

# ALEXANDER CHIEN

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## EDUCATION

University of California, Los Angeles (UCLA), Los Angeles, CA

Expected June 2026

B.S. Computer Science | Upper-division GPA: 3.82 / 4.00

- Coursework: Data Structures and Algorithms, Programming Languages, Operating Systems, Software Construction, Computer Architecture, Deep Learning, Generative AI (Grad), Computer Vision, Probabilistic Models in Genomics
- Clubs: ACM AI, AI Safety, exploretech.la

## EXPERIENCE

Chang's Group at UCLA NLP | Undergraduate Researcher

June 2024 - Present

- Investigating long-context memories for embodied multi-agent systems using LoRA, improving knowledge retention in complex simulations within the VirtualHome environment
- Automated extraction of point clouds from depth images in VirtualHome to enhance agent learning and spatial understanding
- Creating scripts to generate synthetic LLaVA training dataset of thousands of multi-action agent tasks consisting of first-person agent views corresponding to the completion of each action

UCLA StarAI Lab | Undergraduate Researcher

September 2023 - Present

- Examined application of soft and hard constraints in generative models, including graphically structured diffusion models and LLMs for easily constrained tasks (e.g. sudoku)
- Implemented a custom sentential decision diagram to create "exactly one" hard constraint for GPT-2 filtered generation, reducing constraint creation complexity from  $O(n^2)$  to  $O(n \log n)$  with a 50,257-word vocabulary
- Researching improvements to SIMPLE (a discrete gradient estimator) in mixtures of experts as an alternative to soft-merging (SMEAR) and 7 other discrete and non-discrete sampling tricks

CreatorHub | Software Engineer Intern

June 2023 - August 2023

- Developed front-end and back-end of brand competition creation page and password reset pages (JavaScript, Flask, HTML, CSS) for UCLA startup CreatorHub's MVP with mongosh and ItsDangerous API tokens
- Designed JSON schemas for users and brand competitions using MongoDB's schema validation
- Implemented password security protocols (password requirements, SHA-256) and re-designed signup and login pages to improve user onboarding

## PROJECTS

Novel View Synthesis | Co-author

February 2024 - March 2024

- Analyzed 3 approaches to novel view synthesis (light-field rendering, NeRFs, and Gaussian Splatting) in a team of 3
- Wrote article analyzing 3D-GS methodology, comparing its efficacy to other SoTA methods (e.g. Mip-NeRF 360)

Action Prediction for EEG Signals | Developer

February 2024 - March 2024

- Tested vanilla CNN, CNN hybrids (RNN, LSTM, GRU), and multi-head attention for classifying 4 classes of patient activities in data set A of the BCI Competition
- Achieved over 70% accuracy through model ensembling and data augmentation methods (time reversal, injecting Gaussian noise, etc.) with limited data (2115 samples)

## LEADERSHIP & INVOLVEMENT

exploretech.la | Content Member

September 2022 - Present

- Designed and held interactive workshops in computer vision and generative AI for 60+ students in annual expo, hosting hundreds of students from Title 1 high schools in Los Angeles
- Devised workshop materials and taught weekly workshops covering foundational methodologies in traditional ML

Bruin Spacecraft Group | Webmaster

October 2023 - September 2024

- Lead team of 6 in revamping and maintaining the Bruin Spacecraft Group website, boosting user-friendliness for sponsors and prospective members; mentoring team in best practices for web development
- Collaborated closely with 7 other admin teams to ensure accurate display of each team's progress on website

## SKILLS

- Programming Languages: Python, C++, C, JavaScript, Haskell
- Frameworks: PyTorch, TensorFlow, Flask, React
- Other: Git/GitHub, MongoDB, Linux, HTML, CSS, Node