

JONATHAN TOMPSON

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EDUCATION

Harvard University		2002-2006
S.B. EE and CS	Advisor: Prof. Gu-Yeon Wei	with honors
Columbia University		2006-2007
M.S. EE	Advisor: Prof. Peter Kinget	GPA: 3.6/4.0
NYU, Courant Institute of Mathematical Sciences		2011-2015
Ph.D. CS	Advisor: Prof. Chris Bregler (secondary: Yann LeCun)	GPA: 4.0/4.0

WORK EXPERIENCE

Google Brain 2021-present	• Staff Research Scientist (Manager): Team lead within Robotics At Google focusing on imitation learning for robotic manipulation.
Google Brain 2016-2021	• Senior Research Scientist: Worked within the Brain robotics group on a number of projects (RL, fluids, tracking, etc). Transitioned to research manager in 2021.
Google Daydream 2015-2016	• Research Scientist: Worked on Google Cardboard team on an unreleased project. Developed in-house hand-tracking system for google cardboard.
Perceptive Code LLC 2015-2015	• Cofounder: Started (Arjun Jain) an ML consulting company (now acquired) to provide state-of-the-art vision-based tracking solutions.
NYU PhD CS 2011-2014	• Student: ML research on deep learning, including human pose inference, unsupervised feature learning. TA for many CS and ML classes.
MongoDB Inc. 2013	• Summer intern: working with the MongoDB kernel server team (under Alberto Lerner). Redesigned the distributed lock protocol for the configuration server.
Epoch Micro 2007-2011	• Hardware Engineer: Researched state-of-the-art mixed-signal IC solutions for telecommunication (bluetooth, LTE, etc) and data-converters (ADCs, DACs, etc).
Columbia Masters EE 2006-2008	• Student: Fabricated contactless IC testing using inductive coupling. Investigated on-chip ring-oscillator matching and compared statistics to theory.

PUBLICATIONS, INVITED TALKS, PATENTS AND AWARDS

- T. Xiao, H. Chan, P. Sermanet, A. Wahid, Brohan, K. Hausman, S. Levine, J. Tompson, *Robotic Skill Acquisition via Instruction Augmentation with Vision-Language Models*, submitted
- T. Yu, T. Xiao, A. Stone, J. Tompson, A. Brohan, S. Wang, J. Singh, C. Tan, D. M, J. Peralta, B. Ichter, K. Hausman, F. Xia, *Scaling Robot Learning with Semantically Imagined Experience*, submitted
- Anonymous Authors, *PaLM-E: An Embodied Multimodal Language Model*, submitted
- C. Lynch, A. Wahid, J. Tompson, T. Ding, J. Betker, R. Baruch, T. Armstrong, P. Florence, *Interactive Language: Talking to Robots in Real Time*, submitted
- N. Heravi, A. Wahid, C. Lynch, P. Florence, T. Armstrong, J. Tompson, P. Sermanet, J. Bohg, D. Dwibedi, *Visuomotor Control in Multi-Object Scenes Using Object-Aware Representations*, ICRA 2023
- B. Mazouze*, B. Eysenbach*, J. Tompson, *Contrastive Value Learning: Implicit Models for Simple Offline RL*, submitted
- W. Huang, F. Xia, T. Xiao, H. Chan, J. Liang, P. Florence, A. Zeng, J. Tompson, I. Mordatch, Y. Chebotar, P. Sermanet, N. Brown, T. Jackson, L. Luu, S. Levine, K. Hausman, B. Ichter, *Inner Monologue: Embodied Reasoning through Planning with Language Models*, CoRL 2022.
- B. Mazouze, O. Nachum, I. Kostrikov, J. Tompson, *Improving Zero-shot Generalization in Offline Reinforcement Learning using Generalized Similarity Functions*, NeurIPS 2022.
- Invited Talk: *Pick and Place at Scale*. ICRA 2022 Workshop: Challenges in Applying Academic Research to Real-World Robotics.
- P. Florence, C. Lynch, A. Zeng, O. Ramirez, A. Wahid, L. Downs, A. Wong, J. Lee, I. Mordatch, J. Tompson, *Implicit Behavioral Cloning*, CoRL 2021
- K. Zakka, A. Zeng, P. Florence, J. Tompson, J. Bohg, D. Dwibedi, *XIRL: Cross-embodiment Inverse Reinforcement Learning*, CoRL 2021
- Y. Aytar, D. Dwibedi, A. Zisserman, J. Tompson, P. Sermanet, *Aligning sequences by generating encoded representations of data items*, US Patent App. 17/295,286
- I. Kostrikov, J. Tompson, R. Fergus, O. Nachum, *Offline reinforcement learning with fisher divergence critic*

