Curriculum Vitae

Maximilian Du

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EDUCATION

Stanford University **09/2020 – Present**
BS, Computer Science (AI Track) | Minor, Creative Writing | Minor, Psychology
GPA: 4.110 / 4.0. Technical GPA: 4.092 / 4.0

Fayetteville-Manlius High School **09/2016 – 06/2020**
High School Diploma
GPA: 103 / 100

RESEARCH EXPERIENCE

Enclosure Video Enrichment (EVE) / Sound & Health Intern **06/2024 – 09/2024**
Marine Mammal Program | U.S. Navy

- Will be helping the Navy's Marine Mammal Program (MMP) on various cognition, training, and welfare research projects
- Will be working with California Sea Lions and Bottlenose Dolphins

Undergraduate Research Assistant **01/2021 – 06/2024**
Stanford Artificial Intelligence Laboratory (SAIL) | IRIS Lab

- Developed robot learning methods that use multiple sensory modalities, learn from diverse data, and adapt quickly to new tasks.
- Led two projects and co-led a third. Roles included proposing project direction, initiating experiments, analyzing results, presenting progress at weekly meetings, and creating paper figures & presentations
- Working under Prof. Chelsea Finn. Collaborated with Profs. Dorsa Sadigh, and Tobias Gerstenberg. Mentored by Suraj Nair and Alexander Khazatsky
- Published two papers in top robotics conferences: Robotics: Science and Systems 2022 & 2023.
- Presented papers in reading group and hosted summer group meetings for undergraduates

PUBLICATIONS

- **Maximilian Du**, Sasha Khazatsky, Tobias Gerstenberg, and Chelsea Finn (2024). When at First You Don't Succeed: Knowing When to Try Again in Novel Test-Time Scenarios. *In Preparation for Robotics: Science and Systems XX*
- **Maximilian Du**, Suraj Nair, Dorsa Sadigh, and Chelsea Finn (2023). Behavior Retrieval: Few-Shot Imitation Learning by Querying Unlabeled Datasets. *Robotics: Science and Systems XVIV*
- **Maximilian Du***, Olivia Lee*, Suraj Nair, and Chelsea Finn (2022). Play It by Ear: Learning Skills amidst Occlusion through Audio-Visual Imitation Learning. *Robotics: Science and Systems XVIII*
- **Maximilian Du** (2019). Improving LSTM Neural Networks for Better Short-Term Wind Power Predictions. *IEEE 2nd International Conference on Renewable Energy and Power Engineering*
- Homer Walke, Kevin Black, Abraham Lee, Moo Jin Kim, **Maximilian Du**, Chongyi Zheng, Tony Zhao, Philippe Hansen-Estruch, Quan Vuong, Andre He, Vivek Myers, Kuan Fang, Chelsea Finn, and Sergey Levine (2023). BridgeData V2: A Dataset for Robot Learning at Scale. *Conference on Robot Learning (CoRL)*
- Open-X-Embodiment Collaboration (2024). Open X-Embodiment: Robotic Learning Datasets and RT-X Models. *International Conference on Robotics and Automation (ICRA) 2024*

RELEVANT COURSEWORK

Graduate Computer Science: CS 223A (Robotics), CS229M (ML Theory), CS 236 (Deep Generative Models), CS 224R (Deep RL), CS 234 (RL), CS 224N (Deep learning for NLP), CS 330 (Deep Multi-task and Meta Learning), CS 231N (Deep Learning for Computer Vision), CS 229 (ML), UC Berkeley CS 285 (Deep RL, self-study)

Undergraduate Computer Science: CS 161 (Algorithms), CS 110 (Computer Systems Principles), CS 107E (Introductory Computer Systems), CS106B (Programming Abstractions)

Mathematics: EE 364A (Convex Optimization), EE 276 (Information Theory), Math 115 (Real Analysis), CS 228 (Probabilistic Graphical Models), Math 113 (Linear Algebra and Matrix Theory), Math 51 (Linear Algebra and Multivariable Calculus)

Psychology: Psych 226 (Models and Mechanisms of Memory), Psych 169 (Advanced Seminar on Memory), Psych 45 (Learning & Memory), Psych 30 (Perception), Psych 50 (Cognitive Neuroscience)

Writing & Humanities: English 290 (Advanced Fiction), English 191 (Intermediate Non-Fiction), English 190 (Intermediate Fiction), English 92 (Introductory Poetry), English 91 (Introductory Creative Non-Fiction), Phil 2 (Moral Philosophy)

