SeungJu Lee

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Education

Northwestern University — Evanston, IL
Double Major in Mathematics and Computer Science, Minor in Data Science — *Sept. 2021 - June 2025*

Marianas High School — Saipan, MP
Salutatorian — *August 2017 – May 2021*

Experience

Direct Reading Program — December 2022 – June 2025
Mentored by Adam Holeman — ***Northwestern University**, Evanston, IL*
- Gained a comprehensive understanding of manifolds and studied Hamiltonian flow within geodesics on a manifold
- Wrote a senior thesis on Curve Shortening Flow and Mean Curvature Flow
- Textbooks: Introduction to Manifolds by Loring Tu, Lecture Notes from Grad Students

Undergraduate Research — December 2022 – June 2025
Mentored by Professor Gábor Székelyhidi — ***Northwestern University**, Evanston, IL*
- Studying various curvature flows, including mean curvature flow and curve shortening flow, and their applications in geometric analysis.
- Textbooks: Extrinsic Geometric Flows by Ben Andrews, several other papers written by Gage and Hamilton
- You can find my senior thesis here

Northwestern University Math Society (NUMS) — September 2022 – June 2025
Student Run Organization — ***Northwestern University**, Evanston, IL*
- Attended weekly meetings featuring guest lectures from faculty members at Northwestern and visiting professors from other institutions, covering topics related to their current mathematical research.

Preliminary Arizona Winter School — Sep 2024 – Nov 2024
PAWS (NSF-funded virtual program) — *Virtual*
- Learned Symmetries of Root Systems, exploring the classification of root systems, Dynkin diagrams, Weyl groups, and their applications to Lie theory and the Langlands program
- Participated in weekly problem-solving sessions and discussions led by graduate mentors, engaged with advanced topics at the intersection of representation theory, algebra, and number theory

Summer Independent Study — May 2023 – Sep 2023
Directed by Professor Jared Wunsch — *Virtual*
- Studied spectral and scattering theory on quantum graphs, focusing on the behavior of quantum particles on networks of edges and vertices
- Textbooks: Introduction to Quantum Graphs by Berkolaiko

Lean Theorem Proving Project — November 2021 – April 2022
Directed by Professor Apurva Nakade — ***Northwestern University**, Evanston, IL*
- Utilized Lean to prove theorems in graph theory, studied the formalization of mathematical concepts.
- Introduction to Graph Theory by Wilson

Stanford Pre-Collegiate University — June 2020 – Sep 2020
Directed by Professor Margarita Kanarsky — *Virtual*
- Completed Stanford University's Pre-Collegiate Program in Number Theory

Pioneer Academics — June 2020 – Sep 2020
Mentored by Professor Gregory Dresden — *Virtual*
- Conducted original research through the Pioneer Academics Program on continued fractions whose entries are drawn from the Pascal, Fibonacci, and Lucas sequences
- Made contributions to Online Encyclopedia of Integer Sequences(OEIS) entries A337521 and A135829.

Hampshire College Summer Studies in Mathematics — July 2020 – Aug 2020
Held online due to pandemic — *Virtual*
- Selected to attend the Hampshire College Summer Studies in Mathematics (HCSSiM), a rigorous 6-week proof-based program focused on advanced mathematical thinking, problem-solving, and collaboration
- Participated in intensive daily sessions, interactive problem sets, and mathematical exploration guided by faculty and peers