

## Guanchen (Daniel) Du

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### EDUCATION BACKGROUND

<b>UC Santa Barbara</b>	09/2024-(06/2028)
Four-year university; Major: Computer Science; GPA: 4.0	
<b>Tianjin Nankai High School</b>	09/2020-06/2024
Grade 9-12	
<b>Knowledge-First Empowerment Academy</b>	09/2022-06/2023
Grade 11 (AP Courses)	

### JOB SKILLS

Programming experience in C++ and Python  
Familiar with all basic data structures  
Hardware hands-on experience using Arduino  
Familiar with commands in the Linux terminal and GitHub  
Can flexibly use calculus, vector calculus, linear algebra, discrete math, and differential equations in practical problems  
Strong in logic  
Capable of using Microsoft Office effectively and skillfully  
Strong leadership experience  
Strong execution ability  
Fast learner  
Bilingual speaker of English and Mandarin

### COMPUTER SCIENCE COURSES

<b>ECE 3: INTRODUCTION TO PYTHON PROGRAMMING (Python)</b>	Freshman Year
<b>CMPSC 16: PROBLEM-SOLVING WITH COMPUTERS I (C++)</b>	Freshman Year
<b>CMPSC 24: PROBLEM-SOLVING WITH COMPUTERS II (C++ &amp; DATA STRUCTURES)</b>	Freshman Year
<b>CMPSC 40: FOUNDATIONS OF COMPUTER SCIENCE (DISCRETE MATH)</b>	Freshman Year

### MATH COURSES

<b>AP CALCULUS BC</b>	Grade 11
<b>MATH 4A: LINEAR ALGEBRA WITH APPLICATIONS</b>	Freshman Year
<b>MATH 4B: DIFFERENTIAL EQUATIONS</b>	Freshman Year
<b>MATH 6A: VECTOR CALCULUS</b>	Sophomore Year

### RESEARCH

#### 2023 CIS (Cathaypath Institute of Science) Summer Program: Wireless Communications System Design

Grade 11

25 hours/week, 7 weeks/year

Advisor: Prof. Danijela Cabric, University of California, Los Angeles

- Learned the design and applications of wireless communications systems in 5G and Internet of Things technologies through one-week lectures and two-week field group research
- Collaborated with group members on a problem of precise location services for airport luggage management, detection, and recovery system; developed and implemented the localization algorithm based on Chan approach that can analytically solve the position based on several TDOA measurements

- Scored A+ and completed the joint paper *UL-TDOA Airport Baggage Positioning System Based on UWB and Wi-Fi Technologies*, which has been accepted by the 2023 2nd International Conference on Informatics, Networking and Computing (ICINC 2023)

## TEACHING & TUTORING EXPERIENCE

**Voluntary Tutor - High School Mathematics, Sciences, and Computer Science (C++)** Grade 12 – Present  
3 - 4 hours/week, 20 – 25 weeks/year

- Tutor students in mathematics (algebra, calculus, statistics), physics, and chemistry, including AP-level coursework
- Teach C++ fundamentals and core data structures to peers preparing for advanced coursework
- Design lesson plans, practice problems, and review sessions tailored to meet the individual needs of each student
- Improve student performance and confidence through one-on-one and small-group instruction
- Develop teaching, leadership, and communication skills by guiding peers through challenging concepts

## ACTIVITIES

**Arduino-based Automatic Delivery System** February 6 – March 17, 2025

Group Leader

5 hours/week, 6 weeks

Advisor: Prof. Joao Hespanha

- Collaborate with two group members to develop an Arduino-based, wireless automatic delivery system using two Arduino boards, one for transmitting commands and the other for receiving and processing these commands on a mobile car platform. Designed for contactless delivery, the system included an ultrasonic sensor for item detection and a servo motor for automatic dispensing
- Showcased the project at the Science Fair held in ESB 1001 from 6 to 9 pm, March 13, 2025
- Gained hands-on experience in programming in C++ (Arduino IDE), teamwork, leadership, and hardware designing

