

## Christopher A. Baldassano

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CONTACT INFORMATION	Columbia University 1190 Amsterdam Ave 370 Schermerhorn Hall New York, NY 10027  c.baldassano@columbia.edu <a href="http://www.chrisbaldassano.com/">http://www.chrisbaldassano.com/</a>
EMPLOYMENT	<b>Columbia University</b> , Assistant Professor, Department of Psychology (2018-)  <b>Princeton University</b> , Postdoctoral Research Associate, Princeton Neuroscience Institute (2015-2018) PIs: Professors Uri Hasson and Ken Norman
EDUCATION	<b>Stanford University</b> , Ph.D., Computer Science, March 2015 Advisor: Professor Fei-Fei Li Co-Advisor: Diane M. Beck, University of Illinois at Urbana-Champaign  <b>Princeton University</b> B.S.E., Electrical Engineering, June 2009 <i>Summa cum Laude</i> (GPA 3.97) Certificate in Robotics and Intelligent Systems Certificate in Engineering Physics
RESEARCH INTERESTS	Neural mechanisms of real-world perception and memory Applications of machine learning and probabilistic models in neuroimaging
REFEREED PUBLICATIONS	C.S. Lee, M. Aly, <b>C. Baldassano</b> . “Anticipation of temporally structured events in the brain.” <i>eLife</i> , 2021. 10.7554/eLife.64972  C. Chen, Q. Lu, Andre Beukers, <b>C. Baldassano</b> , K. Norman. “Learning to perform role-filler binding with schematic knowledge.” <i>PeerJ</i> , 2021. 10.7717/peerj.11046  C. Ellis, <b>C. Baldassano</b> , A.C. Schapiro, M.B. Cai, J.D. Cohen. “Facilitating open-science with realistic fMRI simulation: validation and application.” <i>PeerJ</i> , 2020. 10.7717/peerj.8564  M. Siegelman and <b>C. Baldassano</b> . “Remembering together.” <i>News &amp; Views, Nature Human Behaviour</i> , 2019. 10.1038/s41562-019-0789-x  M. Silva, <b>C. Baldassano</b> , L. Fuentemilla. “Rapid memory reactivation at movie event boundaries promotes episodic encoding.” <i>Journal of Neuroscience</i> , 2019. 10.1523/JNEUROSCI.0360-19.2019  <b>C. Baldassano</b> , U. Hasson, K.A. Norman. “Representation of real-world event schemas during narrative perception.” <i>Journal of Neuroscience</i> , 2018. 10.1523/JNEUROSCI.0251-18.2018  I.I.A. Groen, M.R. Greene, <b>C. Baldassano</b> , L. Fei-Fei, L., D.M. Beck, C.I. Baker. “Distinct contributions of functional and deep neural network features to representational similarity of scenes in human brain and behavior.” <i>eLife</i> , 2018. 10.7554/eLife.32962  <b>C. Baldassano</b> , J. Chen, A. Zadbood, J.W. Pillow, U. Hasson, K.A. Norman. “Discovering event structure in continuous narrative perception and memory.” <i>Neuron</i> , 2017. 10.1016/j.neuron.2017.06.041

