Christoph Bregler
Google Director / Principal Scientist
Former Full Professor (tenured at NYU)

EDUCATION

*University of California, Berkeley*, CA, 09/93 – 05/98
Ph.D. in Computer Science, 1998, M.S., 1995
Thesis: Computational Models of Human Motion

*University of Karlsruhe, Germany*, 10/87 – 09/93
Diplom in Computer Science, 1993
Thesis: Computer Lipreading

PROFESSIONAL EMPLOYMENT

*Google*, Mountain View & San Francisco, 2015-present
Director, Principal Scientist (level 8): Leading teams in Misinfo Research, Media Integrity, DeepFakes, Cheapfakes, VFX Tech, AR/VR, Human Pose and Face Analysis & Synthesis at Google AI with launches in YouTube, DayDream, Photos, JigSaw, and other product areas.

*Stanford University*, Visiting Professor of Neurology, 2014- 2015

*New York University*, Computer Science Dept., Courant Institute, New York, 2002 – 2014
Full Professor (tenured) / (previously Associate Professor (tenured) / Asst. Professor)

*Lucasfilm, Industrial Light & Magic*, San Francisco, 2007 – 2015
Lead Architect for ILM Multi-Track, co-developed Geometry Tracker, General Match Moving tools, 3D Face Capture. Received 2016 *Academy Award* for Geometry Tracker (with Ronald Mallet) in the Oscars Sci-Tech Category. Multi-Track and Geometry Tracker was used in: Avatar (2009), Cowboys & Aliens, Pirates of the Caribbean: on Stranger Tides, Transformers: Dark of the Moon, Transformers: Age of Extinction, Avengers: (2012), Avengers: Age of Ultron (2015), Battleship, G.I. Joe, Captain America: The Winter Soldier, Now You See Me, Pacific Rim, Star Trek: Into Darkness, Lone Ranger, Lucy, Noah, Teenage Mutant Ninja Turtles (2014), Star Wars: The Force Awakens (2015).

*Manhattan Mocap, LLC*, New York City, 2009–2014 (IP acquired by other entity)
Founder, C.E.O. – 5 employees, Motion Capture technology, R&D. Clients include ESPN, MLB, Digitas, 20th Century Fox, New York Times, Disney, Lucasfilm, ILM.

*Grit Enterprises, Inc*, Berkeley, CA, 06/14 – 12/14 (acquired by other entity)
Founder, C.E.O. – 3 employees, Face Recognition, Deep Learning, Graphics. Client: IARPA contract (Research wing of CIA, NSA, FBI), US Navy Contract

Various *(ongoing)* short-term consulting arrangements: Expert-Witness, IP Evaluation, Project Planning, Research, etc (clients included 20th Century Fox, Weil, Gotshal & Manges, Paladin Capital Group, Cowan Leibowitz & Latman P.C., Sheppard Mullin
Richter & Hampton LLP, Gray Cary Ware & Freidenrich LLP, TAEUS, Lightstorm Entertainment, ESC Entertainment)

Stanford University, Computer Science Department, CA, 01/99 – 08/02
Assistant Professor: Vision, Graphics, Learning.

Disney Feature Animation, Burbank, CA, 2001 + 2002
Consultant: Vision Based Motion Capture for Gemini Project (Facial Animation)

New York University, Courant Institute/Media Research Lab, New York, 08/98 – 01/99
Visiting Scholar

Interval Research Corp., Palo Alto, CA, 95 – 97
Consultant: Developed Facial Animation System: Video Rewrite

Hewlett-Packard Laboratories, Palo Alto, CA, 91-92
Software Engineer: Developed System Software for Physician’s Workstation Project

