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

- J. Aldaco, T. Armstrong, R. Baruch, J. Bingham, S. Chan, K. Draper, D. Dwibedi, C. Finn, P. Florence, S. Goodrich, W. Gramlich, T. Hage, A. Herzog, J. Hoech, T. Nguyen, I. Storz, B. Tabanpour, L. Takayama, J. Tompson, A. Wahid, T. Wahrburg, S. Xu, S. Yaroshenko, K. Zakka and T. Zhao, *ALOHA 2: An Enhanced Low-Cost Hardware for Bimanual Teleoperation*, whitepaper 2024
- Y. Du, M. Yang, P. Florence, F. Xia, A. Wahid, B. Ichter, P. Sermanet, T. Yu, P. Abbeel, J. Tenenbaum, L. Kaelbling, A. Zeng, J. Tompson, *Video language planning*, ICLR 2024
- S. Yang, Y. Du, K. Ghasemipour, J. Tompson, L. Kaelbling, D. Schuurmans, P. Abbeel, *UniSim: Learning Interactive Real-World Simulators*, ICLR 2024
- Open X-Embodiment Collaboration [>150 Authors], *Open X-Embodiment: Robotic Learning Datasets and RT-X Models*, ICRA 2024
- M. Attarian, M. Adil Asif, J. Liu, R. Hari, A. Garg, I. Gilitschenski, J. Tompson, *Geometry Matching for Multi-Embodiment Grasping*, CoRL 2023
- 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*, RSS 2023
- 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*, RSS 2023
- Danny Driess, Fei Xia1, Mehdi Sajjadi, Corey Lynch, Aakanksha Chowdhery, Brian Ichter, Ayzaan Wahid, Jonathan Tompson, Quan Vuong, Tianhe Yu, Wenlong Huang, Yevgen Chebotar, Pierre Sermanet, Daniel Duckworth, Sergey Levine, Vincent Vanhoucke, Karol Hausman, Marc Toussaint, Klaus Greff, Andy Zeng, Igor Mordatch, Pete Florence, *PaLM-E: An Embodied Multimodal Language Model*, ICML 2023
- C. Lynch, A. Wahid, J. Tompson, T. Ding, J. Betker, R. Baruch, T. Armstrong, P. Florence, *Interactive Language: Talking to Robots in Real Time*, RA-L 2023
- 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. Mazoure*, B. Eysenbach*, J. Tompson, *Contrastive Value Learning: Implicit Models for Simple Offline RL*, CoRL 2023
- 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. Mazoure, 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*, CORL 2019.
- 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. Snavely, 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, *MARCOnI: 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. Diament, 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