- K. Vodrahalli, P.H. Chen, Y. Liang, **C. Baldassano**, J. Chen, E. Yong, C. Honey, U. Hasson, P. Ramadge, K. Norman, S. Arora. "Mapping Between fMRI Responses to Movies and their Natural Language Annotations." *NeuroImage*, 2017. 10.1016/j.neuroimage.2017.06.042
- C. Baldassano**, A. Esteva, L. Fei-Fei, D.M. Beck. "Two distinct scene processing networks connecting vision and memory." *eNeuro*, 2016. 10.1523/ENEURO.0178-16.2016
- C. Baldassano**, L. Fei-Fei, D.M. Beck. "Pinpointing the peripheral bias in neural scene processing networks during natural viewing." *Journal of Vision*, 2016. 10.1167/16.2.9
- C. Baldassano**, D.M. Beck, L. Fei-Fei. "Human-Object Interactions Are More than the Sum of Their Parts." *Cerebral Cortex*, 2016. 10.1093/cercor/bhw077
- M.R. Greene, **C. Baldassano**, A. Esteva, D.M. Beck, L. Fei-Fei. "Visual Scenes are Categorized by Function." *Journal of Experimental Psychology: General*, 2016. 10.1037/xge0000129
- C. Baldassano**, D.M. Beck, L. Fei-Fei, "Parcellating connectivity in spatial maps." *PeerJ*, 2015. 10.7717/peerj.784
- C. Baldassano**, D.M. Beck, L. Fei-Fei. "Differential Connectivity Within the Parahippocampal Place Area." *NeuroImage*, 2013. 10.1016/j.neuroimage.2013.02.073
- C. Baldassano**, M.C. Iordan, D.M. Beck, L. Fei-Fei. "Discovering Voxel-Level Functional Connectivity Between Cortical Regions." *Machine Learning and Interpretation in Neuroimaging Workshop, Neural Information Processing Systems (NIPS)* 2012.
- C. Baldassano**, M.C. Iordan, D.M. Beck, L. Fei-Fei. "Voxel-level functional connectivity using spatial regularization," *NeuroImage*, 2012. 10.1016/j.neuroimage.2012.07.046
- PUBLIC  
PREPRINTS
- T.S. Yates, L.J. Skalaban, C.T. Ellis, A.J. Bracher, **C. Baldassano**, N.B. Turk-Browne. "Neural event segmentation of continuous experience in human infants." *bioRxiv*, 2021. 10.1101/2021.06.16.448755
- R. Masís-Obando, K.A. Norman, **C. Baldassano**. "Schema representations in distinct brain networks support narrative memory during encoding and retrieval." *bioRxiv*, 2021. 10.1101/2021.05.17.444363
- S.S. Cohen, **C. Baldassano**. "Developmental changes in story-evoked responses in the neocortex and hippocampus." *bioRxiv*, 2021. 10.1101/2021.04.12.439526
- A. Wu, S.A. Nastase, **C. Baldassano**, N.B. Turk-Browne, K.A. Norman, B.E. Engelhardt, J.W. Pillow. "Brain kernel: a new spatial covariance function for fMRI data." *bioRxiv*, 2021. 10.1101/2021.03.22.436524
- J.A. Williams, E.H. Margulis, S.A. Nastase, J. Chen, U. Hasson, K.A. Norman, **C. Baldassano**. "High-order areas and auditory cortex both represent the high-level event structure of music." *bioRxiv*, 2021. 10.1101/2021.01.26.428291
- S.A. Nastase, Y.-F. Liu, H. Hillman, A. Zadbood, L. Hasenfratz, N. Keshavarzian, J. Chen, C.J. Honey, Y. Yeshurun, M. Regev, M. Nguyen, C.H.C. Chang, **C. Baldassano**, O. Lositsky, E. Simony, M.A. Chow, Y.C. Leong, P.P. Brooks, E. Micciche, G. Choe, A. Goldstein, T. Vanderwal, Y.O. Halchenko, K.A. Norman, U. Hasson. "Narratives: fMRI data for evaluating models of naturalistic language comprehension." *bioRxiv*, 2020. 10.1101/2020.12.23.424091

M. Kumar, M. Anderson, J. Antony, **C. Baldassano**, P. Brooks, M. Cai, P.-H. Chen, C. Ellis, G. Henselman-Petrusek, D. Huberdeau, J.B. Hutchinson, Y.P. Li, Q. Lu, J. Manning, A.C. Mennen, S. Nastase, H. Richard, A.C. Schapiro, N. Schuck, M. Shvartsman, N. Sundaram, D. Suo, J.S. Turek, V. Vo, G. Wallace, Y. Wang, H. Zhang, X. Zhu, M. Capota, J. Cohen, U. Hasson, K. Li, P.J. Ramadge, N. Turk-Browne, T. Willke, K.A. Norman. “BrainIAK: The Brain Imaging Analysis Kit.” OSF, 2020. 10.31219/osf.io/db2ev

#### AWARDS

Elected to Memory Disorders Research Society (2020)  
 Lenfest Junior Faculty Development Award (2018)  
*ScienceSeeker* Editor’s Selection for article “How deep is the brain?” (2016)  
 Best Presenter Award, Science Teaching Through Art (STAr) (2014)  
 NSF Graduate Research Fellowship (2010-2012, 2013-2014)