**SB Hacks XI**

January 11 – 12, 2025

Participating Member

24 hours

- Designed a game called Eggventure in a team of two students during a 24-hour hackathon at UCSB, involving participants from many California and Texas universities
- Utilized Python for the whole game programming, with libraries Pygame, Random, Time, and Math
- The folder was uploaded to GitHub, and the video on YouTube
- [https://github.com/DanielDu-735/Eggventure\\_SB\\_HACKS\\_XI/tree/47b17db89a54e6041ab9b109b312332366ba0ef8/SB\\_HACKS\\_XI](https://github.com/DanielDu-735/Eggventure_SB_HACKS_XI/tree/47b17db89a54e6041ab9b109b312332366ba0ef8/SB_HACKS_XI)
- <https://youtu.be/N81tsbvZ0oY?si=iBdUwvbhhPmKPEFh>
- Demonstrated the game and code to several professors and senior managers from different companies
- Gained experience in teamwork and rapid development skills

**Engineers Without Borders, UC Santa Barbara**

Freshman Year

Technical Member

2 hours/week, 25 weeks/year

- Working in a group, designing a charging table with an electricity supply from solar energy, combining hardware

technology with software technology

- Gained experience in teamwork, compatible designing, circuit logic, and software programming experience

### **Society of Asian Scientists & Engineers, UC Santa Barbara**

Freshman Year

Technical Member

1 hour/week, 20 weeks/year

- Share the experiences of being an engineering student; help each other with both major-related and other interesting problems; discuss the blueprint of designing ideas within this society

### **Advocacy for All Animals, UC Santa Barbara**

Freshman Year

Member

1 hour/week, 30 weeks/year

- Effect changes through education, outreach, and advocacy for animal rights, health, and the environment

### **Student Union**

Grade 10-12

Secretary of Art Department

3 hours/week, 30 weeks/year

- Took charge of writing speeches and proposals for school activities; acted as the host of the chorus and drama festival; controlled the whole process

### **Leyu Sports Club**

September 2020 - Now

Badminton Player

10 hours/week, 52 weeks/year

- Play badminton for over ten years; actively take part in training and games at the club; share with new club members how to improve skills

### **Playing the Piano**

July 2013 - Now

Performer

8 hours/week, 52 weeks/year

- Play the piano for over ten years; take piano lessons for an hour each week; practice for an hour every day; actively participate in piano recitals and contests
- After entering university, regularly post videos of playing the piano on YouTube (@DanielDu-431)

## **COMMUNITY SERVICE**

### **White Paper on 2022 High School Students' Public Welfare Practice**

Grade 11

2 hours/week, 11 weeks/year

- Finished research and planning projects; issued questionnaires to investigate the participation of middle school students in community service

### **Chinese Association of Life Care**

Grade 10

2 hours/week, 2 weeks/year

- Donated money and books for the poor students in Gansu Province; understood their education and life situation to offer support and encouragement

## HONORS & AWARDS

• Dean's Honors (ENGR)	Freshman Year
• National Gold (Division 2) in the Thirty-Seventh Annual AAPT Physics Bowl Contest	Grade 11
• National Top 10 (Division 2) in the Thirty-Seventh Annual AAPT Physics Bowl Contest	Grade 11
• Global Top 100 (Division 2) in the Thirty-Seventh Annual AAPT Physics Bowl Contest	Grade 11
• Certificate of Distinction of 2022 American Mathematics Competition	Grade 11
• Certificate of Participation of 2023 American Invitational Mathematics Examination	Grade 11
• AP Scholar with Honor Award	Grade 11
• Second Place of 2023 Tianjin Nankai High School “Five Tigers Cup” Basketball Game	Grade 11
• Top Gold of Math Kangaroo	Grade 10
• Third Prize of 2022 Tianjin 11th Piano Competition Non-Professional Youth Group B	Grade 10
• The Title of Outstanding Student Cadre at Tianjin Nankai High School	Grade 10
• The Title of Elite Athlete at Leyu Sports Club	Grade 10
• Recognition Award in Tianjin Nankai High School 2022 “Reading Inherits Culture and Book Nourishes Life” Campaign for Articles	Grade 10