

# Chanwut Kittivorawong

INTERACTIVE DATA VISUALIZATION · DATA SYSTEMS

🏠 [chanwutk.github.io](https://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 at Sky Lab

**Area:** Data Visualization Tools, Geo-Spatial Video Data Systems

**GPA:** 3.72

### University of Washington, Seattle

Washington, U.S.A

COMBINED BS/MS OF COMPUTER SCI. AND ENG.

2016 - 2021

**Research Mentor:** Professor Jeffrey Heer at 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 teams to design and develop Apperception; 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](https://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](https://github.com/chanwutk/arquero-sql)), a query processing library in JS. Designed and implemented 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](https://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](https://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](https://chanwutk.github.io/ccn-coverage-vis-paper))

### Mask Wearing Classification

2021

Chanwut Kittivorawong, Louis Maliyam ([chanwutk.github.io/mask-paper](https://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](https://chanwutk.github.io/pleiades))

## Skills

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

## Talks

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### 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

*Databases 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](https://youtu.be/bi6FFsWV_9k?t=1317)*

### D3.js Deep Dive

Oct 20, 2020

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

## Teachings

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### CSE 512: Data Visualization (For Grdaute Students) — 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 — 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 — 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 — 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 — Teaching Assistant for Dan Grossman

2019

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

## Courseworks

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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

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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

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### Thai Students Association at 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.