HONORS AND AWARDS

Terman Engineering Scholastic Award. Top 1% of the Stanford Engineering graduating class. **03/2024**
Knight Hennessy Scholar **03/2024 – Present**
Hertz Fellowship Finalist. Top 45 out of 860 applicants **01/2024**
CRA Outstanding Undergraduate Researcher Award Finalist **01/2024**
Stanford CS Honors Program **09/2023 – Present**
Stanford Undergraduate Creative Writing Prize. Third place prize out of 100+ submissions. **05/2023**
Stanford Small Grant Recipient. Faculty-endorsed research in humanities. **03/2023 – 09/2023**
Lunsford Award Finalist For Oral Presentation of Research. Top 5 out of 600+ class presentations **03/2022**

TEACHING AND OUTREACH

Deep Learning Portal Mentor **03/2024 – Present**
Stanford Computer Science Department

- Helped disadvantaged students learn AI by hosting live, weekly office hours

Stanford Splash Lecturer **11/2021 – Present**
Stanford Educational Studies Program

- Designed a curriculum to introduce high school students to robot learning through connections to animal training and other fields of psychology
- Taught five course iterations so far, with roughly 200 total students. Received numerous positive student reviews.
- Invited to present similar lecture at the International Marine Mammal Trainers Association (IMATA) conference in 2024

CS 106A/B Section Leader (TA) **01/2021 – 06/2022**
Stanford Computer Science Department

- Led weekly small-group sections for the popular CS106A/B Stanford course series.
- Helped with conceptual and coding problems during weekly office hours, graded homework assignments and exams
- Received crowd-voted office hour service award and positive student feedback through anonymous mid-quarter evaluation.

LEADERSHIP

Senior Producer & Writer **06/2022 – Present**
Stanford Storytelling Project

- Leading production team on a podcast series, to be published on PRX, PodBean, and aired on KZSU radio
- Doing fieldwork, interviews (30+ hours) and archival research (5k+ documents) for a creative nonfiction book on the human-animal relationship. Work is partially funded by Stanford University.
- Presented findings on the human-animal relationship at Stanford Symposium of Undergraduate Research and Public Service (SURPS)

Volunteer Advisor + Narrative Lead **03/2023 – 06/2023**
Truth4Toki Advocacy Group

- Helped organize 25 zoological professionals to advocate for animal welfare by creating a unified narrative, editing written posts, and preparing people for media interviews
- Helped gain 40k+ signatures on a petition and prolonged local & national media attention (Good Morning America, NBC Seattle, WPLG Miami, VICE)

SKILLS

Languages: Python, C++, C, Java, HTML/CSS

ML & Data Tools: PyTorch, Tensorflow, Numpy, Matplotlib, Linux, Git, Zotero

Codebase/API Familiarity: Robosuite, Robomimic, Roboverse, MuJoCo, PyBullet, SLURM, ROS

Robots: Franka-Emika Panda Arm, Widowx Arm,

Other Tools: LaTeX, Adobe Illustrator / Audition / Premiere Pro, CAD Design, Oscilloscope, Soldering

Other Skills: Archival Document Organization, Narrative Interviews, Audio Production, Educational Presentations, Narrative Theory & Storytelling

OTHER PROJECTS

The Basics: Research Toolkit **12/2021 – Present**

Personal Project

- Kept track of code snippets commonly used during research and combined them into a public GitHub repository
- Curated Zotero database of 800+ research papers with meaningful organization scheme
- Wrote hundreds of pages of notes on math and AI subjects that are uploaded to my website

Archivist & Editing Work **05/2023 – Present**

Themed Reality Journalism Group

- Trained people to use archival software for FOIAs and AI tools for content summary
- Edited written articles and scripts related to the zoological industry, leading to multi-million video views and high-influence op-eds

Policy Evaluation for Berkeley and Google **01/2023 – 09/2023**

Stanford IRIS Lab

- Assisted with research projects at Google and Berkeley by evaluating policies on a Widowx robot
- Assisted with some data analysis and evaluation task proposal, leading to results presented in published papers

Looking Under the Hood of DetectGPT **01/2023 – 03/2023**

CS 224N Final Project

- Extended published results on DetectGPT, an algorithm that detects large language model output
- Proposed and tested ways of improving DetectGPT by focusing on certain parts of speech

Can you Macgyver It? Teaching an Agent to Use Tools **01/2023 – 03/2023**

CS 234 Final Project

- Implemented a policy gradient algorithm to solve a tool-usage environment
- Explored impacts of different exploration algorithms on data efficiency and final performance

Sixteen Pixels is (Almost) All You Need: Crafting Parameterized Image Uncrumpling Models **03/2022 – 06/2022**

CS 231N Final Project | Best project winner

- Modified the Pix2Pix algorithm to take in a crumpled image and output its uncrumpled form
- Proposed a smaller PatchGAN architecture that qualitatively outperforms existing PatchGAN architectures

MidiStyle: Parameterized Audio Style Transfer for Instrument Swapping **09/2021 – 11/2021**

CS 229 Final Project

- Used a convolutional autoencoder to transform piano music into other instruments
- Used a FiLM-style conditioning to modify the output instrument