

# Sean Fang

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## Education

- 2022–Present **The International Baccalaureate (IB) Diploma Programme**, *Pensacola High School*, Pensacola, FL, USA
- Weighted GPA: 5.03   Unweighted GPA: 3.98/4.0
  - SAT: 1550; ACT: 36

## Honors

- 2021, 2022 **MathCounts Competition**, first place (Northwest Florida region)
- 2022, 2023 **American Math Competition (AMC) 10**, first place (regional)
- 2024 **American Math Competition (AMC) 12**, first place (regional), AIME qualifier
- 2024–2025 **The Commissioner's Academic Challenge Team**–Escambia County All-Star
- 2025 **Florida Sunshine Scholar** – Top STEM student statewide
- 2025 **Semifinalist**, National Merit® Scholarship Program

## Research Experience

**Research Assistant, Mathematical Intelligence and Neural Dynamics (MIND) Lab, University of West Florida (UWF), Supervisor: Dr. Shusen Pu.**

- Summer 2024 Co-authored a peer-reviewed study (*Mathematica Slovaca*, 2025) proposing the RB-TL-EHL-G statistical distribution for reliability and biomedical data modeling, visualized probability density, hazard rate, and survival curves using Matplotlib and ggplot2.
- Fall 2024–Present Used machine learning algorithms to discover short-range orders (SRO) in medium entropy alloys (MEAs). Developed the Python codes to predict the SRO in alloys by modeling effective pair interactions. Analyzed atomic interactions and chemical motifs within alloys.
- Summer 2025 Formulated the mathematical structure of the newly proposed Kumaraswamy Exponentiated Odds Ratio (K-EOR) distribution family. Contributed to manuscript writing and technical proofreading for all major sections, ensuring mathematical rigor and clarity.

## Publications and National Presentations

- 2025 B. Oluyede, L. Schröder, **S. Fang**, A. Cohen, T. Moakofi, Y. Zhang, and S. Pu. Advancing Reliability and Medical Data Analysis Through Novel Statistical Distribution Exploration. *Mathematica Slovaca*, 75(1):225–242
- 2025 **S. Fang**, C. Fang and S. Pu. The Kumaraswamy Exponentiated Odds Ratio Family: Mathematical Insights and Practical Applications. *In press*
- January 9, 2025 **Contributed Talk**, *Data-driven Analysis of Chemical Short-range Order-Property Correlations in Multi-principal Element Alloys*, Joint Mathematics Meetings, Seattle, WA
- August 9, 2025 **Poster Presentation**, *The Kumaraswamy Exponentiated Odds Ratio Family: Mathematical Insights and Practical Applications*, Mathematical Association of America MathFest, Sacramento, CA

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## Leadership and Activities

- 2022–Present **State team member, Academic Team**  
A trivia-focused club that competes in the National Academic Quizbowl Tournament, requires knowledge of math, science, history, and literature. Escambia County All Star Team member, qualified for national competition NAQT (336 teams), semifinals in state competition (34 teams) (Spring 24)
- 2022–Present **Vice President, Science Olympiad**  
A club that competes in Science Olympiad, a competition involving various STEM subjects in both knowledge and build events. Placed in the Science Olympiad regional competitions in Cryptography, Disease Detectives, and Anatomy. Organize two fundraiser events per year.
- 2024–Present **Vice President, Mu Alpha Theta**  
Lead the group to prepare and organize Pi Day and AMC 10/12; tutor 20 teammates; won 1st locally in AMC 10/12 (22-24); AIME qualifier (24)
- 2024–2025 **Summer School Programs at UWF**
- STA 4031 Math/Stat I, A (Summer 2024)
  - MAP 2023 Differential Equations, A (Summer 2025)
  - MAS 3105 Linear Algebra, A (Summer 2025)
- 2022–2024 **Competitor, Member, Engineering Club**  
Built BEST Robotics bot; competed at state/national levels; responsible for robot design, robot testing, and robot operation.
- 2024–Present **Co-organizer/Tutoring, STEM Outreach, CAS (Creativity Activity Service)**  
Co-organize STEM projects, create resources and promote STEM to younger students, provide tutoring, and create useful resources.
- 2025–Present **Member, Future Business Leaders of America (FBLA)**  
STrain for FBLA competitive events, attend leadership conferences to network with peers, strengthen business, leadership, creative problem solving.
- 2022–2023 **Violin Solo Performance at UWF**  
Solo performances in November 2022 and May 2023.
- 2018–2023 **Swim Team, USA Swimming Member**  
White team member at the Greater Pensacola Aquatic Club (GPAC).
- 2023 - 2024 **Volunteer**  
Volunteered at the MESS Hall. Set up and maintain exhibits and kits. Hosted two events for children to learn and enjoy STEM topics. Volunteer at the Pensacola Art Festival to set up and prepare the art exhibition.

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## Skills

- Piano 10+ years of training and performance experience
- Violin 8+ years of training and ensemble participation, supervisor: Dr. Leonid Yanovski
- Computer Python (scikit-learn, numpy, pandas, Matplotlib), R, Matlab,  $\text{\LaTeX}$