Derek Chui

Curriculum Vitae

Santa Clara University, Computer Science & Engineering, 500 El Camino Real, Santa Clara, CA 95053

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Linkedin: linkedin.com/in/derek-chui | GitHub: github.com/derek-chui | U.S. Citizen

Education

Santa Clara University   Sep 2023 - Jun 2027
- Bachelor of Science in Computer Science and Engineering, Minor in Responsible Artificial Intelligence
- Relevant Coursework: Data Structures, Discrete Mathematics, Linear Algebra, Object Oriented Programming, Probability and Statistics, Unix Scripting and Automation, Programming Languages, Information Storage

Football Analytics Projects

Santa Clara University Soccer   Sep 2025 - Present
- **50+** Catapult & VALD **metrics**, **100+ report** pages, **50+** D1 athletes, **Python**, **NumPy**, **Pandas**, **Matplotlib**.
- **Automated pipeline** reveals workload trends, asymmetries, injury risks, coaches can spot meaningful outliers.

Player Actions v Usage Rates   Sep 2025 - Nov 2025
- **300k+** views on X in **10** days via posts with efficiency profiles across positions to inform smarter squad building.
- Analysed **50+** Premier League players, correlated player productivity, revealing misused or underutilized players.

2025 Summer Squad Assessment   Aug 2025 - Sep 2025
- Processed, cleaned, compared over **50** rumored and new signings against current & recently departed players.
- **Reported insights** on positional needs & quantify fit, strengths, and risk flags during the 2025 summer window.

Progression Analysis (24/25)   Jul 2025 - Aug 2025
- Analyzed progression (passes, carries, receptions) over **42** games across a Premier League team's 24/25 season.
- For bottom half teams, selective progression with lower possession correlates with positive results, and vice versa.

Network Optimization Projects

Semantic Q Learning NOMA   Sep 2025 - Present
- Implemented a **Reinforcement Learning (RL)** algorithm via **1000+** episodes, realistic semantic NOMA model.
- Within **5%** of optimal network utility even with scalability for future **6G** wireless systems and ethical implications.

Semantic Greedy NOMA   Mar 2025 - Aug 2025
- **Greedy** algorithm and semantic model for NOMA that outperforms existing baselines in network utility by **25%**.
- Strong **visualizations** & metrics extended to **Reinforcement Learning (RL)** in Semantic Q Learning NOMA.

Pinch Antenna Assisted NOMA   Aug 2025 - Present
- Enhanced NOMA using pinch antennas to amplify user channels based on proximity over **500** trials.
- Improved sum rates by **15%**, potential for scalable user grouping and improved sum rates in future **6G** networks.

Research

Hackworth Applied Ethics Research Grant   Nov 2025
- Submission: How AI Biases Can Silence Certain Users in 6G Mobile Communications

IEEE Consumer Communications & Networking Conference Poster   Oct 2025
- Accepted: Semantic Utility Aware User Grouping for 6G NOMA Networks (2 Page)

BayLearn Machine Learning Symposium   Sep 2025
- Submission: Semantic Aware User Pairing for 6G NOMA Networks

IEEE Consumer Communications & Networking Conference   Aug 2025
- Submission: Semantic Utility Aware User Grouping for 6G NOMA Networks

2FURS (Faculty-mentored Undergraduate Research) Grant   Apr 2025

Experience

Research Assistant
Santa Clara University

Apr 2025 - Present

Internship | Hybrid

- Work in Wireless Intelligent Networks (WIN), **Reinforcement Learning (RL)** models for 6G wireless systems.
- Analysed **25+** papers, implemented **20+** simulations, and compiled into over **10** submissions to various venues.

Teaching Assistant
Santa Clara University

Sep 2025 - Dec 2025

Part-time | Hybrid

- Facilitated lectures, led practicums, and office hours for **61** students in **programming paradigms** (CSEN 171).
- Developed assignments and **autograders**, increased scores by **5%** via detailed instructions and feedback response.

Sales Development Representative
ProofJump

Jul 2024 - Apr 2025

Part-time | Remote

- Connected with **100+** professionals in the **SaaS**, **B2B**, and SDR industries through LinkedIn Sales Navigator.
- Automated **100+** outreach emails to specific audiences and set up inbound & outbound routines.

Training Specialist
Honeywell

Jul 2024 - Nov 2024

Part-time | On-site

- **10+** training videos on Honeywell XLS fire alarms, planned courses, worked on site at various apartment buildings.
- Assisted instructors during training with **50+** students over **15** weeks, Honeywell Building Automation Systems.

Video Editor
Freelance

Feb 2021 - Jul 2024

Remote

- Managed **70** video projects over **3** years for clients with Final Cut Pro under fluid deadlines in an efficient manner.
- Organized & detail oriented file management for footage, project folders, exports, focused on quality & consistency.

Content Creator
Self-Employed

Dec 2015 - Feb 2021

Remote

- **170** YouTube content over **5** years on gaming, lifestyle, tech, video essays, montage segments, and more.
- Hosted a podcast with **22** discussions and interviews, blogs with in **30** depth articles, compiled into a short book.

Projects

Football Analytics

Jul 2025 - Present

- **50+ reports**, player **dashboards**, match reviews via **Python**, **Excel**, **NumPy**, **Pandas**, **Matplotlib**, **Seaborn**.
- **Reported 100+ visualizations** with over **150 metrics** across **100+** players. **500k+** total impressions on X.

Network Optimization

Mar 2025 - Present

- Developed semantic **optimization** methods for **6G** NOMA wireless systems, **Reinforcement Learning (RL)**.
- Modular simulation pipelines, up to **25%** gains over baselines, near optimal utilities, over **1000+** episodes & trials.

Personal Website

Mar 2025 - Jun 2025

- Done with Netlify frameworks, **Astro**, **TypeScript**, **CSS**, and **JavaScript**, averaging **2000+** requests per week.

Benchmark

Jun 2024 - Mar 2025

- Basics of **12** different languages and concepts including **C**, **C++**, **Java**, **Python**, **HTML**, **CSS**, and **Javascript**.

Fantasy Premier League

Jan 2025 - Mar 2025

- Game in C++ to simulate team drafting and weekly matchups with **50+** players over **10** gameweeks.

Phonebook

Sep 2023 - Nov 2023

- Multi threaded phonebook application in C for storing and retrieving **100+** contacts done over **10** weeks.

Word Gravity

Jan 2022 - May 2022

- Interactive typing game in **JavaScript**, players type letters before they reach the bottom with **100+** unique levels.

Technical Skills

Data Analysis: Python, Excel, NumPy, Pandas, Matplotlib, Seaborn
General: C, C++, Java, Data Structures & Algorithms, MATLAB, HTML, JavaScript, CSS, Netlify, Astro
Software: Final Cut Pro, Microsoft Visual Studio Code, Jupyter Notebooks, LinkedIn Sales Navigator, Git, GitHub
Miscellaneous: Lead Generation, Building Automation Systems (BAS), LaTeX

References

Krishna Ramamoorthy
- Position: Assistant Professor of Computer Science and Engineering
- Employer: Santa Clara University
- Context: Network optimization projects, research, research assistant, teaching assistant
- Email: kkattiyanramamoorthy@scu.edu

Jacob Roy
- Position: Assistant Athletics Director, Sports Performance
- Employer: Santa Clara University
- Context: Worked with in my Santa Clara University Soccer project
- Email: jroy@scu.edu

Justin Khoo
- Position: Founder
- Employer: ProofJump
- Context: Worked for at ProofJump
- Email: justin.khoo@gmail.com