

Sangman Lee, PhD

sangman.math@gmail.com | LinkedIn | Personal Website

Boulder, CO, USA | Eligible for F-1 OPT/STEM OPT (can work up to 3 years without visa sponsorship).

Education

University of Colorado Boulder PhD in Mathematics	2026
California State University, Northridge BS in Mathematics; Minor in Computer Science	2017

Projects

Dissertation, University of Colorado Boulder <i>Computational Complexity of the Subpower Intersection Problem for Semigroups</i>	2026
- Designed polynomial-time algorithms for a decision problem in computer algebra, proving correctness using graph theory and reductions to simpler algebraic structures. - Determined the structural conditions under which the problem is polynomial-time solvable, NP-complete, or PSPACE-complete for several families of finite semigroups. - Built a Python backtracking search over finite Cayley tables, using automated checks while pruning invalid and duplicate structures.	

Personal Website	2026
Built sangmanlee.com with Astro and configured automatic CI/CD from GitHub to Cloudflare Workers Static Assets.	

Independent Bot Deployment Project	2022 and 2024
- Integrated REST APIs and asynchronous WebSocket streams into a long-running Python application, adding automatic restart, graceful shutdown, and exception handling. - Coordinated concurrent tasks with asyncio locks, events, and semaphores to reduce race conditions, avoid API rate-limit errors, and verify stable request processing. - Built binary executables for Amazon Linux using Docker, then deployed the application to AWS EC2.	

Experience

Instructor, University of Colorado Boulder	2018–2022 and 2025–2026
Teaching Assistant, University of Colorado Boulder <i>Calculus I, II, and III (single-variable and multivariable calculus)</i>	2017 and 2024
- Adapted explanations to students' needs and current understanding, using analogies and multiple approaches to clarify underlying ideas and motivations. - Collaborated with instructors across multiple course sections to align pacing, assessments, and grading standards.	
Mandatory Military Service, South Korea	2022–2024
Served in the Fire Direction Center of a field artillery unit.	
- Calculated firing data from coordinates and ammunition requirements under time pressure. - Created a shared spreadsheet for the unit to manage scheduling, equipment inventory, and searchable personnel status records under resource constraints and military information security policies. Updated it with unit members' feedback to fix bugs and improve usability.	