regularization, ICML 2021

- S. Chen, J. Tompson, R. Garg, *Context-sensitive hand interaction*, US Patent 11,181,986
- D. Seita, P. Florence, J. Tompson, E. Coumans, V. Sindhwani, K. Goldberg, A. Zeng, *Learning to rearrange deformable cables, fabrics, and bags with goal-conditioned transporter networks*, ICRA 2021
- D. Dwibedi, Y. Aytar, J. Tompson, P. Sermanet, A. Zisserman, *With a little help from my friends: Nearest-neighbor contrastive learning of visual representations*, ICCV 2021
- A. Zeng, P. Florence, J. Tompson, S. Welker, J. Chien, M. Attarian, T. Armstrong, I. Krasin, D. Duong, V. Sindhwani, J. Lee, *Transporter networks: Rearranging the visual world for robotic manipulation*, CoRL 2020
- D. Dwibedi, Y. Aytar, J. Tompson, P. Sermanet, A. Zisserman, *Counting Out Time: Class Agnostic Video Repetition Counting in the Wild*, CVPR 2020
- I. Kostrikov, O. Nachum, J. Tompson, *Imitation Learning via Off-Policy Distribution Matching*, ICLR 2020
- Y. Lu, J. Tompson, *ADAIL: Adaptive Adversarial Imitation Learning*, NeurIPS 2019 workshop
- D. Dwibedi, Y. Aytar, J. Tompson, P. Sermanet, A. Zisserman, *Temporal Cycle-Consistency Learning*, CVPR 2019
- C. Lynch, M. Khansari, T. Xiao, V. Kumar, J. Tompson, S. Levine, P. Sermanet, *Learning Latent Plans from Play*, submitted work.
- MC Clement, AJ Faaborg, R. Garg, J. Tompson, S. Chen, *Context sensitive hand collisions in virtual reality*, US Patent 10,635,161
- I. Kostrikov, K. Agrawal, D. Dwibedi, S. Levine, J. Tompson, *Discriminator-Actor-Critic: Addressing Sample Inefficiency and Reward Bias in Adversarial Imitation Learning*, ICLR 2019
- Invited talk: *Fluid Simulation and PDE simulation using deep-learning*, Stanford's ERE seminar 2018.
- S. Suwajanakorn, N. Snaveley, J. Tompson, M. Norouzi, *Discovery of Semantic 3D Keypoints via End-to-end Geometric Reasoning*, ORAL presentation at NIPS 2018.
- D. Dwibedi, J. Tompson, C. Lynch, P. Sermanet, *Learning Actionable Representations from Visual Observations*, International Conference on Intelligent Robots (IROS) 2018.
- G. Papandreou, T. Zhu, L. Chen, S. Gidaris, J. Tompson, and K. Murphy, *PersonLab: Person Pose Estimation and Instance Segmentation with a Part-Based Geometric Embedding Model*, ECCV 2018
- D. Dwibedi, J. Tompson, C. Lynch, P. Sermanet, *Self-Supervised Representation Learning for Continuous Control*, Workshop in Machine Learning in the Planning and Control of Robot Motion at ICRA 2018
- K. Schlachter, C. DeFant, S. Herscher, J. Tompson, *Beyond Photo Realism for Domain Adaptation from Synthetic Data*, Submitted work 2018.
- D. Dwibedi, P. Sermanet, J. Tompson, *Temporal Reasoning in Videos using Convolutional Gated Recurrent Units*, Brave New Ideas in Video Understanding Workshop at CVPR 2018
- Invited Talk: RSS 2017 Workshop on Articulated Tracking, *Human Person Detection and Pose Estimation*.
