Sanchit Singh | AI/ML Researcher

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Education
San Diego State University
Bachelor of Science in Computer Science, Expected May 2026
GPA: 3.51 / 4.00 | **Major GPA:** 3.88 / 4.00
Dean's List **(Fall 2023, Spring 2024, Fall 2024, Spring 2025)**
Relevant Coursework- Data Structures and Algorithms, Machine Learning, Artificial Intelligence, Computer Architecture, Advanced Programming Languages, Software Systems, Linear Algebra, Applied Probability, Statistics, Calculus I–II, Physics I–II

Publications
- Elkins, A., **Singh, S.**, Pourebadi, M., Amadasun, U., Abhari, K. Training Socially Intelligent Robots with Large Behavior Models: Challenges, Strategies, and Future Research Opportunities. **ICIS 2025 (ACCEPTED)**
- Elkins, A., **Singh, S.**, Pourebadi, M., Amadasun, U., Abhari, K. *Designing Socially Grounded Data Pipelines for Training and Operating Socially Intelligent Robots: Challenges and Future Directions.* **HICSS 2026 (ACCEPTED)**
- Aditi Naiknaware*, **Sanchit Singh***, Hajar Homayouni, Salimeh Sekeh. Temp-SCONE: A Novel Out-of-Distribution Detection and Domain Generalization Framework for Wild Data with Temporal Shift. (**equal contribution*) ***NeurIPS 2025** Workshop on Reliable ML for Unreliable Data* **(ACCEPTED)**
- Elkins, A. C., **Singh, S.**, Blankenship, S., Kieback, A., Amadasun, U. P., Chadha, A. *DAWZY: Human-in-the-Loop Natural-Language Control of REAPER.* **NeurIPS 2025** Workshop on AI for Music **(ACCEPTED)**

RESEARCH EXPERIENCE

Bioacoustics Representation Learning, SDSU— Student Researcher | Aug 2025 - Present
Conducted under the guidance of Professors **Hajar Homayouni** and **Marie Roch,** in collaboration with the **San Diego Zoo Wildlife Alliance**
- Applying self-supervised learning to 4 TB of rainforest audio data to cluster and analyze animal vocalizations across species and habitats
- Developing transformer-based embedding pipelines and attention-guided clustering to detect rare and frequency-specific acoustic events

Membership Inference Attack on Provenance Graphs, SDSU — Student Researcher | June 2025 - Present
Conducted under the guidance of Professor **Joann Chen**
- Researching node-, edge-, and subgraph-level membership inference attacks on provenance graph datasets using Graph Neural Networks
- Developing unified pipelines with shadow/target splits to evaluate inference attacks across graph granularities

Out-of-Distribution Robustness Research, SDSU — Student Researcher | Feb 2025 - Sep 2025
Conducted under the guidance of Professors **Hajar Homayouni** and **Salimeh Sekeh**
- Extended **SCONE** and **WOODS** frameworks to design and evaluate **Temp-SCONE**, a temporal extension for robust OOD detection under evolving distributions
- Built pipelines with **WideResNet** and **Vision Transformers**, training across temporally split datasets (CIFAR-10, CINIC-10, Imagenette)
- Contributed to theoretical analysis of temporal consistency and its relationship to generalization error under domain shifts

James Silberrad Brown Center for AI at SDSU — Lead Student Researcher | Aug 2024 - Aug 2025
Research conducted under the guidance of Professors **Mary Pourebadi**, **Kaveh Abhari**, and **Aaron Elkins**
- Conducted video QA experiments using **VLMs (LLaVA)** and **LLMs (LLaMA)**; developed pipelines for temporal video understanding
- Built a face recognition module (90%+ accuracy) and multi-stage reasoning workflows combining VLM summaries with LLM chaining

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Projects
DAWZY– Finalist, UC Berkeley AI Hackathon 2025
- Selected as 1 of 9 finalists (top ~2.6%) out of 350+ projects and 1400+ participants
- Built an AI-powered Digital Audio Workstation for beginners; intuitive, editable, and educational
- Enabled natural language-to-music creation with real-time editing and modular AI assistance
- Website: dawzy.app | Finalist Pitch: YouTube | Submission: Devpost

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Awards & Recognitions
- Nominated for **CRA Outstanding Undergraduate Researcher Award 2025** by Professors **Mary Pourebadi** and **Hajar Homayouni**
- TensorFlow Developer Certified (Mar 2024)
- F**inalist – UC Berkeley AI Hackathon 2025 (DAWZY)** – Selected as 1 of 9 finalists (top ~2.6%) out of 350+ projects and 1400+ participants
- **Hackathon Projects:** UpliftMe (Cal Hacks 2024) · Hero of Codemere (UCSD DiamondHacks 2025)