

# Alexandra J. Marx

Email: [ajjmarx@umich.edu](mailto:ajjmarx@umich.edu)

734-730-4398

Ann Arbor, MI, USA (Willing to relocate)

LinkedIn: [linkedin.com/in/alexandra-marx-85622a242](https://linkedin.com/in/alexandra-marx-85622a242)

GitHub: [github.com/AjjMarx](https://github.com/AjjMarx)

Blog and Portfolio: [ajjmarx.github.io/](https://ajjmarx.github.io/)

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## Education:

**University of Michigan**, Ann Arbor, MI (Jan. 2025 – Dec. 2027 Expected)

- BS Computer Science
- BS Mathematics: Mathematical Sciences (Biology)
- Fall 2025 GPA: 3.5, Cumulative GPA: 2.8

**Washtenaw Community College** (Sept. 2022 – Dec. 2024 Transfer)

- GPA: 3.7, Dean's list (2024)

## Experience:

**Software Eng. Research: Undergraduate Research Opportunity Program** (Sept. 2025 – Present):

- *Reinventing Programming in Social Studies, Mathematics, and Language Arts Classes*
- Principal Investigator: Prof. Mark Guzdial, Director of PCAS at Michigan
- Role: Developing a **Graph Theory Educational Programming Language** for use in schools.
  - > Engineered native JavaScript code to generate and execute drag-and-drop SVG programming blocks.
  - > Developed WebGL graphics pipeline and equations to render interactive 3D textured globe.
  - > Documented research process for locating entry points for lessons and ideal pedagogy in design.

Code: [github.com/AjjMarx/TeaspoonGraph](https://github.com/AjjMarx/TeaspoonGraph), interactive Demo: [ajjmarx.github.io/TeaspoonGraph/](https://ajjmarx.github.io/TeaspoonGraph/)

**Course Research: Lab of Geometry at Michigan (LOG(M), MATH 440)** (Jan. 2026 – Present):

- *Exploring Domains of Discontinuity in  $\mathbb{R}^3$*
- Faculty Advisors: Alejandro Bravo-Doddoli, Neza Zager Korenjak
- Team-based computational mathematics research into dynamics of 3D linear transformations.

**Volunteer: Girls in Electrical Engineering and Computer Science** (Sept. 2025 – Present)

- Collaboratively designed and taught a lesson in introductory computer science to several groups of 40-50, mostly female, elementary and middle school students.

**Volunteer: Math Corps Tutoring (University of Michigan)** (Nov. 2025 – Present)

- Weekly mathematics tutoring for middle school students at Ypsilanti Community Middle School.

**Employment: Food Service (Multiple Roles)** (2022, 2024 – 2025)

- Prepared food in a high stress, hierarchical, and diverse environments. Maintained a clean kitchen.

## Additional Projects:

**Personal Site/Tech Blog**: (Sept. 2025 – Present)

- Single page application (SPA) written in HTML5, JavaScript, and CSS.
- Engineered animated webpage transitions between any two pages while preserving URLs.
- Developed abstraction layer to define safe, aesthetically pleasing, webpages with JSON.

Code Repository: [github.com/AjjMarx/ajjmarx.github.io](https://github.com/AjjMarx/ajjmarx.github.io)

**3Blue1Brown Summer of Math Exposition #2: Math Explainer Competition (SoME2)**:

- Wrote, voiced, and animated 25-minute 3D animated video in Blender explaining intuitive geometric principles behind Voronoi Diagrams and Fortune's Algorithm.
- Programmed automated processes for rendering complex concepts with then-new Geometry Nodes.
- Achieved >11,000 Views and over 600 likes, YouTube: [https://youtu.be/L\\_joQb12QSE](https://youtu.be/L_joQb12QSE)

**3-Dimensional Polyhedral & Developable Surface Paper Art (Published)**:

- Designed and translated numerous complex, artistic, 3D models into respective flat 2D un-foldings to fit within hardware constraints and be easily re-folded into original designs.
- Seen by over 240,000 users, generated over \$11,000 in ad revenue.

## Skills:

**Programming**: C++ | JavaScript | Lua | Python | HTML/CSS | WebGL | GLSL | Unix Command Line

**Computer Science**: Algorithms | Data structures | Graphics | Unit & Integration testing

**Applied Math**: Linear Algebra | Differential Equations | Discrete Math | Numerical methods

**Pure Math**: Real analysis | Abstract Algebra | Dynamics & Recursion | Mathematical Origami

**Human Language**: Mandarin Chinese (Simplified) (HSK 4 equivalent) (B1, Basic Fluency)

**Dev. Software**: GitHub | Bash | Zsh | Vim | Valgrind | Secure Shell (SSH) | L<sup>A</sup>T<sub>E</sub>X (LaTeX)

**Other Software**: Blender | Fusion 360 | ArcGIS | Adobe Suite | Office Suite | Google Suite

**Digital Design**: Vector Graphics | Shaders | Tikz | 3D Paper Crafts | 3D Printing | Pixel Art