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Ryan-Sierra.vercel.app

Ryan Sierra

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Education

Purdue University — West Lafayette, IN
B.S. in Computer Science — *Aug 2024 – May 2028*

- **Concentrations**: Software Engineering & Machine Intelligence
- **Coursework**: Data Structures & Algorithms, Object-Oriented Programming, Computer Architecture, Programming in C, Foundations of Computer Science, CS Tools (Git)

Research Experience

GeoML Environmental Prediction Research — West Lafayette, IN
Research Assistant — *Sep 2024 – Jan 2025*

- Collaborated on a project leveraging NASA's satellite data and GEOS-FP atmospheric models to predict global concentrations of pollutants like dust, sea salt, organic carbon, brown carbon, and sulfates, aiming to extend reliable air quality forecasting to underserved and sensor-limited regions.
- Integrated ground-based monitoring data to refine model accuracy, utilized MLflow to visualize performance, and developed tools to detect and correct errors in GEOS-FP-generated files.

Involvement

Purdue CS Undergraduate Student Board — West Lafayette, IN
CS193 Lead Instructor, Mental Health Initiative Lead, Research Resources Initiative Lead, Member — *Feb 2025 – Present*

- Selected from a 3% acceptance rate into Purdue's premier and most competitive Computer Science organization, focused to strengthening student-faculty connections and enhancing the CS student experience through community-driven initiatives.
- Support 700+ first-year students by teaching CS193 (Intro to CS tools), while leading mental health initiatives and expanding access to research by connecting students with faculty projects and promoting early involvement.

Launchpad Purdue — West Lafayette, IN
Mentor, Member — *March 2025 – Present*

- Provide a one-on-one, semester-long mentorship program to help first-year CS students acclimate to life at Purdue and receive guidance on building their first technical full stack project.
- Host community-building and technical skill development events throughout the semester to equip incoming students with the knowledge and connections needed to thrive.

Purdue Bands And Orchestras — West Lafayette, IN
Wind Ensemble Principal Horn, Boiler Brass Member — *August 2024 – Present*

- Principal Horn of the Purdue Wind Ensemble for 3 consecutive semesters, selected to perform at the Kennedy Center and in Spain (Spring 2025); awarded the Leath Scholarship (1 of 300 recipients) and the David Foertsch Memorial Brass Award.
- Perform with Boiler Brass, Purdue's elite basketball pep band, earning the "Outstanding Audition" award and supporting the team at high-energy home games.

Work Experience

Fogo de Chão Brazilian Steakhouse — Irving, TX
Host, Employee — *May 2025 – August 2025*

- Greeted and seated guests in a fast-paced, upscale, fine dining environment, ensuring efficient table rotation and a welcoming first impression.
- Managed reservations, wait lists, and guest inquiries while coordinating closely with servers and managers to maintain smooth front-of-house operations.

Projects

Twitch Weekly Recap Website

React, Node.js, Tailwind CSS, Twitch API, MongoDB, OAuth, Vercel, REST API

- A full-stack web app delivering personalized recaps of a user's followed Twitch streamers, featuring automated Twitch API data collection, interactive dashboards with highlights and top clips, Twitch OAuth authentication, and curated playlists. Aggregates VODs, clips, and analytics into comprehensive daily recaps.

French Horn Practice Website

React, Node.js, Tailwind CSS, MongoDB, Vite, Vercel, REST API

- A 33-day French horn practice platform for orchestral audition prep, featuring daily curated excerpts from Bach, Beethoven, Strauss, etc. Includes integrated sheet music viewer, synchronized audio playback, personalized practice calendar, progress tracking, and favorite management, providing a structured, goal-driven path for professional audition readiness.

Formula 1 2025 Race Result Prediction Model

Python, Scikit-learn, Random Forest, Data Analysis, Pandas, OpenF1 API

- A machine learning model predicting Formula 1 race results using historical OpenF1 API data. Utilizes Random Forest regression with analysis of practice, qualifying, and sprint sessions, achieving predictions within 3 positions. Processes lap times, sector splits, and team comparisons to model driver trends and circuit-specific performance.

Skills

Languages: Java, Python, C, JavaScript, HTML/CSS, R

Frameworks: React, Node.js, Flask, JUnit, Tailwind CSS, HeroUI, React Bits, FastAPI

Developer Tools: Git, Docker, VS Code, Visual Studio, PyCharm, IntelliJ, Eclipse

Libraries: Pandas, NumPy, Matplotlib, SKLearn