Karl Pertsch

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Education

- **University of Southern California** — Los Angeles, CA
  PhD in Computer Science with Joseph Lim, GPA: 4.0/4.0 — since Aug. 2018
- **University of Pennsylvania** — Philadelphia, PA
  Fulbright Visiting Scholar in Computer Science; GPA: 4.0/4.0 — Aug. 2017 – May 2018
- **Technical University Dresden** — Dresden, Germany
  Diploma in Electrical Engineering, GPA: 4.0/4.0 (with distinction) — Aug. 2012 – Aug. 2017

Publications

J. Yamada, **K. Pertsch**, A. Gunjal, J. Lim, 'Task-Induced Representation Learning', *International Conference on Learning Representations (ICLR)*, 2022. https://openreview.net/forum?id=OzyXtIZAzFv

T. Nam, S. Sun, **K. Pertsch**, S. Hwang, J. Lim, 'Skill-based Meta-Reinforcement Learning', *International Conference on Learning Representations (ICLR)*, 2022. https://openreview.net/forum?id=jeLW-Fh9bV

K. Pertsch, Y. Lee, Y. Wu, J. Lim, 'Demonstration-Guided Reinforcement Learning with Learned Skills', *Conference on Robot Learning (CoRL)*, 2021. arxiv.org/abs/2107.10253

K. Pertsch, Y. Lee, J. Lim, 'Accelerating Reinforcement Learning with Learned Skill Priors', *Conference on Robot Learning (CoRL)*, 2020 (Plenary Talk, top 4%). arxiv.org/abs/2010.11944

J. Yamada*, Y. Lee*, G. Salhorta, **K. Pertsch**, M. Pflueger, G. Sukhatme, J. Lim, P. Englert, 'Motion Planner Augmented Reinforcement Learning for Robot Manipulation in Obstructed Environments', *Conference on Robot Learning (CoRL)*, 2020. arxiv.org/abs/2010.11940

K. Pertsch*, O. Rybkin*, F. Ebert, C. Finn, D. Jayaraman, S. Levine, 'Long-Horizon Visual Planning with Goal-Conditioned Hierarchical Predictors', *Neural Information Processing Systems (NeurIPS)*, 2020. arxiv.org/abs/2006.13205

K. Pertsch*, O. Rybkin*, J. Yang, K. G. Derpanis, J. Lim, K. Daniilidis, A. Jaegle, 'Keyframing the Future: Keyframe Discovery for Visual Prediction and Planning', *Conference on Learning Dynamics for Control (L4DC)*, 2020. arxiv.org/abs/1904.05869

O. Rybkin*, **K. Pertsch***, K. G. Derpanis, K. Daniilidis, A. Jaegle, 'Learning what you can do before doing anything', *International Conference on Learning Representations (ICLR)*, 2019. openreview.net/forum?id=SylPMnR9Ym

O. H. Jaffari*, S. K. Mustikovela*, **K. Pertsch**, E. Brachmann, C. Rother, 'iPose: Instance-Aware 6D Pose Estimation of Partly Occluded Objects', *Asian Conference on Computer Vision (ACCV)*, 2018. arxiv.org/abs/1712.01924

Experience

- **CLVR Lab, University of Southern California** — Los Angeles, CA
  Research Assistant, Supervisor: Joseph Lim — since August 2018
  - **Transfer Learning from Large, Offline Datasets**: Improve learning efficiency on downstream tasks by leveraging large, unstructured experience datasets, e.g. via skill transfer.
  - **Visual Model-based Planning and Control**: Learn hierarchical predictive models for planning and control from raw image observations.
- **Google Brain Robotics** — Mountain View, CA
  Student Researcher, Supervisor: Karol Hausman — since May 2022
  - **Learning from Large-Scale Robot Data**: Leverage large-scale real robotic datasets for accelerating the learning of new robotic tasks.

- **Facebook AI Research** — Menlo Park, CA
  Research Intern, Collaborators: Akshara Rai, Dhruv Batra, Franziska Meier, Vikash Kumar — Aug. 2021 - Mar. 2022
  - **Cross-Domain Imitation Learning**: Learn to imitate demonstrations from a source environment in a different target environment by imitating semantic skills instead of primitive actions.
- **RAIL Lab, UC Berkeley** — Berkeley, CA
  Visiting Researcher, Supervisor: Sergey Levine — Feb. 2019 - Jul. 2019
  - **Hierarchical Prediction Models for Visual Planning**: Long-horizon, goal-conditioned planning with a recursive, tree-structured prediction model.
- **GRASP Lab, University of Pennsylvania** — Philadelphia, PA
  Fulbright Visiting Scholar, Supervisor: Kostas Daniilidis — Aug. 2017 - May 2018
  - **Unsupervised Learning of Action Representations**: Learn a representation of an agent's action space via variational video prediction just from raw videos & perform action conditioned video prediction + visual servoing.
- **Computer Vision Lab Dresden** — Dresden, Germany
  Diploma Thesis, Supervisor: Carsten Rother — Apr. 2017 - Aug. 2017
  - **Object Pose Estimation**: Design, implement and test a pipeline for 6DoF pose estimation of objects from single RGB/RGB-D input images. Used dataset features texture-less objects and heavy occlusion.
- **Institute of Automotive Engineering Dresden** — Dresden, Germany
  Research Assistant, Supervisor: Bernard Bäker — Apr. 2016 - Jan. 2017
  - **Reinforcement Learning**: Develop a Reinforcement Learning framework for learning energy-optimal driving strategies for hybrid-electric vehicles.

Scholarships and Awards

- **Best Paper Runner-Up Award**: at the Robot Learning Workshop @ NeurIPS 2020. — Dec. 2020
- **Best Paper Presentation Award**: at the Conference for Robot Learning (CoRL), 2020. — Nov. 2020
- **Fulbright Scholarship**: Awarded by the US government for academic excellence and social commitment. — Aug. 2017
- **Best Diploma in EE@TU Dresden**: Awarded by the Faculty of Electrical and Computer Engineering. — Aug. 2017
- **Year's Best Pre-Diploma**: Awarded by the Faculty of Electrical and Computer Engineering. — Aug. 2014
- **Deutschlandstipendium**: National scholarship for outstanding academic achievements. — Oct. 2013 - Sep. 2017

Talks

- **Stanford Vision&Learning Lab**: *Accelerating Reinforcement Learning with Learned Skill Priors.* [Slides] — Jul. 2021
- **PAL Lab @ UPenn**: *A Scalable Framework for Skill-Based Learning with Offline Datasets.* — Jun. 2021

Reviewing Service

- Transactions on Machine Learning Research (TMLR), 2022.
- IEEE Transactions on Robotics (T-RO), 2022.
- International Conference on Robotics and Automation (ICRA), 2022.
- International Conference on Machine Learning (ICML), 2022.
- International Conference on Learning Representations (ICLR), 2022. *Highlighted Reviewer.*
- Conference on Robot Learning (CoRL), 2021.
- International Conference on Machine Learning (ICML), 2021. *Expert Reviewer.*
- International Conference on Robotics and Automation (ICRA), 2021.
- International Conference on Learning Representations (ICLR), 2021.
- Neural Information Processing Systems (NeurIPS), 2020.
- International Conference on Machine Learning (ICML), 2020. *Top Reviewer Certificate.*
- International Conference on Learning Representations (ICLR), 2020.
- IEEE conference on Computer Vision and Pattern Recognition (CVPR), 2019.
- International Conference on Computer Vision (ICCV), 2019.