

# Nancy Shen

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🔗 Portfolio

## EDUCATION

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**University of California San Diego**

09/2021 – 12/2025 | La Jolla, CA

*B.S Cognitive Science - Machine Learning and Neural Computation*

Minor in Data Science

### Relevant coursework:

Supervised Machine Learning Algorithms, Data Science in Practice, Introduction to Data Visualization, Web Mining and Recommender Systems.

## PROJECTS

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### Gamify Unplugged [🔗](#)

02/2025 – 03/2025

*How Gamifying Surveys Reduces Cognitive Load*

- Ranked Top 10% in class for data visualization clarity by analyzing multi-modal biometric signals (ECG + EEG) across two user groups to quantify the cognitive load reduction effect of gamification on survey completion.
- Built an interactive D3.js visualization to surface behavioral patterns across user segments, applying exploratory data analysis and multi-modal data processing techniques applicable to content personalization research.

### Brain-to-Cursor Mapping [🔗](#)

01/2025 – 03/2025

*Machine Learning to Predict Eye Movement from EEG*

- Achieved real-time inference of eye-movement direction from raw EEG signals by building a supervised ML model with custom neural signal preprocessing and feature extraction, integrated into a live brain-computer interface; demonstrating end-to-end production-style model deployment.
- Reduced signal noise by applying domain-specific preprocessing transforms, improving model generalization across subjects and demonstrating rigorous large-scale data analysis and evaluation methodology.
- Architected the system in a modular, extensible pipeline (separating preprocessing, inference, and control layers) to enable rapid iteration, mirroring the scalable and robust ML systems required in industry settings.

### Recipe Interaction Predictor [🔗](#)

12/2024 – 01/2025

*Predicting User Engagement with Recipes Using Recommender Systems*

- Improved user-recipe interaction prediction accuracy by ~13% (70% → 79%) by engineering similarity-based retrieval features and applying collaborative filtering across 83K+ recipes and 731K+ interactions from the Food.com dataset.
- Designed an end-to-end ranking pipeline using feature engineering and model evaluation, directly mirroring production recommendation workflows; documented offline evaluation methodology and outlined a framework for future A/B testing to validate ranking quality against engagement metrics.
- Identified and quantified the impact of sparse user data on model performance, applying data cleaning and imputation strategies that reduced prediction error by 9 percentage points.

## PROFESSIONAL EXPERIENCE

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**Cognitive Sciences Instructional Assistant**

03/2024 – 06/2025 | La Jolla, CA

*University of California, San Diego*

- Increased student comprehension of machine learning and neural computation concepts (as measured by section attendance and student feedback) by designing and delivering 50-minute weekly discussion sections that translated complex algorithmic topics into accessible frameworks for 30+ students.
- Improved assignment completion rates by providing individualized support on distilling core concepts in supervised learning, data analysis, and statistical reasoning into actionable guidance.

## SKILLS

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**Programming Languages:** Python (Pandas, Numpy, Scikit-Learn, Seaborn), SQL (PostgreSQL), Java, JavaScript, R

**Tools & Technologies:** Git, Jupyter, Excel, HTML/CSS, Tableau, Pytorch, TensorFlow, Data Modeling, NLP, ETL

**Concepts:** Recommendation Systems, Retrieval & Ranking, Feature Engineering, Multi-modal Learning, Real-time ML Inference, Experimental Design, Predictive Modeling, Data Visualization

**Languages:** English, Mandarin Chinese, French, Korean