Chanwut **Kittivorawong**

Data Visualization · Interactive Video Data Systems

chanwutk.github.io | chanwutk | chanwut-k | chanwut_k | Chanwut Kittivorawong | Berkeley, CA

Education

University of California, Berkeley — *California, U.S.A*

Ph.D. in Computer Science — *2021 - 2026 (expected)*

Advisor: Professor *Alvin Cheung @ Sky Lab*
Area: Data Visualization Tools, Geospatial Video Analytic Systems
GPA: 3.8

University of Washington, Seattle — *Washington, U.S.A*

Combined BS/MS of Computer Sci. and Eng. — *2016 - 2021*

Research Mentor: Professor *Jeffrey Heer @ IDL*
Area: Data Visualization Tools, Data Interaction Tools
GPA: 3.83 (Master's), 3.91 (Bachelor's **Magna Cum Laude*)

Work Experience

Sky Lab + RISE Lab + EPIC Data Lab, UC Berkeley — Graduate Student Researcher — *2021 - Present*

- Lead a team to design and develop Spatialyze; a video data analysis system, focusing on geo-spatial-related queries and optimizations.
- We designed the programming interface of the system that allows users to define their search queries in terms of geo-spatial aspects of their videos.
- We also optimize our system to use less expensive ML operations by using extra geo-spatial metadata, resulting in more than 2x speed.

OctoML Inc. — Software Engineering Intern — *2020 & 2021*

- Designed and created a visualizer for deep-learning models and their performance using D3+TypeScript.
- The visualizer is a part of the optimizer tool (Octomizer) that optimizes deep-learning models compiled by TVM and measures their performances.

Interactive Data Lab, University of Washington — Undergraduate + Graduate Research Assistant — *2018 - 2021*

- Contributed to **Vega-Lite** (*github.com/vega/vega-lite*), a high-level grammar of interactive graphic for generating easy-to-understand visualization. Designed and implemented grammar for creating error bar/error band, enabling users to create error bar/band chart without redundant work of manually composing . As a result, the specification for creating error bar chart is shortened by half.
- Contributed to **Arquero** (*github.com/chanwutk/arquero-sql*), a query processing library in JS. Designed and implemeted Arquero-SQL as an alternative execution engine to Arquero's own engine in JS. Arquero-SQL executes Arquero queries on an SQL server to achieve better performance and scalability.

DocuSign Inc. — Software Engineering Intern (Product Development: Manage & Optimize) — *2019*

- Design & develop AWS services as parts of Advanced Analytics Platform, using to extracts, sanitizes, and stores usage data.
- Design AWS lambda to auto-shutdown idle EMR clusters and notebooks to prevent unnecessary billings. Design spark jobs to keep the schema of the service's database up-to-date and to clean up unused files from failed data ingestion to prevent dirty data from being analyzed.

Publications

Design Study for a Geospatial-Video Data Analysis Query Language — *2022*

Chanwut Kittivorawong, *Shadaj Laddad, Andrew Lenz, Amy Lu*

Efficient Distributed Data Loading for Large-Scale Machine Learning Model Training with Parax — *2021*

Sheng Shen, ***Chanwut Kittivorawong*** *(chanwutk.github.io/parax-dataloader-paper)*

Legible Label Layout for Data Visualization, Algorithm and Integration into Vega-Lite **Master's Thesis* — *2021*

Chanwut Kittivorawong *(chanwutk.github.io/label-thesis)*

Community Cellular Networks Coverage Visualizer — *2021*

Chanwut Kittivorawong, *Sirapop Theeranantachai, Nussara Tieanklin, Esther Jang, Kurtis Heimerl (chanwutk.github.io/ccn-coverage-vis-paper)*

Mask Wearing Classification — *2021*

Chanwut Kittivorawong, *Louis Maliyam (chanwutk.github.io/mask-paper)*

Fast and Flexible Overlap Detection for Chart Labeling with Occupancy Bitmap **Conference* — *2020*

Chanwut Kittivorawong, *Dominik Moritz, Kanit Wongsuphasawat, Jeffrey Heer IEEE VIS Short Paper, Oct 2020.*