#### FUNDING SUPPORT

*How cognitive maps potentiate new learning: constraining a computational model by decoding the thoughts of superior memorists*

National Science Foundation, Proposal ID 2024622  
 Role: Co-PI  
 09/01/2020 - 08/31/2023  
 \$516,701 Columbia total costs (\$990,000 across all sites)

#### *Collaboratory Fellows Fund*

Columbia University  
 Role: Co-instructor  
 07/01/2019 - 01/01/2020  
 \$14,963 (\$149,859 for full project)

#### *Lenfest Junior Faculty Development Award*

Columbia University  
 Role: PI  
 01/01/2019 - 01/01/2020  
 \$15,000

#### INVITED TALKS AND WORKSHOPS

NIMH Workshop on Naturalistic Stimuli and Individual Differences (2021)  
 NIMH Dynamic and Interactive Data Visualization Workshop (2021)  
 University of Arizona Cognitive Science Virtual Colloquium Series (2020)  
 Yale Current Works in Neuroscience (2019)  
 Flux Developmental Cognitive Neuroscience Congress (2019)  
 CUNY Graduate Center Neuroscience Seminar Series (2019)  
 Columbia University Department of Human Development Colloquium (2019)  
 Princeton BrainIAK Workshop (2019)  
 Columbia University Psychology Colloquium (2018)  
 USA Memory Championship (2018)  
 TEDxCarnegieLake (2017)

#### TEACHING AND OUTREACH EXPERIENCE

*Undergraduate courses*  
 GU4239: Cognitive Neuroscience in Narrative Film (Fall 2018, Fall 2019, Fall 2020)  
 UN1610: Introductory Statistics for Behavioral Scientists (Spring 2019, Spring 2020, Spring 2021)  
 GR6130: Tools for Reproducible & Collaborative Science (Fall 2019)  
 Instructor for Princeton Neuroscience Junior Seminar (Fall 2015, Fall 2016, Fall 2017)

*Enrichment and Outreach programs*

Volunteer teacher for Stanford's and Princeton's SPLASH community outreach programs (Spring 2010, Spring 2012, Fall 2013, Spring 2014, Spring 2015): Designed and taught "The Science of Optical Illusions" to over 100 local middle school and high school students

Stanford "Science Teaching Through Art" (STAr) (Fall 2015): Designed and presented research poster at local high school and community college outreach events

MENTORSHIP

*Postdoctoral fellows*

Samantha Cohen

Halle Dimsdale-Zucker

Matthew Sachs

*Graduate students (Primary or co-primary advisor)*

Matthew Siegelman

Hannah Tarder-Stoll

Jiawen Huang

*Graduate students (Secondary advisor)*

Jamal Williams

Rolando Masis-Obando

Marta Silva

Benjamin Silver

Yaniv Abir

Camille Gasser

*Graduate students (Thesis committee)*

Serra Favila

Petar Raykov

Michael Cohanpour

*Undergraduate honors students*

Sunjae Shim

Mareike Keller

MEDIA COVERAGE "Several brain regions help us anticipate what's going to happen next." *PNAS Journal Club*, April 30, 2021.

"Researchers identify a neural mechanism involved in the creation and consolidation of memories." *University of Barcelona News*, October 22, 2019.

"A toolkit for data transparency takes shape." *Nature*, August 20, 2018.

"'Sherlock' in the depths of the brain." *Austrian Broadcasting Corporation*, August 4, 2017.

"Scientists Legit Studied The Brains Of People Watching 'Sherlock' And Discovered Something Super Cool." *Gizmodo Australia*, August 4, 2017.

"'Sherlock' and the case of narrative perception." *Science Daily*, August 2, 2017.

SERVICE

*Departmental Service*

Director of Undergraduate Studies for Psychology (2019-)

COVID-19 Research Ramp-Up Committee

*University Service*

Elected to Junior Faculty Advisory Board (2020-2022)

