

Boyuan Chen

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EDUCATION

Massachusetts Institute of Technology (MIT), PhD student in EECS, MIT CSAIL

2021 - Present

UC Berkeley, BA Computer Science (EECS Honor Class), Applied Math, Class of 2021, GPA 3.96

2017-2021

Research Interest: Generative world model, Model-based reinforcement learning, Foundation models for decision making

Selected Coursework: Deep Unsupervised Learning(A+), Deep Reinforcement Learning(A+), Advanced Robotics(A+), Natural Language Processing(A), Machine Learning(A), Computer Vision(A), AI System(A+), Hardware for Deep Learning(A), Robotics(A+), Real Analysis(A+), Complex Analysis(A+), Algorithms(A), Data Structure(A), Programming(A+), Computer Architecture(A), Stochastic Process & Probability(A)

EXPERIENCE

Google DeepMind

Research Intern

May 2023 - Aug 2023

- Lead the training of a multi-modal Large Language Model (MLLM) with large scale synthetic data.
- Implemented the entire data synthesis pipeline, instruction tuning that was later adopted into Gemini 2.0.

Google X (or X, the Moonshot Factory)

AI resident (with return offer at Google's L4 level but declined)

May 2022 - Aug 2022

- Develop machine learning algorithms for sequential decision making in robotics
- Visual grounding for Large Language Model

MIT Computer Science and Artificial Intelligence Laboratory (CSAIL)

Researcher

Sep 2021 - present

- Machine learning research advised by Prof. Vincent Sitzmann and Prof. Russ Tedrake
- Research focus: Generative world model, Model-based RL, Foundation models for decision making, Robotics.

Berkeley Artificial Intelligence Research Lab

Researcher

Jan 2019 - Aug 2021

- Reinforcement learning research with Prof. Pieter Abbeel; Computer vision research Prof. Trevor Darrell
- Student researcher on unsupervised learning, 3d vision, visual reinforcement learning and generalizable manipulation.

Robomooc.com, Chongqing Muke Robotics Inc.

Startup Founder

Nov 2017 - Mar 2020

- Company providing robotics education solution to K12 education
- Lead the software and hardware development of robot kits that we sell to student participants in robotics competitions

Robomaster at Berkeley (Robotics Team & Club)

Founder, Captain

Oct 2018 - 2021

- Lead 20-member robotics team building autonomous shooting robots for ICRA RoboMaster AI Challenge
- Designed and implemented novel methods for data collection, object detection and inference acceleration

Open Source Project Contributor

- Contributor of DL Framework Pytorch, Torchvision; Physics Engine Bullet3

2018 - 2021

MIT Chess club

- Executive at MIT Chess Club
- Team member of MIT in collegiate chess league

2021 - 2023

SKILLSET

Language & Tools: Python, C++/C, Java, PyTorch, Tensorflow, Jax, Pax, Flume, OpenCV, MongoDB, TensorRT, ZeroMQ, Qt5

Machine Learning: Deep Reinforcement Learning, Generative Models (Diffusion, Flow, GAN, VAE), Variational Inference, Time Series Prediction, Planning Imitation Learning, World Model, Large Language Model, Multimodal Model, Data Synthesis.

PUBLICATION

Diffusion Forcing: Next-token Prediction Meets Full-Sequence Diffusion

NeurIPS 2024

B. Chen, D. Monso, Y. Du, M. Simchowitz, R. Tedrake, V. Sitzmann.

(Used by Adobe Firefly)

Spatial VLM: Endowing Vision-Language Models with Spatial Reasoning Capabilities

CVPR 2024

B. Chen, Z. Xu, S. Kirmani, B. Ichter, D. Driess, P. Florence, D. Sadigh, L. Guibas, F. Xia

(Used by Gemini 2.0)

Self-Supervised Reinforcement Learning that Transfers using Random Features

NeurIPS 2023

B. Chen, C. Zhu, P. Agrawal, K. Zhang, A. Gupta

History Guided Video Diffusion

ICML 2025

K. Song*, <u>B. Chen</u> *, M. Simchowitz, Y. Du, R. Tedrake, V. Sitzmann. (*Equal Contribution)	In submission
Open-vocabulary Queryable Scene Representations for Real World Planning	ICRA 2023
<u>B. Chen</u> , F. Xia, B. Ichter, K. Rao, K. Gopalakrishnan, M. Ryoo, A. Stone, D. Kappler	
Unsupervised 3d Keypoint Learning for control	ICML 2021
<u>B. Chen</u> , D. Pathak, P. Abbeel.	
Discovering Diverse Multi-Agent Strategic Behavior via Reward Randomization	ICLR 2021
Z. Tang, C. Yu, <u>B. Chen</u> , H. Xu, X Wang, F. Fang, S. Du, Y. Wang, Y. Wu	
DittoGym: Learning to Control Soft Shape-Shifting Robots	ICLR 2024
S. Huang, <u>B. Chen</u> , H. Xu, V. Sitzmann	
Reasoning or Reciting? Exploring the Capabilities and Limitations of LLM Through Counterfactual Task	NAACL 2024
Z. Wu, L. Qiu, A. Ross, E. Akyürek, <u>B. Chen</u> , B. Wang, N. Kim, J. Andreas, Y. Kim	
Extraneousness-Aware Imitation Learning	ICRA 2023
R. Zheng, K. Hu, <u>B. Chen</u> , H. Xu.	
Zero-shot Policy Learning with Spatial Temporal Reward Decomposition on Contingency-aware Observation	ICRA 2020
<u>B. Chen</u> *, H. Xu*, Y. Gao, T. Darrell.	
Unifying 3D Representation and Control of Diverse Robots with a Single Camera	under review at Nature
S. Lester Li, A. Zhang, <u>B. Chen</u> , H. Matusik, C. Liu, D. Rus, V. Sitzmann	

ACADEMIC SERVICE

Reviewer of NeurIPS, ICLR, ICML, CVPR, RSS, ICRA, IROS, RAL, AAAI	2021-present
Teaching Assistant, MIT 6.S183 Diffusion Models, 6.4210/6.4212 Robotic Manipulation	Sep 2022 – Dec 2022

PERSONAL PROJECTS

Autonomous multi-floor food delivery robot (Control, Planning, Sensing, Vision, ROS)	Sep 2019 - Dec 2019
ICRA Robomaster AI Challenge Autonomous Combat Robot (Vision, Planning, ROS, Control, AI)	Jan 2019 - May 2019
Personal drivable RC robot (CAD, Manufacture, Electronics, Control, Embedded System)	May 2019 - Aug 2019
Autonomous Multi-Terrain Rover (CAD, Manufacture, Electronics, Computer Vision, Planning)	Oct 2017 - Aug 2018
Autonomous Tracking Drone (Computer Vision, Embedded System)	Sep 2016 - Aug 2017

HONOR

Seneff-Zue CS Fellowship	Feb 2021
Winner, Facebook Pytorch Summer Hackathon	Aug 2019
Finalist, ICRA 2019 Robomaster AI Challenge	May 2019
Winner, Record Keeper, UC Berkeley CS 61C Neural Network Inference Optimization Contest	Aug 2018
Winner, CS170 Efficient Algorithms Contest	Oct 2018
2 nd place, Google Puzzlehunt, second fastest prize eligible team out of 800+ teams of Google employees	Aug 2022
Honor degree in EECS, High honor in general scholarship, Dean's List, UC Berkeley	2017-2021