HONORS

• Seminal Graphics Papers 2023: 1997 VideoRewrite Paper (Bregler, Covell, Slaney) was republished in 50th SIGGRAPH anniversary edition: Seminal Graphics Papers: Pushing the Boundaries, Volume 2 August 2023
• Academy Award 2016 in the Oscar’s Science & Technology (SCITECH) category for ILM’s Geometry Tracker (with Ronald Mallet)
• Malofiej21 Gold (Main Infographics Event for Journalists), for “Olympics Portfolio” with NY Times collaboration.
• Time Magazine feature as one of the “10 Ideas that make a Difference in 2013”
• 2012 New York Times Publisher’s Award and 2012 Online Journalism Award for “Connecting Music and Gesture” / “The Maestro’s Mojo”
• 2011 Best in Show Award Peter Sullivan Award, 19th Malofiej International Infographics Awards, for “How Mariano Rivera Dominates Hitters” with NY Times collaboration.
• Malofiej19 Gold (same event as above), for “How Mariano Rivera Dominates Hitters” with NY Times collaboration.
• IEEE 2008 Longuet-Higgins Prize (for Fundamental Contributions in Computer Vision that Have Withstood the Test of Time)
• Finalist, Blavatnik Award 2007 (New York Academy of Science)
• Reese Prosser Memorial Lecture 2005 (Dartmouth)
• Motion Capture Society World Records: Squidball: Most Interactive Capture (Incumbent), Largest Markers (Incumbent), Largest Capture (2004)
• Program Chair, SIGGRAPH 2004, Computer Animation Festival & Electronic Theater
• Sloan Research Fellow, 2003, 2004
• Olympus Prize, 2002, (German Vision / AI Society DAGM honors every year 1 outstanding scientist)
• I.E. Block Community Lecture, 50th Anniversary of SIAM community, 2002
• IEEE CVPR 2001 Best Student Paper (Co-Advisor / Advisor of student)
• *Stanford Terman Fellow*, 1999
• *Stanford Joyce Faculty Fellow*, 1999
• *ACM Doctoral Dissertation Nomination*, 1998

**OTHER PROFESSIONAL ACTIVITY**

**Editorial Boards:**
- *International Journal of Computer Vision* (Springer)
- *IEEE Transaction of Pattern Analysis and Machine Intelligence*
- *Foundations and Trends in Computer Graphics and Vision* (Now Publishers)

**Other Boards:**
- Board of Directors, Dance Notation Bureau, NYC, since 2009
- Board of Directors, SONA Research, San Francisco, since 2009
- Advisory Board, Max Planck & Stanford University Center for Visual Computing and Communication, since 2012
- Advisory Board, MaMoCa, Los Angeles, now sold to MotionAnalysis, since 2006
- Advisory Board, Machine Perception Technologies, San Diego, Jan 2008 to Jan 2013
- HackNY, Admissions Committee, 2012

**Program Committees:**
- Prix Ars Electronica Jury, Linz, 2013
- Program Chair, Pacific Graphics, 2012
- Prix Ars Electronica Jury, Linz, 2010
- ACM SIGGRAPH 2009 General Jury
- Prix Ars Electronica Jury, Linz, 2009
- Program Chair IEEE Workshop on Motion and Video Computing, Snowbird, Utah, 2009
- IEEE CVPR 2007
- ACM SIGGRAPH Papers 2006
- ACM SIGGRAPH Papers 2005
- Area Chair for IEEE CVPR, 2005
- ACM SIGGRAPH Electronic Theater & Computer Animation Festival, Chair 2004
- IEEE CVPR, Madison, Wisconsin, 2003,
- AAAI, Edmonton, Alberta, Canada 2002,
- Eurographics, Sarbruecken, Germany, 2002,
- Pacific Graphics, Beijing, China, 2002,
- IEEE CVPR, Hawaii, 2001,
- Graphics Interface, Ottawa, Ontario, Canada, 2001,
- IEEE Workshop on Human Motion, Austin, TX 2001,
- Area Chair for IEEE CVPR, Hilton Head, SC, 2000,
- IEEE Workshop on Human Modeling, Hilton Head, SC, 2000,
- Vision, Modeling, and Visualization, Stuttgart, Germany, 2001,
- IEEE Computer Animation, Seoul, Korea, 2001,
- IEEE Computer Animation, Philadelphia, 2000,
- ACM SIGGRAPH Animation Sketches, New Orleans, 2000,
- Audio-Visual Speech Processing, Santa Cruz, 1999,
- IEEE Int. Workshop on Modeling People, Corfu, Greece, 1999