*Volunteer reviewer*

Attention, Perception, & Psychophysics  
Behavioural Brain Research  
Cerebral Cortex  
Cognition  
Cognitive Research: Principles and Implications  
Current Opinion in Neurobiology  
Developmental Science  
eLife  
eNeuro  
European Conference on Computer Vision (ECCV)  
Frontiers in Human Neuroscience  
IEEE Conference on Computer Vision and Pattern Recognition (CVPR)  
IEEE Journal of Selected Topics in Signal Processing  
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)  
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)  
International Conference on Computer Vision (ICCV)  
International Workshop on Pattern Recognition in Neuroimaging  
Journal of Cognitive Neuroscience  
Journal of Neuroscience  
Journal of Neuroscience Methods  
Journal of Vision  
Nature Communications  
Nature Human Behavior  
Nature Neuroscience  
Neural Information Processing Systems (NIPS)  
NeuroImage  
Neuropsychologia  
PLOS ONE  
Proceedings of the National Academy of Sciences (PNAS)  
Psychology and Aging  
Science Advances  
Trends in Cognitive Science

CONFERENCE AND WORKSHOP PRESENTATIONS T.S. Yates, L.J. Skalaban, C.T. Ellis, A.J. Bracher, C. Baldassano, N.B. Turk-Browne. “How infants carve up continuous experience into neural events.” Poster Presentation and Oral Presentation at the Flux Virtual Congress (2021).

K. Kleespies, M. Sumner, E. McDevitt, C. Baldassano, U. Hasson, K. Norman, M. Schönauer. “The neocortex rapidly acquires a content-specific representation of naturalistic learning material.” Poster Presentation at Psychologie und Gehirn (2021).

S. Cohen and C. Baldassano. “Event representations become more stable and predictive with age.” Poster Presentation at the Flux Virtual Congress (2020).

S. Shim and C. Baldassano. “Event Perception Based on Working Memory Demand.” Poster Presentation at the Columbia Psychology Symposium (2020).

H. Tarder-Stoll, C. Baldassano, M. Aly. “Multi-Step Prediction and Integration in Naturalistic Environments.” Poster Presentation at the Cognitive Neuroscience Society Virtual Meeting (2020).

C.S. Lee, M. Aly, C. Baldassano. “Anticipation of temporally structured events in the brain.” Poster Presentation at the Society for Neuroscience Annual Meeting, Chicago, IL (2019).

- M.E. Siegelman, N. Kriegeskorte, C. Baldassano. “A neural network model of naturalistic schema learning with computer-generated poetry.” Poster Presentation at the Society for Neuroscience Annual Meeting, Chicago, IL (2019).
- S.S. Cohen, C. Baldassano. “The evolution of narrative processing during development.” Poster Presentation at the Society for Neuroscience Annual Meeting, Chicago, IL (2019).
- S.A. Nastase, Y. Liu, H. Hillman, A. Zadbood, L. Hasenfratz, N. Keshavarzian, J. Chen, C.J. Honey, Y. Yeshurun, M. Regev, M. Nguyen, C.H.C. Chang, C. Baldassano, O. Lositsky, M.A. Chow, Y.C. Leong, P.P. Brooks, A. Goldstein, G. Choe, K.A. Norman, U. Hasson. “Narratives: fMRI data for evaluating models of naturalistic language comprehension.” Poster Presentation at the Society for Neuroscience Annual Meeting, Chicago, IL (2019).
- R. Masis-Obando, U. Hasson, K.A. Norman, C. Baldassano. “Decoding mental walkthroughs of spatial memories in an immersive virtual reality environment.” Poster Presentation at the Society for Neuroscience Annual Meeting, Chicago, IL (2019).
- A. Reblando, T. Kelishasi, C. Baldassano. “Manipulating temporal event structure via top-down script activation.” Poster Presentation at the Society for Neuroscience Annual Meeting, Chicago, IL (2019).
- C.S. Lee, M. Aly, C. Baldassano. “Anticipation of temporally structured events in the brain.” Poster Presentation at the Context and Episodic Memory Symposium, Philadelphia, PA (2019).
- M. Siegelman and C. Baldassano. “Modeling brain representations of structured schematic poetry with recurrent neural networks.” Poster Presentation at the Context and Episodic Memory Symposium, Philadelphia, PA (2019).
- M. Silva, C. Baldassano, L. Fuentemilla. “Electrophysiological signatures of event segmentation during movie viewing and recall.” Poster Presentation at the Society for Neuroscience Annual Meeting, San Diego, CA (2018).
- R. Masis-Obando, K.A. Norman, C. Baldassano. “Decoding mental walkthroughs of spatial memories in an immersive virtual reality environment.” Poster Presentation at the Society for Neuroscience Annual Meeting, San Diego, CA (2018).
- J. Williams, C. Baldassano, J. Chen, U. Hasson, K.A. Norman. “Exploring event structure in song perception.” Poster Presentation at the Society for Neuroscience Annual Meeting, San Diego, CA (2018).
- C. Baldassano. “Perception and memory of schematic narrative events.” Oral Presentation at the International Conference on Learning and Memory (2018).
- J. Williams, C. Baldassano, J. Chen, U. Hasson, K.A. Norman. “Exploring event structure in song perception.” Oral Presentation at the Context and Episodic Memory Symposium, Philadelphia, PA (2018).
- A. Beukers, C. Baldassano, U. Hasson, K.A. Norman. “Learning the statistics of events.” Poster Presentation at the Context and Episodic Memory Symposium, Philadelphia, PA (2018).
- C. Baldassano, R. Masis-Obando, U. Hasson, K.A. Norman. “Perception and recall of narrative event schemas.” Poster Presentation at the Society for Neuroscience Annual Meeting, Washington, DC (2017).

