

# Derek Chui

## Curriculum Vitae

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

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## 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, so 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

- **Collected** progression (passes, carries, receptions) over **42** games across a Premier League team's 24/25 season.
- **Visualizations** show lower progression correlates with positive results for bottom half teams, and vice versa.

## Network Optimization Projects

### Semantic Q Learning NOMA

Sep 2025 - Present

- **Built & maintained** a **Machine Learning (ML)** algorithm, **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 & semantic model for NOMA that outperforms **monitored** baselines in network utility by **25%**.
- Strong **visualizations** & **metrics** extended to **data** driven optimization workflow in [Semantic Q Learning NOMA](#).

### Pinch Antenna Assisted NOMA

Aug 2025 - Present

- **Simulated** 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

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### Research Assistant

Apr 2025 - Present

*Santa Clara University*

*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 related venues.

### **Teaching Assistant**

Sep 2025 - Dec 2025

*Santa Clara University*

*Part-time | Hybrid*

- Facilitated lectures, led practicums, and office hours for **61** students in programming paradigms (CSEN 171).
- Developed assignments and autograders, database **visualizations** and **analysis** reveals increased scores by **5%**.

### **Sales Development Representative**

Jul 2024 - Apr 2025

ProofJump

*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**

Jul 2024 - Nov 2024

*Honeywell*

*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

Feb 2021 - Jul 2024

*Freelance*

*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

Dec 2015 - Feb 2021

*Self-Employed*

*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

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### 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, in **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

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**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

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### **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](mailto: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](mailto:jroy@scu.edu)

### **Justin Khoo**

- Position: Founder
- Employer: [ProofJump](#)
- Context: Worked for at [ProofJump](#)
- Email: [justin.khoo@gmail.com](mailto:justin.khoo@gmail.com)