**Review Panels:**
- NSF review panel for various programs in 2008, 2007, 2005, 2003, 2002, 2001, 1998
- Sloan Foundation Feature Film Grant Judge, 2011, 2010, 2009, 2006, 2005, 2004, NYU Tisch School of Arts Film&TV & Sloan Foundation

**Reviewer:**
MacArthur Foundation, ACM SIGGRAPH, SCA, Advances in Neural Information Processing Systems, IEEE CVPR, EE Computer Animation, IEEE Int. Conf on Robotics and Automation, Int. Journal on Computer Vision, Trans. on Pattern Analysis and Machine Intelligence, Journal of Computer Vision and Image Understanding, Trans. on Image Processing, Journal on Artificial Intelligence Research, Journal of VLSI Signal Processing Systems For Speech, Image, and Video Technology.

GRANTS

IARPA Janus Grant: $1,400,000, Face Recognition, Face Synthesis, Deep Learning, 08/14-Via Grit Enterprises Inc (CEO and Founder).

ONR Grant: Dyadic and Crowd Analytics from Video, 10/11-09/14
PI: C. Bregler, $1,050,000 / 3 years

AFRL SBIR Phase II Grant: Automated Analysis and Classification of Anomalous 3-D Human Shapes and Hostile Actions, 05/11-04/13
PI: K. Atul, NYU-PI: C. Bregler, $250K subcontract to NYU.

ONR Grant: Statistical Analysis of Body Signatures. 12/08 – 10/11
PI: C. Bregler, $900K / 3 years + DURIP of $572K = total $1,472,000

Google Faculty Research Award, Space-Time Mash-Up, 05/10-05/11
PI: C. Bregler, $30K / 1 year

AFRL SBIR Phase I Grant: Automated Analysis and Classification of Anomalous 3-D Human Shapes and Hostile Actions, 05/10-11/11
PI: K. Atul, NYU-PI: C. Bregler, $33K subcontract to NYU.

NSF Grant: SGER: The Grammar of Immersive Interactive Narrative. 08/07 – 07/08
PI: Scott Snibbe, C. Bregler, $130K / 1 year (subcontract to SONA research)

ONR Grant: Intrinsic Biometrics for Human Motion Signatures. 05/07 – 12/08
PI: C. Bregler, $280K / 1.5 years

NSF Grant: Laban Capture, Perceptual Models of Dynamics. 09/03 – 09/07
PI: C. Bregler, Co-PI: Ted Warburton (Dance Education), Peggy Hackney (IMS);
$672K / 3 years

NSF Grant: ITR: New Technology for the Capture, Analysis and Visualization of Human Movement. 09/03 – 09/07
PI: R. Chellappa, UMD, Co-PI, C. Bregler, NYU, J Jeka, T. Andriacchi, Stanford, L. Davis, UMD;
NYU part $320K / 3 years

Sloan Research Fellow, 09/03 – 09/05, $40K / 2 years

ONR-MURI Detecting Human Activity with a network of vision sensors. 10/01 – 10/06
PIs: J. Malik, Co-PIs: C. Bregler, D. Forsyth, J. Canny, S. Russell, M. Jordan, P. Perona, M. Mataric;
Subcontract for $750K / 5 years (to NYU now)

NSF Grant: Models of Human Kinematics, 09/00 – 08/03
PI: Bregler; $340K / 3 years
NSF CISE Research Instrumentation: High-Speed Motion Acquisition, 09/00 – 08/03
  PI: Bregler, Co-PI: Andriacchi, Hanrahan;
  $200K / 3 years

Stanford BIO-X: “Move-to-a-Cure” 10/00 – 10/02
  Collaboration with Medical School to analyze Movement Disorders.
  PI: Bronthe-Steward, Co-PI: Bregler; Alexander
  $200K / 2 years

Stanford Office of License and Technology Research Incentive grant for Cartoon Capture, 2001
  PI: Bregler, Loeb; $25K

