

# 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

### Matchday for Hudl Wyscout

Jan 2025 - Present

- Hudl Wyscout compatible **reporting app**, **100+** aggregates, athlete **dashboards**, match review PDFs, **KPIs**.
- 100+** scout metrics, supports match, season review, player evaluation, opposition **analysis**, talent identification.

### Player Performance Outliers

Sep 2025 - Present

- 100+** Catapult, VALD, Output **KPIs**, **100+ report** pages, NCAA D1, **Python**, **NumPy**, **Pandas**, **Matplotlib**.
- Automated pipeline**, workload trends, injury risks, outliers, **Q-learning (ML)** & **XGBoost** advises next steps.

### 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, beats **monitored** baselines implemented from other research papers 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

### IEEE Wireless Communications and Networking Conference

Jan 2026

- Submission: Semantic-Aware Learning-Based NOMA User Grouping for Programmable 6G RANs

### Helene Lafrance Library Undergraduate Research Award

Jan 2026

- Submission: Semantic-Aware NOMA with Hybrid Rate Modeling and Q-Learning based User Grouping

### SCU School of Engineering Research Showcase

Jan 2026

- Submission: Semantic Aware User Grouping for 6G NOMA Networks using Q-Learning

<b>Hackworth Applied Ethics Research Grant</b>	Nov 2025
· Submission: <a href="#">How AI Biases Can Silence Certain Users in 6G Mobile Communications</a>	
<b>IEEE Consumer Communications &amp; Networking Conference Poster</b>	Oct 2025
· Accepted: <a href="#">Semantic Utility Aware User Grouping for 6G NOMA Networks (2 Page)</a>	
<b>BayLearn Machine Learning Symposium</b>	Sep 2025
· Submission: <a href="#">Semantic Aware User Pairing for 6G NOMA Networks</a>	
<b>IEEE Consumer Communications &amp; Networking Conference</b>	Aug 2025
· Submission: <a href="#">Semantic Utility Aware User Grouping for 6G NOMA Networks</a>	
<b>2FURS (Faculty-mentored Undergraduate Research) Grant</b>	Apr 2025
· Awarded in undergraduate research funding	

## Experience

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<b>Research Assistant</b>	Apr 2025 - Present
<i>Santa Clara University</i>	<i>Internship   Hybrid</i>
· Work in Wireless Intelligent Networks (WIN), <b>Reinforcement Learning (RL)</b> models for 6G wireless systems.	
· <b>Analysed 25+</b> papers, implemented <b>20+ simulations</b> , and compiled into over <b>10</b> submissions to related venues.	
<b>Teaching Assistant</b>	Sep 2025 - Dec 2025
<i>Santa Clara University</i>	<i>Part-time   Hybrid</i>
· Facilitated lectures, led practicums, and office hours for <b>61</b> students in programming paradigms (CSEN 171).	
· Developed assignments and autograders, database <b>visualizations</b> and <b>analysis</b> reveals increased scores by <b>5%</b> .	
<b>Sales Development Representative</b>	Jul 2024 - Apr 2025
<i>ProofJump</i>	<i>Part-time   Remote</i>
· Connected with <b>100+</b> professionals in the <b>SaaS, B2B</b> , and SDR industries through LinkedIn Sales Navigator.	
· Automated <b>100+</b> outreach emails to specific audiences and set up inbound & outbound routines.	
<b>Training Specialist</b>	Jul 2024 - Nov 2024
<i>Honeywell</i>	<i>Part-time   On-site</i>
· <b>10+</b> training videos on Honeywell XLS fire alarms, planned courses, worked on site at various apartment buildings.	
· Assisted instructors during training with <b>50+</b> students over <b>15</b> weeks, Honeywell Building Automation Systems.	
<b>Video Editor</b>	Feb 2021 - Jul 2024
<i>Freelance</i>	<i>Remote</i>
· Managed <b>70</b> video projects over <b>3</b> 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.	
<b>Content Creator</b>	Dec 2015 - Feb 2021
<i>Self-Employed</i>	<i>Remote</i>
· <b>170</b> YouTube content over <b>5</b> years on gaming, lifestyle, tech, video essays, montage segments, and more.	
· Hosted a podcast with <b>22</b> discussions and interviews, blogs with <b>30</b> in depth articles, compiled into a short book.	

## Projects

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<b>Football Analytics</b>	Jul 2025 - Present
· <b>50+</b> reports, player <b>dashboards</b> , match reviews via <b>Python, Excel, NumPy, Pandas, Matplotlib, Seaborn</b> .	
· <b>Reported 100+ visualizations</b> with over <b>150 metrics</b> across <b>100+</b> players, <b>500k+</b> total impressions on X.	
<b>Network Optimization</b>	Mar 2025 - Present
· Developed semantic <b>optimization</b> methods for <b>6G</b> NOMA wireless systems, <b>Reinforcement Learning (RL)</b> .	
· Modular <b>simulation</b> pipelines, up to <b>25%</b> gains over baselines, near optimal utilities, in <b>1000+</b> episodes & trials.	
<b>Personal Website</b>	Mar 2025 - Jun 2025
· Done with Netlify frameworks, <b>Astro, TypeScript, CSS</b> , and <b>JavaScript</b> , averaging <b>2000+</b> requests per week.	
<b>Benchmark</b>	Jun 2024 - Mar 2025
· Basics of <b>12</b> different languages and concepts including <b>C, C++, Java, Python, HTML, CSS</b> , and <b>Javascript</b> .	
<b>Fantasy Premier League</b>	Jan 2025 - Mar 2025
· Game in <b>C++</b> to <b>simulate</b> team drafting and weekly matchups with <b>50+</b> players over <b>10</b> 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:** Hudl, Catapult, Python, Excel, NumPy, Pandas, Matplotlib, Seaborn, ML, RL

**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: [kkattivanramamoorthy@scu.edu](mailto:kkattivanramamoorthy@scu.edu)

### **Jacob Roy**

- Position: Assistant Athletics Director, Sports Performance
- Employer: Santa Clara University
- Context: Worked with in creating [Matchday for Hudl Wyscout](#) and [Player Performance Outliers](#)
- 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)