

# Shun Guo (Sean)

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## EDUCATION

**Duke Kunshan University (DKU) & Duke University** **Kunshan, China & Durham, USA**  
*B.S. in Applied Math & Computational Science - Math Concentration* **Sep 2019 - Dec 2023**

- **GPA: 3.454 / 4.0**
- **Major Coursework:** Calculus, Multivariable Calculus, Prob & Stats, Complex Analysis, Linear Algebra, Advanced Linear Algebra, Intro Programming & Data, Numerical Analysis, Real Analysis, ODE & Dynamical Systems, Intro Applied Math, Intro PDE, Math of Machine Learning, Math Modeling, Data Structure, Stochastic Process, Algorithm and Database.

**Duke University** **Durham USA**  
*MEng in Fintech* **Aug 2024 - May 2026**

- **GPA: 4.0 / 4.0**
- **Major Coursework:** Programming for Fintech, Fin Inst Products and Services, Software Engineering for Fintech, Machine learning for Fintech, Asset Pricing

## COMPUTER SKILLS

**Programming languages:** Python (advanced), Java (intermediate), C/C++ and SQL (SQLite).

**Tools & OS:** Mathematica, MATLAB, Photoshop, Premiere Pro, Illustrator, Maya, Markdown, and LaTeX; Windows, Linux-Debian, and MacOS.

## PROFESSIONAL EXPERIENCES

**Tenneco, Inc.**, Hardware Driver Engineer | Intern | Supervisor: Mazon Chen **March- Jun 2024**

- Develop a PID algorithm to control the urine pump in the Selective Catalytic Reduction with C programming language.
- Helped test and debug the controller for the urea pump in their post-processing system.
- Help developed sign in system for the HR department with FastAPI and Vue.

**CITIC Securities**, *Analyst & fintech developer* | Onsite internship | Supervisor: Minghua Shen & Zhenyu Xu **Jul- Aug 2022**

- Developed a data crawler in Python to acquire company data with recent private placement plans daily.
- Developed a chatbot on Wecom using the Nonebot asynchronous messaging framework to send daily results to my supervisor.
- Collected data from listed companies in CSI 1000 Index with Choice API to analyze their stock performances.
- Drafted reports based on analyses on business and shareholder compositions, market, capital operations, and industrial chain.

**Google LLC**, *Data Engineer* | Remote part-time assistant | Supervisor: Helen Chen **Jul- Aug 2022**

- Cleaned customer-advertisement-related click and consumption data and concatenate them into an SQLite database.
- Created sub-tables sorting by customer and advertisements demographic data for further market analysis.
- Labeled data with RFM model and created clusters by price using K-means, analyzed the customer and advertising structure.

**CICC**, *Quantitative Analyst & Developer* | Remote part-time assistant | Supervisor: Huajie Chen **Jun- Jul 2021**

- Acquired, analyzed, and visualized historical transaction data within the CSI300, CITIC Primary Industry, SZSE Component, SSE SME Composite Index to evaluate market performances in Python, and detected the Calendar Effect.
- Created an analytical module that could evaluate the performance of a given list of public offering funds in Python.

## PROJECTS & EVENTS

**Hack Duke 2025** **Feb 2025- Feb 2025**

- Created backend APIs for the Hackathon project using Django, including functions of accessing stock data and metadata with Yahoo finance and Alphavantage API, calculating financial ratios for company, fetching stock news of a chosen period, and auto-generating report with OpenAI API.
- Fixed bugs and design issues in the React.js frontend. Optimized the frontend system to improve the reaction speed.

**North Carolina business study for NC Bankers Association** **Oct 2024- Dec 2024**

- Accessed data with web scratching technology powered by selenium in Python. Over 300k lines of business data are obtained.
- Analyzed the data based on their number of employees and annual sales. Calculated related statistics and visualized them on map with Geoplot. Stratified businesses for deeper insight.

**Chatbot development based on BERT NLP prediction and VITS audio synthesizing** | A school research **Aug 2022- May 2023**

- Built a cross-platform chatbot based on Nonebot using BERT for NLP prediction and VITS for audio synthesizing.
- Improved the extendable chatbot framework with basic function of receiving and sending messages.
- Collected languages corpus data for VITS training, cleaned and transferred the English model for Chinese and Japanese.

**Numerical PDE** | A summer group seminar **Jun 2022 - Aug 2022**

- Targeted to solve a 2- or 3-dimensional Heat Equation with Dirichlet Boundary Condition and no analytical solutions.
- Solved 1-dimensional Poisson equation numerically with Dirichlet, Neumann and mixed Boundary Conditions verified its accuracy with analytical solutions. Reduced the algorithm time complexity to  $O(N)$  using the Thomas algorithm. Solved 2-point boundary value problem with Newton's method. Solved a 2-dimensional elliptical equation using 5- and 9-point stencils.

**Audio and Image processing using the Fast Fourier Transformation (FFT)** | A school lab project **Nov 2020 -Dec 2021**

- Built an analog audio system in Python using SCIP and NumPy to have realized noise reduction works by using FFT.
- Studied the algorithm by analyzing the application FFT used in audio and image processing with Julia FFTW and WAV.
- Established a high-pass filter that could pass certain signals with cutoff frequencies and be used for future audio processing.

## EXTRACURRICULAR ACTIVITIES

**Founder & Finance Manager** (*ACG Club of DKU*): Connected external sponsors, organized club activities **Feb 2020 - present**

**Member & Debater** (*Debate Club of DKU*): primary debater in 10+ events, peer-tutor and member recruiter **Sep 2019 - present**

**Member** (*Committee of Artistic Music Festival of DKU*): coordinated musicians, assisted during concerts **Dec 2019 - Feb 2020**

## OTHER INFORMATION

**Languages:** Chinese Mandarin (native), English (proficient), and Japanese (conversational).

**Certificates:** Machine Learning (by *Stanford*); Python Data Structure; Computer Science: Algorithms, Theory, and Machines; Computer Science: Programming with a Purpose (by *Princeton University*), Moral Foundations of Politics (by *Yale*). CFA Lv2. Candidate.

**Personal Interests:** logic studies, debate, graphic design and illustration, web design, and modding for games.