# Alexandra J. Marx

Ann Arbor, MI, USA   (Willing to relocate)
Email: ajjmarx@umich.edu
734-730-4398
LinkedIn:    linkedin.com/in/alexandra-marx-85622a242
GitHub:      github.com/AjjMarx
Tech Blog:   ajjmarx.github.io/

## Education:

**University of Michigan**, Ann Arbor, MI   (Jan. 2025 – Dec. 2027 Expected)
° BS Computer Science
° BS 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 COMPFOR 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,   interactive Demo:  ajjmarx.github.io/TeaspoonGraph/

**Mathematics 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 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 (University of Michigan)** (Nov. 2025 – Present)
• Weekly mathematics tutoring for middle school students at Ypsilanti Community Middle School.

**Employment:  Food Service (2x)** (2022, 2024 – 2025)
• Prepared food in a high stress, hierarchical, and diverse environment.  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/Personal-Site

**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

**3-Dimensional Polyhedral & Developable Surface Paper Art (Published):**
 • Designed and translated numerous 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) \| LaTeX (LaTeX) |
| **Other Software:** | Blender \| Fusion 360 \| ArcGIS \| Adobe Suite \| Office Suite \| Google Suite |
| **Digital Design:** | Vector Graphics \| Fragment Shaders \| 3D Paper Crafts \| 3D Printing \| Pixel Art |