

# Ellen Kolesnikova

Decatur High School, Decatur, GA, USA

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## Summary

HS senior. CS+math: AI, cryptography, digital humanities, building systems to help people.

## Selected Honors, Awards, Qualifications

- Georgia Governor's Honors Program (GHP). Selected one of 19 GA high school students to participate as CS major in 4-week residential academic camp. Summer 2024
- NCWIT Aspirations in Computing GA Winner, 2025
- National Merit Semifinalist, 2026 (1520 PSAT)
- Georgia Tech *on-campus* Dual Enrollment (1 out of ~20 HS students), 2025-26
- AIME qualifier, 2025
- 1580 SAT (800 math) in 9th grade. 1580 SAT (800 math) in 11th grade.
- Winner, MYSO Atlanta concerto competition; soloist with MYSO Atlanta. 2022
- Concertmaster, Georgia All State Middle School orchestra. 2022
- Asst concertmaster, principal 2nd vln, Emory Symphony Youth Orch. 2024-25, 25-26
- Principal 2nd violin in 11/12 full orchestra GMEA all state, 2025

## Publications

Online CS bibliography (incomplete): [DBLP](#), [Google Scholar](#)

1. *Edge AI for Real-time Fetal Assessment in Rural Guatemala*. Nasim Katebi, Mohammad Ahmad, Mohsen Motie Shirazi, Daniel Phan, **Ellen Kolesnikova**, Sepideh Nikookar, Alireza Rafiei, Murali K. Korikana, Rachel Hall-Clifford, Esteban Castro, Rosibely Sut, Enma Coyote, Anahi Venzor Strader, Edlyn Ramos, Peter Rohloff, Reza Sameni, Gari D. Clifford.

In **ML4H 2024** (Machine Learning for Health Symposium); Spotlight Demo. Dec 2024.  
[Paper](#). [Presentation](#).

2. *Pin the Tail on the Model: Blindfolded Repair of User-Flagged Failures in Text-to-Image Services*. Gefei Tan, Ali Shahin Shamsabadi, **Ellen Kolesnikova**, Hamed Haddadi, Xiao Wang.

To appear in **NeurIPS 2025**; Dec 2025.

3. *Computational Analysis for Authorship Attribution: A Study of The 'Passio et miracula S. Edwardi regis et martyris'*. Juliana Viezure, Jacob Young, **Ellen Kolesnikova**.

In submission to **Interfaces**, a journal of medieval European literatures

## Selected Coursework

- AP: Stats (5), CS A (5), Calc BC (5), US History (5), Physics C (5), US Gov (5), World History (4), Lang (5)
- DE at Georgia Tech: **11th grade** MATH1554 - Linear Algebra, MATH2551 - Multivariable Calculus, CS1331 - Object Oriented Programming; **12th grade (on-campus)** - MATH3012 - Applied Combinatorics, RUSS1001 - Elementary Russian, BIOS 1107/1107L - Biological Principles

## Research Experience

- Intern: Emory University. 2023-25

Advisor: Gari Clifford.

Project: Safe+Natal: AI pregnancy monitoring in rural Guatemala. Joint project of Emory University and Wuqu' Kawoq Maya Health Alliance (Guatemala). Develop a simple-to-use AI-enhanced system that enables rural midwives from Mayan communities in Guatemala to conduct basic pregnancy monitoring, and to refer patients to hospitals as needed.

Integrated with Guatemalan hospitals, it has reduced maternal mortality from one of the highest in the Western Hemisphere to nearly zero!

My role: lead work on AI software to transcribe blood pressure readings. Collaborate with Emory advisors and students, Guatemalan midwives and doctors. 1 published paper+1 in preparation.

- Intern: Northwestern University. 2024-25

Advisor: Xiao Wang.

Project: Research on privacy-preserving AI fairness (bias removal via secure finetuning).

Setting: a private pre-trained model may be biased, e.g., it only generates images of men (not women) in leadership positions. Goal: use an external party's advice (also private) to fine-tune the model to eliminate specific bias.

Paper accepted to top-tier conference (NeurIPS 2025)

- Intern: Georgia Tech. 2025

Advisor: Juliana Viegure.

Project: Use AI, traditional analysis, and stylometric analysis to determine authorship of a medieval Latin text. Our work proposes, with compelling evidence, an author for this text, disproving a previous authorship attribution. I was in charge of the idea, implementation, and write up of the AI section. Paper in submission.

## Leadership and Service

- Founder and co-president of the Decatur High School Math Club in 9th grade
  - This club focuses on preparation for high-level math competitions such as AMC and Math League. About 50% of club members are girls.
  - Recognized as a top-scoring school in the state-wide Math League competition, with two students recognized as individual top-scorers. Two club members AIME qualified; one ranked 1st in GA and 4th nationally in Trig Star competition.
- Center co-Manager, Math Kangaroo 2026
  - Organize and manage Math Kangaroo testing center (with teacher) based in Decatur High School
  - K-12 math competition
- Violin performances for various community and school events, such as fundraisers and awards ceremonies.

## Selected Audited Courses and Miscellaneous Projects

- Harvard CS50, CS50 AI; ASU CSE365 Intro Info Assurance; Georgia Tech CS7641 Machine Learning, CS8803 Secure Multiparty Computation, CS6270 Intro to Blockchain.
- Write-up summaries and video on Zero-Knowledge Proofs and AI

## Music

- 3 years Atlanta Symphony Youth Orchestra (ASYO) 2022-23, 23-24, 25-26
- 2 years Emory Youth Symphony Orchestra (EYSO), 2024-25, 25-26
- 3 years Atlanta Metropolitan Youth Symphony Orchestra (MYSO), 2019-2022
- 1 year Georgia Youth Symphony Orchestra (GYSO), 2018-2019
- 5 years Georgia All State Orchestra (2021, 22, 23, 24, 25)
- 2 years Renfroe Middle School Orchestra (Decatur GA) (2020-2022)
- 4 years Decatur High School Orchestra (2021-present)
- Violin with Agnes Scott Collegiate Chorus, Decatur HS Chorus (2022, 23)
- 2 years Agnes Scott Community Orchestra (assistant concertmaster)

## Art

- Designed logos for cryptography conferences:  
Crypto 2021, 22, 24, CFAIL 2022, 23, 24, 25, PKC 2023.

## Miscellaneous

- English (native), Romanian (fluent), Russian (basic), German (basic)
- Math Kangaroo K-12 yearly participant and frequent top-three winner in GA and nationally
- 2nd in state for GMTA competition (1st alternate for strings competition), 2023
- Finalist in junior category in SVA violin concerto competition, 2025
- 1st (2025, \$500) and 2nd (2024, \$200) place winner in Decatur HS STEM fair