

# Songgun Lee

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## CONTACT INFORMATION

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Santa Barbara, CA 93106

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## RESEARCH INTERESTS

Quantum Computing, Quantum Simulation, Computational Physics, Quantum Algorithms, Statistical Mechanics, Data Analysis, Signal Processing.

## EDUCATION

University of California, Santa Barbara, Santa Barbara, CA 06/2027  
Bachelor of Science in Physics, GPA: 3.6  
Relevant Coursework: Computational Physics (Python), Linear Algebra, Differential Equations, Vector Calculus, Physics Laboratory, Special Relativity, Classical Mechanics, Quantum Mechanics.

## AWARDS

3<sup>rd</sup> Place Award, UC Santa Barbara New Venture Competition 2025  
1<sup>st</sup> Place Award, Technology Management Program Market Validation Award 2025

## SKILLS

Programming: Python (NumPy, SciPy, Pandas, Matplotlib), JavaScript, Bash/Shell Scripting, MATLAB, LaTeX

Systems & Tools: Linux/Unix CLI, Git, TCP/IP Socket Programming, Multithreading, Raspberry Pi (GPIO/I2C)

Signal Processing: FFT/Spectral Analysis, Power Spectral Density (PSD), Time-Series Analysis, Monte Carlo Simulations, Numerical PDE Solvers

Core Competencies: Object-Oriented Software Design, Hardware-Software Integration, Test & Measurement Systems, Scientific Data Validation, Algorithm Development

Languages: Korean (Native), English (Fluent)

## PROFESSIONAL EXPERIENCE

**Co-Founder** 11/2024 - 01/2025  
*oxy444, Seoul, Republic of Korea*

I spearheaded data-driven market research for oxy444's inaugural exhibition in Seongsu, Seoul's premier art district. By conducting statistical analysis on audience demographics and engagement trends, I directed the production of targeted digital content that significantly boosted online interaction. I engineered the Go-To-Market strategy for the summer exhibition featuring original photography, utilizing predictive analytics to optimize visitor turnout and sales conversion.

**Co-Founder** 10/2024 - 07/2025  
*Masterminding, Santa Barbara, CA*

I led the data strategy for an AI EdTech startup, conducting over 40 structured validation interviews to pinpoint high-friction customer pain points. I architected the Business Model Canvas and verified product-market fit through A/B testing on learning modalities, which secured 10 pilot school contracts. I developed dynamic financial models for unit economics and revenue forecasting using sensitivity analysis, directly contributing to our 3rd place finish in UCSB's New Venture Competition against 50+ teams.

**Operations and Quality Control Assistant** 05/2024-09/2024  
*Maison de Celine, Busan, Republic of Korea*

I engineered a custom "Inventory Verification System" using Python and Raspberry Pi, implementing an event-driven architecture with O(1) hash map optimization to eliminate manual tracking errors. I conducted deep-dive data auditing on shipping workflows to identify "invisible" revenue leakage, diagnosing high-frequency error zones and implementing protocol adjustments that reduced mis-delivery rates by 80%. Additionally, I restructured fulfillment teams to replace low-agility workflows, increasing order processing speed by 15%.

**Field Direction Center Squad Leader**

08/2022–02/2024

*Republic of Korea Army, 1st Infantry Division*

I commanded a Fire Direction Center in a Forward Edge of Battle Area, responsible for high-precision ballistic calculations where decimal errors posed direct threats to safety. I developed a novel calculation algorithm for High-Explosive rounds that reduced target acquisition time by 60%, drastically increasing squad survivability. I authored the now-standardized "4.2-inch Mortar FDC Field Manual," institutionalizing this faster protocol. During operations, I managed real-time data transmission while leading 20-mile tactical marches with 100+ lbs of gear under simulated combat stress.

**Academic Instructor**

2021–2022, 03/2024–09/2024

*Seoul Language Institute, Busan, Republic of Korea*

I delivered advanced instruction in Physics, Linear Algebra, and Calculus, translating abstract mathematical theories into practical analytical frameworks for high school students. I was promoted to Head of Teaching Assistants to restructure the internal support system, implementing new workflow protocols that significantly improved grading efficiency. I mentored students in analytical thinking for SAT Math and STEM subjects, fostering the critical problem-solving skills required for higher-level engineering education.

PUBLICATIONS

- S. Lee, D. Lee (2023) *4.2 inch Mortar FDC Field Manual for HE and Training Ammunition* <sup>1</sup>
- S. Lee (2024) *Comprehensive Security Protocols for Guard Post Operations* <sup>2</sup>

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<sup>1</sup>Classified Document: Available only to personnel with Level 2 Security Clearance in the ROK Military.

<sup>2</sup>Confidential Document: Distributed to all Guard Post personnel in the ROK Army.