- J.D. Cohen, M. Lesnick, B. Keller, C. Baldassano, A.C. Schapiro, C.T. Ellis. "Using realistic, synthetic fMRI data to validate Topological Data Analysis as a tool for fMRI." Poster Presentation at the Society for Neuroscience Annual Meeting, Washington, DC (2017).
- J. A. Williams, J. Chen, C. Baldassano, U. Hasson, K.A. Norman. "Neural representation of musical contexts in high-level cortical regions." Poster Presentation at the Society for Neuroscience Annual Meeting, Washington, DC (2017).
- I. I. Groen, M.R. Greene, C. Baldassano, L. Fei-Fei, D.M. Beck, C.I. Baker. "Convolutional neural networks best predict representational dissimilarity in scene-selective cortex: comparing computational, object and functional models." Oral Presentation at the Vision Sciences Society Annual Meeting, St. Pete Beach, FL (2017).
- I. I. Groen, M.R. Greene, C. Baldassano, D.M. Beck, L. Fei-Fei, C.I. Baker. "Comparing computational, object and functional models of scene representation in the human brain." Oral Presentation at the Society for Neuroscience Annual Meeting, San Diego, CA (2016).
- M. Regev, E. Simony, C. Baldassano, U. Hasson. "Attention selectively modulates dynamical functional connectivity in processing of simultaneously presented spoken and written narratives." Oral Presentation at the Society for Neuroscience Annual Meeting, San Diego, CA (2016).
- C. Baldassano, U. Hasson, K.A. Norman. "Representation of real-world event schemas during narrative perception." Poster Presentation at the Society for Neuroscience Annual Meeting, San Diego, CA (2016).
- J.W. Antony, C. Baldassano, M. Aly, K.A. Norman, N.B. Turk-Browne. "Reconstructing spatial location and forward planning during navigation." Poster Presentation at the Society for Neuroscience Annual Meeting, San Diego, CA (2016).
- C. Baldassano, J. Chen, J. Pillow, U. Hasson, K. Norman. "Discovering event structure in continuous narrative perception and memory." Oral Presentation at the Manhattan Area Memory Meeting, New York, NY (2016).
- C. Baldassano, J. Chen, J. Pillow, U. Hasson, K. Norman. "Tracking brain activity during continuous perception and recall." Oral Presentation at the Context and Episodic Memory Symposium, Philadelphia, PA (2016).
- C. Baldassano\*, A. Saxe\*. "A theory of learning dynamics in perceptual decision-making." Poster Presentation at the Computational and Systems Neuroscience (Cosyne) conference, Salt Lake City, NV (2016).
- C. Baldassano, A. Esteva, D.M. Beck, L. Fei-Fei. "Two distinct scene processing networks connecting vision and memory." Oral Presentation at the Society for Neuroscience Annual Meeting, Chicago, IL (2015).
- C. Baldassano, A. Esteva, D.M. Beck, L. Fei-Fei. "Two distinct scene processing networks connecting vision and memory." Oral Presentation at the Vision Sciences Society Annual Meeting, St. Pete Beach, FL (2015).
- M.R. Greene, C. Baldassano, A. Esteva, D.M. Beck, L. Fei-Fei. "Functions Provide a Fundamental Categorization Principle for Scenes." Oral Presentation at the Vision Sciences Society Annual Meeting, St. Pete Beach, FL (2015).
- C. Baldassano, D.M. Beck, L. Fei-Fei. "Parcellating connectivity in spatial maps." Poster Presentation at BayLearn (Bay Area Machine Learning Symposium), Berkeley, CA (2014).

