

# JONATHAN TOMPSON

Address and telephone number available on request

jonathantompson@gmail.com  
jonathantompson.com

## EDUCATION

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

## WORK EXPERIENCE

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| Google Brain<br>2022-present      | • <b>Staff Research Scientist:</b> Team lead within Robotics At Google focusing on imitation learning for robotic manipulation.                                      |
| Google Brain<br>2016-2022         | • <b>Senior Research Scientist:</b> Worked within the Brain robotics group on a number of projects (RL, fluids, tracking, etc).                                      |
| Google Daydream (VR)<br>2015-2016 | • <b>Research Scientist:</b> Worked on Google Cardboard team on an unreleased project.<br>• Developed in-house hand-tracking system for google cardboard.            |
| Perceptive Code LLC<br>2015-2015  | • <b>Cofounder:</b> Started small consulting company (with Arjun Jain) to provide state-of-the-art vision-based tracking solutions.                                  |
| NYU PhD CS<br>2011-2014           | • <b>Student:</b> ML research on deep learning, including human pose inference, unsupervised feature learning. TA for many CS and ML classes.                        |
| MongoDB Inc.<br>2013              | • <b>Summer intern:</b> working with the MongoDB kernel server team (under Alberto Lerner). Redesigned the distributed lock protocol for the configuration server.   |
| Epoch Micro<br>2007-2011          | • <b>Hardware Engineer:</b> Researched state-of-the-art mixed-signal IC solutions for telecommunication (bluetooth, LTE, etc) and data-converters (ADCs, DACs, etc). |
| Columbia Masters EE<br>2006-2008  | • <b>Student:</b> Fabricated contactless IC testing using inductive coupling. Investigated on-chip ring-oscillator matching and compared statistics to theory.       |

## PUBLICATIONS, INVITED TALKS AND AWARDS

- B. Mazouze\*, B. Eysenbach\*, J. Tompson, *Contrastive Value Learning: Implicit Models for Simple Offline RL*, 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
- 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.
- 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*, Submitted Paper
- 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
- I. Kostrikov, J. Tompson, R. Fergus, O. Nachum, *Offline reinforcement learning with fisher divergence critic regularization*, ICML 2021
- 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. Ayta, 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. Ayta, 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.
- 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, *MARCOI: 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

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- Chris Bregler – [bregler@courant.nyu.edu](mailto:bregler@courant.nyu.edu)
- Yann LeCun - [yann@cs.nyu.edu](mailto:yann@cs.nyu.edu)