Ana Amaglobeli

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High school junior interested in biomedical sciences and neuroscience

Education

Fort Hamilton High School — Brooklyn, NY

High School Diploma — *Expected June 2027*

- **GPA:** 99.84 (weighted) **Rank:** 19/1,235 (Top 2%)
- **Advanced Coursework:** AP Calculus AB, AP Chemistry, AP Computer Science Principles, AP English Language & Composition, AP U.S. History, AP World History
- **Honors Coursework:** Physics, Chemistry, Algebra II, Geometry, English, Spanish 5 & 6
- **Awards:** Principal's List (all semesters), Honor Roll (all semesters), Honors Academy member

Extracurricular Activities

Columbia University SHAPE Program — Manhattan, NY

Student, Biomedical Engineering: Where Biology, Medicine & Design Meet — *July 2025 – Aug 2025*

- Selected for Columbia Engineering SHAPE (3-week BME) covering biomechanics, bioinstrumentation, and medical imaging
- Used engineering design process to prototype a wearable pulse-rate sensor for sleep monitoring (Arduino + soldering)
- Designed enclosure and circuitry with 3D modeling/printing and laser cutting; iterated from tests and peer feedback
- Presented the functional prototype and device capabilities to faculty and peers in a final symposium

Alzheimer's Prediction Benchmark — Brooklyn, NY

Independent Research (IEEE-style paper) — *July 2025 – Dec 2025*

- Research paper explores whether neuropsychiatric symptoms improve Alzheimer's prediction beyond cognition/function alone
- Built reproducible Python pipeline: cleaning, feature sets, stratified train/test splits, and model training/evaluation
- Ran ablation study across feature groups; compared ROC-AUC/recall and confusion matrices to quantify missed AD cases
- Wrote IEEE manuscript with methods, results tables (mean±std), and figures for transparent, repeatable reporting

Philosophy Club, Fort Hamilton High School — Brooklyn, NY

President — *Sept 2023 – Present*

- Lead a student organization of 50+ members dedicated to ethics, logic, and political philosophy
- Developed 30+ discussion questions that encouraged peers to construct logical arguments and engage in structured debate

Varsity & Club Volleyball — Brooklyn, NY

Captain & Setter — *Aug 2024 – Present*

- Elected team captain and starting setter, coordinating plays during PSAL games and six regional/northeast club tournaments
- Committed 12+ hours per week to training, meetings, film study, travel, and competitions while maintaining full course load

STEM Projects

Youth NeuroNext | *Neuroscience Learning Platform* | *Founder & Developer* — Sept 2025 – Present

- Built a free neuroscience platform for teens with bite-sized lessons on sleep, stress, and focus for better study habits and evidence-based brain health, designed to be clear, supportive, and accessible for all learners
- Built "Ask Neuro" Q&A with category filters and search, plus expandable, source-backed answers to common teen questions
- Created 5–8 minute mini-lessons, quizzes with instant feedback, and curated books/videos/podcasts for self-study
- Built 3D brain explorer in React/Three.js with raycast selection, smooth highlighting, and ARIA/keyboard support

BrainBrowser | *3D Neuroanatomy Visualizer* | *Creator & Lead Developer* — Sept 2025 – Present

- Modernized the McGill BrainBrowser into a browser-based atlas so students learn structure–function by exploring 3D regions with no installs, then compare areas using lobe/hemisphere labels, descriptions, key functions, and coordinates
- Built **Explorer Mode** for focused study: click or search regions, rotate to the selection, gray out context, and highlight structures
- Built raycast region selection and GPU highlighting; used Web Workers/TypedArrays to keep large meshes smooth

Molecule Builder | *Educational Molecule Builder* | *Creator & Developer* — Nov 2025 – Present

- Built an educational molecule builder to help high school and organic chemistry students learn bonding and valence rules
- Added guided build challenges with real-time valence checks, plus quizzes/flashcards to reinforce concepts through practice
- Exports SMILES and computes Lipinski Ro5, linking student-built structures to drug-likeness and real pharmaceutical ideas

Periodic Table 3D | *Interactive Chemistry Learning App* | *Creator & Developer* — Sept 2025 – Oct 2025

- Built a interactive periodic table to help chemistry students move beyond memorization via searchable 2D grid & immersive 3D
- Added quiz mode (70+ questions) with explanations and a compound builder linking properties to real compounds and uses
- Shipped a fast, 60 FPS WebGL app in React, TypeScript, and Three.js, syncing 3D clicks to UI state and animations for clarity

Technical Skills

Languages: Georgian (native), English (fluent), Spanish (intermediate)
Programming: TypeScript, JavaScript, Python (intermediate), HTML/CSS, Arduino (basic), LaTeX
Frameworks/Libraries: Next.js, React, React Three Fiber, Three.js, Zustand, Framer Motion, Tailwind CSS
Graphics/Visualization: WebGL, HTML5 Canvas, 3Dmol.js
Engineering: Soldering, 3D modeling/printing, laser cutting, basic circuit prototyping
Tools & Design: Git, Microsoft Excel, Microsoft Office Suite, Adobe Photoshop/Illustrator/InDesign, Procreate