- C. Baldassano, A. Esteva, D.M. Beck, L. Fei-Fei. “Comparing and parcellating voxel-scale multimodal human brain connectivity.” Poster Presentation at the Fourth Biennial Conference on Resting State / Brain Connectivity, Cambridge, MA (2014).
- C. Baldassano, D.M. Beck, L. Fei-Fei. “Supervoxel parcellation of visual cortex connectivity.” Poster Presentation at the Vision Sciences Society Annual Meeting, St. Pete Beach, FL (2014).
- C. Baldassano, D.M. Beck, L. Fei-Fei. “Differential Connectivity Within the Parahippocampal Place Area.” Oral Presentation at the Vision Sciences Society Annual Meeting, Naples, FL (2013).
- C. Baldassano, D.M. Beck, L. Fei-Fei. “Differential Connectivity Within the Parahippocampal Place Area.” Poster Presentation at the Cognitive Neuroscience Society Annual Meeting, San Francisco, CA (2013).
- C. Baldassano, M.C. Iordan, D.M. Beck, L. Fei-Fei. “Discovering Voxel-Level Functional Connectivity Between Cortical Regions.” Oral and Poster Presentation at the Machine Learning and Interpretation in NeuroImaging Workshop, NIPS (2012).
- C. Baldassano, D.M. Beck, L. Fei-Fei. “Neural Representation of Human-Object Interactions.” Oral Presentation at the Vision Sciences Society Annual Meeting, Naples, FL (2012).
- A.G. Lustig, C. Baldassano, E. Caddigan, L. Fei-Fei, D.M. Beck. “Does category-based attention change the representation of scene category?” Poster Presentation at the Cognitive Neuroscience Society Annual Meeting, Chicago, IL (2012).
- M.C. Iordan, C. Baldassano, D.B. Walther, D.M. Beck, L. Fei-Fei. “Translation Invariance of Natural Scene Categories.” Oral Presentation at the Vision Sciences Society Annual Meeting, Naples, FL (2011).
- C. Baldassano, M.C. Iordan, D.M. Beck, L. Fei-Fei. “Fine-Grained Functional Connectivity using Spatial Regularization.” Poster Presentation at the NIPS Workshop on Machine Learning and Interpretation in Neuroimaging (2011).
- C. Baldassano, M.C. Iordan, D.M. Beck, L. Fei-Fei. “Objects in context: decoding and connectivity.” Poster Presentation at the Collaborative Research in Computational Neuroscience Principal Investigator Meeting, Princeton, NJ (2011).
- C. Baldassano, M.C. Iordan, D.M. Beck, L. Fei-Fei. “Decoding objects undergoing contextual violations.” Poster Presentation at the Vision Sciences Society Annual Meeting, Naples, FL (2011).

#### OTHER PUBLICATIONS

- A. Saxe, C. Baldassano. “Convergence properties of deep linear networks.” CS229T Final Project Report, 2014.
- C. Baldassano, G. Franken, J. Mayer, A. Saxe, D. Yu. “Kratos: Princeton University’s Entry in the 2008 IGVC.” 21st Annual IS&T/SPIE Symposium on Electronic Imaging, Proc. Vol. 7252, 72520I (2009); DOI:10.1117/12.810509.
- C. Baldassano. “Compact Attitude Sensor System using SR-UKF.” National Science Foundation SUNFEST 2008 Report TR-CST12SEP08, p. 164-195.
- I. Ashwash, A.R. Atreya, C. Baldassano, D. Benjamin, B.C. Cattle, B.M. Collins, A. Downey, G.H. Franken, J. Glass, Z. Glass, L. Gorman, J.S. Herbach, W. Hu, U. Javed, J.R. Mayer, S.M. Momen, A.M. Saxe, S.N. Schiffres, D. Yu, A.L. Kornhauser. “Princeton University Technical Paper.” Defense Advanced Research Projects Agency (DARPA), Nov. 2007.