- C. Schenck, J. Tompson, D. Fox, S. Levine, *Learning Robotic Manipulation of Granular Media*, CoRL 2017.
- J. Tompson, K. Schlachter, P. Sprechmann, K. Perlin, *Accelerating Eulerian Fluid Simulation With Convolutional Networks*, ICML 2017 & ICLR 2017 workshop.
- G. Papandreou, T. Zhu, N. Kanazawa, A. Toshev, J. Tompson, C. Bregler, K. Murphy, *Towards Accurate Multi-person Pose Estimation in the Wild*, CVPR 2017.
- A. Elhayek, E. De Aguiar, A. Jain, J. Tompson, L. Pishchulin, M. Andriluka, C. Bregler, B. Schiele, C. Theobalt, *MARCO_nI: ConvNet-based MARKerless Motion Capture in Outdoor and Indoor Scenes*, PAMI '16
- Awarded the '16 NYU Janet Fabri award for outstanding doctoral dissertation.
- R. Goroshin, J. Bruna, J. Tompson, D. Eigen, Y. LeCun, *Unsupervised Learning of Spatiotemporally Coherent Metrics*, ICCV 2015
- Awarded the 2015 NYU Henning Biermann award for exceptional contributions to education and service.
- J. Tompson, R. Goroshin, A. Jain, Y. LeCun, C. Bregler, *Efficient Object Localization Using Convolutional Networks*, CVPR 2015
- A. Elhayek, E. De Aguiar, A. Jain, J. Tompson, L. Pishchulin, M. Andriluka, C. Bregler, B. Schiele, C. Theobalt, *Efficient ConvNet-based Markerless Motion Capture in General Scenes with a Low Number of Cameras*, CVPR 2015
- J. Tompson, A. Jain, Y. LeCun, C. Bregler, *Joint Training of a Convolutional Network and a Graphical Model for Human Pose Estimation*, NIPS 2014
- A. Jain, J. Tompson, Y. LeCun, C. Bregler, *MoDeep: A Deep Learning Framework Using Motion Features for Human Pose Estimation*, ACCV 2014
- R. Goroshin, J. Bruna, A. Szlan, J. Tompson, D. Eigen, Y. LeCun, *Unsupervised Feature Learning from Temporal Data*, NIPS 2014 workshop & ICML.
- A. Jain, J. Tompson, M. Andriluka, G. Taylor, C. Bregler, *Learning Human Pose Estimation Features with Convolutional Networks*, ICLR 2014
- J. Tompson, M. Stein, Y. LeCun, K. Perlin, *Real-Time Continuous Pose Recovery of Human Hands Using Convolutional Networks*, ACM TOG/SIGGRAPH 2014
- Awarded the 2013 Jacob T. Schwartz Ph.D. Fellow for outstanding performance in the NYU Ph.D. program.
- Invited Talk: K. Perlin, M. Stein, J. Tompson. *ARCADE: A System for Augmenting Gesture-Based Presentations*,

SIGGRAPH Real-Time Live demo (2012).

- J. Tompson, A. Dolin and P. Kinget, *2.6GHz RF Inductive Power Delivery for Contactless On-Wafer Characterization*, IEEE ICMTS, 2008 (Patent: WO/2009/065040)

OTHER EXPERIENCE AND QUALIFICATIONS

Teaching Assistant

Columbia & NYU: 2006-2007, 2011-2015

- **NYU**: Computer Vision: David Geiger. Introductory Computer Science: Ken Perlin. Computer Graphics: Ken Perlin. Computer games: Ken Perlin.
- **Columbia**: Circuits: C. Zukowski, Wireless Com: P. Diamant, VLSI Circuits: A. Bhavnagarwala.

Programming Languages

- C/C++/C#, Java, Lua, LISP, OpenGL/CL, CUDA, GLSL, Matlab, HTML, Python

REFERENCES

- Chris Bregler – bregler@courant.nyu.edu
- Yann LeCun - yann@cs.nyu.edu