# Zoe Ludena

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## Education

**University of California, San Diego** *Expected Mar 2025*
*BS in Data Science, Minor in Business Economics*

- **Coursework:** Interactive Visualizations, Probabilistic Modeling and Machine Learning, Dimensionality Reduction and Deep Learning, Business Analytics, Deep Model Climate Emulation

## Experience

**Student Worker** *San Diego, CA*
*San Diego Sheriff's Office* *Feb 2024 – Present*

- Identify patterns and anomalies in large, continuously growing text datasets by leveraging text machine learning techniques, Regex, Python, Pandas, and SQL.
- Communicate findings effectively through presentations, driving informed decision-making and cross-team alignment.
- Streamline data processing by developing Azure-based pipelines to clean data incrementally, conduct sentiment analysis, and perform clustering, reducing manual effort by 90%.

**Data Science Instructional Assistant** *La Jolla, CA*
*Halıcıoğlu Data Science Institute* *Mar 2023 – Present*

- Enhance student performance and engagement by hosting office hours twice a week and creating 5+ educational videos and examples, leading to improved class comprehension and higher assignment scores.
- Improve assignment quality and exam rigor by developing midterm materials and grading assignments for 200+ students, ensuring alignment with learning objectives.
- Achieve consistent resolution of forum inquiries, answering 10+ questions weekly to clarify complex concepts in statistics, Python, Java, Pandas, and NumPy.

## Projects

**Utilizing Emulators to Explore the Climate Model Parameter Space** *Repo*

- Collaborated with Professor Duncan Watson-Parris and a team of two to recreate the Climate Bench Paper using machine learning models (Gaussian Process, Random Forest, Neural Networks) for future climate predictions.
- Leveraged Python and XArray for data analysis and modeling, ensuring accurate representation of climate dynamics.

**Big O Explained** *Big O Notation Page*

- Implemented Python for algorithm demonstrations and data visualization, integrating JavaScript and HTML for an engaging, user-friendly interface.
- Deployed the tool to support lower-division data science courses, enhancing student comprehension of algorithmic efficiency through hands-on exploration.

**Water Quality & Socioeconomic Status in CA** *Jun 2024*

- Analyzed the relationship between water quality and socioeconomic factors (income, education, and race) across California using public datasets.
- Identified significant disparities affecting disadvantaged communities through statistical methods, including regression analysis, ANOVA, and Kruskal-Wallis tests.
- Utilized diverse data sources such as the U.S. Census and SAFER Dashboard, generating insights to inform equity-focused water management strategies.

## Technologies

**Languages:** Python, Pyspark, LaTEX, SQL, Javascript, Java, HTML
**Technologies:** Git/Github, Windows OS, Microsoft SQL Server, Microsoft Office, VSCode, Tableau, PowerBI
**Honors:** UCSD Provost Honors, IEEE - Eta Kappa Nu