Alex Messina

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With a background in JavaScript, Python, and simulation-focused development, I bring experience designing interactive, real-world modeling applications using technologies like React, Node.js, and Django. I've built full-stack projects such as my large language model explorer and the bee swarm-tracking app, demonstrating my ability to architect, integrate, and deploy complex systems. My experience as an educator and esports coach has strengthened my ability to collaborate in team settings, communicate effectively across disciplines, and guide shared goals to successful outcomes. I'm eager to further develop and expand my skills while contributing to projects. Additional skills include:

- **PROGRAMMING LANGUAGES: JAVASCRIPT, JAVA, PYTHON, TYPESCRIPT**
- **ARCHITECTURES: REST, MERN**
- **WEB TECHNOLOGIES: HTML, CSS, BOOTSTRAP, NODE.JS, EXPRESS, HANDLEBARS, REACT, WEBPACK, KONVA, DJANGO**
- **DATABASES: MYSQL, MONGOOSE, SEQUELIZE**
- **TOOLS & FRAMEWORKS: GIT, API INTEGRATION, GRAPHQL, JWT, BCRYPT, DOTENV**
- **DESIGN & DEVELOPMENT: FRONT-END DESIGN, BACK-END INTEGRATION, FULL-STACK DEPLOYMENT**

EDUCATION & CERTIFICATIONS

Certificate of Completion - Coding Boot Camp   **2024**
Washington University - St. Louis

Certified Scrum Master   **2023**
Scrum Alliance

Chancellors Certificate in Java & Python Programming   **2023**
University of Missouri - St. Louis

Java Certificate of Completion   **2020**
PLTW Master Teachers

Master of Education - Learning, Teaching and Curriculum   **2015**
University of Missouri - Columbia

Master of Science in Forensic Sciences   **2012**
Marshall University

Bachelor of Science in Biology   **2010**
University of Missouri - Columbia

PERSONAL PROJECTS

LARGE LANGUAGE MODEL (LLM) EXPLORER - HTTPS://GITHUB.COM/EXECUTORKARTHAN/LLM-WEB-APP
- Summary: Mobile responsive educational app that allows users to explore prompt engineering with the Gemini LLM through solving pre-defined mazes generated using Python's Turtle module.
- Role: Author
- Tools: TypeScript, Ant-Design, Vite, React, Django, Gemini, Dotenv, Tokenization, Monaco, Skulpt

MEDICAL IMAGING SIMULATION - HTTPS://MEDICAL-IMAGING-SIMULATOR.NETLIFY.APP/

- Summary: Mobile responsive app that simulates how a medical imaging machine collects photons from a radiotracer and creates an image from the tracer signal. This app lets users adjust collimator depth, width and radiotracer dosage to observe their effects on image quality.
- Role: Author
- Tools: TypeScript, CSS, Ant-Design, Konva, Vite, React

Bee-Porter -https://github.com/ExecutorKarthan/Bee-porter
- Summary: Mobile responsive app that allows users to create accounts and drop pins, notifying logging in users as to the locations of bee swarms
- Role: Co-Author
- Tools: Javascript, Mongoose, CSS, BootStrap, Express, Vite, Render, Bcrypt, React, Apollo/GraphQL, Mapbox API, JWT, Stripe

Worth the Watch? - https://github.com/ExecutorKarthan/Worth-the-Watch
- Summary: Mobile responsive app that allows users to view, create and comment on movie reviews
- Role: Co-Author
- Tools: Javascript, CSS, Bootstrap, Express, Dotenv, Handlebars, Sequelize, Mysql2, Bcrypt, Sessions

PROFESSIONAL EXPERIENCE

Teacher Researcher   June – *August*
Washington University   St. Louis, MO
Summer 2025 - AI Lab
- Built virtual interactive simulation to support student introductions to Large Language Models (LLM).
- Authored companion lessons for students to explore LLM limitations, costs/benefits and prompt engineering

Summer 2024 - Medical imaging Lab
- Built virtual interactive simulation to support student learning the fundamentals of medical imaging.
- Constructed a doll model to illustrate radiotracer injection and photon emission.
- Authored companion lessons for students to explore medical imaging concepts.

Science Teacher   August *2018 – Present*
St. Charles High School   St. Charles, MO
- Supported students from a variety of backgrounds in multiple levels of chemistry and computer science coursework.
- Developed a Google Apps Script that was adopted by the school to coordinate student flow from homeroom to other locations.
- Helped guide and implement building-level decisions by serving on the Shared Leadership Committee.
- Supported colleagues by hosting professional development presentations and book clubs.
- Introduced a material science-based chemistry curriculum to promote student interest and success.
- Prepared students so that 100% passed the AP Chemistry exam in both 2023 and 2025.
- Coordinated with the Microsoft Technology Education and Learning Support (TEALS) program to provide an industry professional to support St. Charles' newly created computer science program.

Esports Head Coach   August *2021 – Present*
St. Charles High School   St. Charles, MO
- Build and maintain a competitive esports team with a focus on developing student-athletes in a positive, accepting environment.
- Created and managed the first-ever esports team in St. Charles School District History.
- Organized the first live Esports tournament hosted by a public high school in St. Charles County.
- Coached state-qualifying Smash Bros and Halo teams.