

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 IN 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 (Optomizer) 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 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 & Projects

Spatialyze: A Geospatial Video Analytics System with Spatial-Aware Optimizations

2024

Chanwut Kittivorawong, Yongming Ge, Yousef Helal, Alvin Cheung. Accepted at VLDB 2024 (dl.acm.org/doi/10.14778/3665844.3665846, spatialyze.github.io)

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 Python, TypeScript, 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 Video Analytic System, Data Visualization, Database Management, Algorithms, Data Structures, Web Programming
Software Development, Deep Learning/Machine Learning, Object Oriented Programming

Talks

Spatialyze: A Geospatial Video Analytics System with Spatial-Aware Optimizations

Jan 9, 2024

Sky Winter Retreat 2024, UC Berkeley

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 course, 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 course, 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 Grdauite 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.