparison [P6]	- Apr. 2016
Tsailing Fung, Master's Student, UC DAVIS	Jun. 2015
On presenting personal bibliographic data with botanic visualization design [P7]	- Dec. 2015
Tan Huu Nguyen, Master's Student, UC DAVIS	Apr. 2015
On analyzing usage of electric car charging stations for deciding optimal pricing strategy	- Oct. 2015

PROFESSIONAL SERVICES

Program Committee Member

IEEE Pacific Visualization Symposium (2017, 2018)

Paper Reviewer

IEEE Information Visualization Conference (2016, 2017)

IEEE Conference on Visual Analytics Science and Technology (2016, 2017)

Eurographics/IEEE Conference on Visualization (2017)

IEEE Pacific Visualization Symposium (2017, 2018)

ACM Transactions on Knowledge Discovery from Data (2016)

International Symposium on Graph Drawing & Network Visualization (2016)

IEEE International Conference on Big Data Computing Services and Applications (2016)

Workshop on Visualization in Practice (2016, 2017)

IEEE International Conference on Big Data (2013, 2017)

TALKS

Conference Presentations

Privacy Preserving Visualization forSocial Network Data with Ontology Information. PacificVis 2017, Seoul, South Korea	Apr. 2017
Privacy Preserving Event Sequence DataVisualization using a Sankey Diagram-like Representation. ACM Siggraph Asia 2016 Symposium on Visualization, Macao	Dec. 2016
PaperVis: Literature Review Made Easy, EuroVis 2011. Bergen, Norway	Jun. 2011

Invited Talks & (Guest) Lectures

Privacy Aware Multimedia Data Sharing, Processing, and Visualization. FXPAL, Palo Alto, CA	Nov. 2017
The Recent Advances in Privacy Preserving Visualization. Academia Sinica, Taipei, Taiwan	Apr. 2017
Introductory to Visualization. National Taiwan University of Science and Technology, Graduate-level class: Multimedia Systems taught by Dr. Chuan-Kai Yang	Oct. 2014