Pleiades: Interactive Composing Tools for Vega-Lite Charts — *2019*

Chanwut Kittivorawong, *Manesh Jhawar, Sorawee Porncharoenwase (chanwutk.github.io/pleiades)*

Skills

Languages	TypeScript, Python, PostgreSQL, Vega-Lite, Vega, Java, C++, C, SQL, C#, HTML5, CSS, LaTeX
Tools/Libraries	D3, React, Git, Node.js, NumPy, PyTorch, Vue.js, UNIX, bash, jest, Jekyll, Apache Spark, AWS
General	Data Visualization, Database Management, Algorithms, Data Structures, Web Programming Software Development, Deep Learning/Machine Learning, Object Oriented Programming

Talks

Video Preprocessing and Optimization for V-DBMS with Geo-spatial Metadata *Mar 8, 2022*

Data Systems And Foundations Seminar, UC Berkeley

Minimizing Expensive ML Operations in Video Data Exploration Tasks using Geo-Spatial Metadata *Oct 26, 2022*

EPIC Inaugural Advance, UC Berkeley

Design Study for a Geospatial-Video Data Analysis Query Language *May 11, 2022*

Data Systems And Foundations Seminar, UC Berkeley

D3.js Deep Dive *Apr 29, 2021*

A part of CSE 512: Data Visualization, University of Washington

Fast and Flexible Overlap Detection for Chart Labeling with Occupancy Bitmap *Oct 28, 2020*

IEEE VIS (InfoVis) 2020 – youtu.be/bi6FfsWV_9k?t=1317

D3.js Deep Dive *Oct 20, 2020*

A part of CSE 442: Data Visualization, University of Washington

Teachings

INFO 290T: Human-Centered Data Management @ UC Berkeley — *Reader for Aditya Parameswaran, 30 students* *2023*

Graded students' reading assignments

CSE 512: Data Visualization (For Grdaute Students) @ UW — *Teaching Assistant for Jeffrey Heer, 120 students* *2021*

Taught D3.js Tutorial, graded students' assignments, and answered students' questions in discussion board.

CSE 442: Data Visualization @ UW — *Teaching Assistant for Jane Heffernan and Jeffrey Heer, 120 students* *2020*

Taught D3.js Tutorial, graded students' assignments, answered students' questions in discussion board, and held weekly office hours.

CSE 331: Software Design and Implementation @ UW — *Teaching Assistant for Kevin Zatloukal, 179 students* *2020*

Taught React Tutorial, taught class sections, graded students' assignments, answered students' questions in discussion board, and held weekly office hours.

CSE 442: Data Visualization @ UW — *Teaching Assistant for Matthew Conlen, 120 students* *2020*

Graded students' assignments, answered students' questions in discussion board, and held weekly office hours.

CSE 331: Software Design and Implementation @ UW — *Teaching Assistant for Dan Grossman* *2019*

Graded students' assignments, answered students' questions in discussion board, and held weekly office hours.

Courseworks

Data Structures and Parallelism	Data Visualization	Principles of Programming Languages
Software Design & Implementation	Computer Vision	Intro. to Compiler Construction
Systems Programming	Introduction to Deep Learning	PL Analysis & Implementation
Database System Internal	Introduction to Algorithms	Artificial Intelligence I
Machine Learning	Natural Language Processing	Adv. Topics in Computer Systems
Domain Specific Languages	Intro. to Distributed System	Building User-Centered Prog. Tools

Honors & Awards

2016	**16th place**, ACM Pacific Northwest Regional Programming Contest	*Seattle, Washington*
2016	**1st place**, ACM University of Washington Qualifier Round	*Seattle, Washington*
2015	**Undergraduate through Ph.D. Full Scholarship**, Royal Thai Scholarship	*Bangkok, Thailand*
2014	**Silver Medalist, Highest score within the region**, The 10th Thailand Olympiad in Informatics	*Ubon Ratchathani, Thailand*
2012	**Silver Medalist**, The 8th Thailand Olympiad in Informatics	*Bangkok, Thailand*

Extracurricular Activity

Thai Students Association at the University of Washington *Seattle, WA*

Head of Public Relations Team *2017 - 2018*

- Supervised and maintained communication about the events hosted by Thai Students Association to UW communities
- Coordinated with UW Alumni Association Thailand for hosting a new students orientation session in Bangkok.