Brian Yang

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Education

University of California, Berkeley *(Class of 2020)* ***Computer Science B.A., GPA: 3.7/4.0***

Courses Taken Data Structures and Algorithms, Artificial Intelligence, Computer Architecture and Machine Structures, Probability and Random Processes, Efficient Algorithms and Intractable Problems, Discrete Math and Probability Theory, Multivariable Calculus, Natural Language Processing, Machine Learning, Deep Reinforcement Learning, Decision Making, and Control, Cybersecurity

Skills/Portfolio

Languages	Python, Java/C#, C, JavaScript	**Website**	www.byang.org
Frameworks	PyTorch, TensorFlow, ROS, Docker	**GitHub**	www.github.com/bhyang
Clubs / Activities	Machine Learning @ Berkeley, Parliamentary Debate @ Berkeley		

Experience

PRO Unlimited @ Facebook AI Research (FAIR) ***June 2019—Present***
Contractor (supervised by Dr. Roberto Calandra) *Menlo Park, CA*

- Investigated the applications of model-based reinforcement learning to dexterous in-hand robotic control
  - Designed and trained video prediction models to model the dynamics of robotic in-hand manipulation
  - Leveraged deep dynamics models to perform dexterous manipulation using model predictive control
  - Published work as joint-first author at a NeurIPS workshop and submitted to RA-L/ICRA 2020
- Created and documented high-level interfaces for robotic manipulators and sensors for internal use

Berkeley Artificial Intelligence Research (BAIR) Lab ***August 2017—Present***
Undergraduate Researcher (supervised by Prof. Sergey Levine) *Berkeley, CA*

- Currently working on lifelong learning of mobile navigation and grasping in real-world environments
- Worked on purely visual and morphology-agnostic control of robotic end-effectors in the low-data regime
  - Developed a novel approach (MAVRIC) that uses a mutual information metric for self-recognition
  - Said approach learns to perform reaching and imitation with less than 20 seconds of training data
  - Published journal paper in RA-L 2020 and under review for ICRA 2020
- Designed an open-source robotics platform (REPLAB) for benchmarking the state-of-the-art in robot learning
  - Created and documented a reproducible hardware setup for robotic manipulation on low-cost arms
  - Implemented several state-of-the-art deep learning based approaches for robotic grasping tasks
  - Presented work at ICRA 2019 and several regional conferences (BARS 2018, BayLearn 2019)

Berkeley Swarm Lab ***May 2017—August 2017***
Undergraduate Researcher (supervised by Prof. Kristofer Pister) *Berkeley, CA*

- Helped develop a data-efficient algorithm (HPC-BBO) for jointly optimizing microrobot morphologies and gaits
- Led a project to design and implement an intelligent state-of-the-art controller for a millimeter-scale micro-robot
  - Developed an approach that uses Bayesian optimization for the data-efficient learning of locomotion
  - Designed a novel path planning algorithm that navigates unseen environments using learned primitives
  - Published work at two NeurIPS workshops and at RA-L/ICRA 2018

Berkeley CS61A Course Staff ***January 2017—May 2017***
Academic Intern *Berkeley, CA*

- Assisted faculty with instruction and preparation of additional materials for lab sections and homework parties
- Provided instruction through weekly office hours to improve student understanding of Python and OOP
- Helped manage course infrastructure to support over two thousand Berkeley students taking the course

Saltire Software ***June 2015—August 2015***
Software Engineering Intern *Portland, OR*

- Developed a web applet for users to customize, render, and order 3D-printed camshaft models online
- Created interactive educational resources for illustrating complex mechanical systems using JavaScript
- Presented work at the 2015 Apprenticeships in Science & Engineering (ASE) Symposium

Research Interests

Robotics, computer vision, machine learning.

Robot learning, perception, learning from visual feedback, manipulation, grasping, deep reinforcement learning, video prediction, tactile sensing.

Publications

Journals

- **Yang, B.**, Jayaraman, D., Berseth, G., Efros, A., & Levine, S. (2020). MAVRIC: Morphology-Agnostic Visual Robotic Control. IEEE Robotics and Automation Letters.
- **Yang, B.**, Wang, G., Calandra, R., Contreras, D., Levine, S., & Pister, K. (2018). Learning flexible and reusable locomotion primitives for a microrobot. IEEE Robotics and Automation Letters, 3(3), 1904-1911.

Conferences

- **Yang, B.**, Jayaraman, D., Zhang, J., & Levine, S. (2019). REPLAB: A Reproducible Low-Cost Arm Benchmark for Robotic Learning. International Conference on Robotics and Automation (ICRA).
- Liao, T., Wang, G., **Yang, B**., Lee, R., Pister, K., Levine, S., & Calandra, R. (2019). Data-efficient Learning of Morphology and Controller for a Microrobot. International Conference on Robotics and Automation (ICRA).

Workshops

- **Yang, B.**, Jayaraman, D., Berseth, G., Efros, A., & Levine, S. (2019). MAVRIC: Morphology-Agnostic Visual Robotic Control. NeurIPS Workshop on Robot Learning: Control and Interaction in the Real World.
- **Yang, B.**, Wang, G., Calandra, R., Contreras, D., Levine, S., & Pister, K. (2017). Learning flexible and reusable locomotion primitives for a microrobot. NeurIPS Workshop on Acting and Interacting in the Real World: Challenges in Robot Learning (*oral presentation*).
- **Yang, B.**, Wang, G., Calandra, R., Contreras, D., Levine, S., & Pister, K. (2017). Learning locomotion primitives from contextual Bayesian optimization. NeurIPS Workshop on Bayesian Optimization.

Honors

- 2016 Andy Grove Scholarship Recipient
- 2017, 2018 Upsilon Pi Epsilon (UPE) Candidate
- 2018 National Parliamentary Tournament of Excellence (NPTE) Champion