Stanford Terman Fellowship, 1999-2001

Stanford Noyce Faculty Scholarship, 1999-2000

Gift Fund from Electronic Arts, 2001, $45K

Gift Fund from Microsoft Research, 2000, $20K

California MICRO, Interval, Recognition of Human Motion in Video, 07/96-07/98
  Faculty PI: J. Feldman; Student PI: C. Bregler;
  $100K / 2 years

PUBLICATIONS

Video Rewrite: Driving visual speech with audio (Seminal Graphics Paper 2023 edition)
Christoph Bregler, Michelle Covell, Malcolm Slaney, Seminal Graphics Papers: Pushing the Boundaries, Volume 2, 2023

COSMOS: Catching out-of-context image misuse using self-supervised learning
Shivangi Aneja, Christoph Bregler, Matthias Niessner, Proc AAAI conf on AI, 2023

Training-Free Neural Matte Extraction for Visual Effects
S Elcott, JP Lewis, N Kanazawa, C Bregler, SIGGRAPH Asia Tech Comms, 2022

ACM Multimedia grand challenge on detecting cheapfakes, 2022
Shivangi Aneja, Cise Midoglu, Duc-Tien Dang-Nguyen, Sohail Ahmed Khan, Michael Riegler, Pål Halvorsen, Chris Bregler, Balu Adsumilli, https://arxiv.org/pdf/2207.14534.pdf

MMSys’ 21 grand challenge on detection cheapfakes, 2021
Shivangi Aneja, Cise Midoglu, Duc-Tien Dang-Nguyen, Michael Alexander Riegler, Paal Halvorsen, Matthias Nießner, Balu Adsumilli, Chris Bregler, https://arxiv.org/pdf/2107.05297.pdf

LipSync3D: Data-Efficient Learning of Personalized 3D Talking Faces from Video using Pose and Lighting Normalization
Avisek Lahiri, Vivek Kwatra, Christian Frueh, J.P. Lewis, Christoph Bregler, CVPR 2021

SimPose: Effectively Learning DensePose and Surface Normal of People from Simulated Data
Tyler Zhu, Per Karlsson, Christoph Bregler, ECCV 2020

PuppetGAN: Cross-Domain Image Manipulation by Demonstration
Towards Accurate Multi-person Pose Estimation in the Wild
George Papandreou, Tyler Zhu, Nori Kanazawa, Alexander Toshev, Jonathan Tompson, Christoph Bregler, Kevin Murphy, CVPR 2017

Efficient ConvNet-based Marker-less Motion Capture in General Scenes with a Low Number of Cameras
A. Elhayek, E. de Aguiar, A. Jain, J. Tompson, L. Pushchulin, M. Andriluka, C. Bregler, B. Schiele, C. Theobalt, CVPR 2015

Efficient Object Localization Using Convolutional Networks
Jonathan Tompson, Ross Goroshin, Arjun Jain, Yann LeCun, Christoph Bregler, CVPR 2015

Dancing with the Turks
I-Kao Chiang, Ian Spiro, Seungkyu Lee, Alyssa Lees, Jingchen Liu, Chris Bregler, Yanxi Liu
Proc. ACM Int. Conf. On Multimedia, 2015

Joint Training of a Convolutional Network and a Graphical Model for Human Pose Estimation
Jonathan Tompson, Arjun Jain, Yann LeCun, Christoph Bregler, NIPS 2014

MoDeep: A Deep Learning Framework Using Motion Features for Human Pose Estimation
Arjun Jain, Jonathan Tompson, Yann LeCun, and Chris Bregler, ACCV 2014

Learning Human Pose Estimation Features with Convolutional Networks
Arjun Jain, Jonathan Tompson, Mykhaylo Andriluka, Graham W. Taylor, Christoph Bregler, Int. Conf. on Learning Representations, (ICLR) 2014

Cryptagram: Photo Privacy for Online Social Media
Matt Tierney, Ian Spiro, Chris Bregler, Lakshmi Subramanian
ACM Conference on Online Social Networks (COSN), 2013

Realtime Facial Animation with On-the-fly Correctives
Hao Li, Jihun Yu, Tuting Ye, Chris Bregler
ACM SIGGRAPH, Technical Papers, 2013

Markerless Motion Capture in the Crowd
Ian Spiro, Thomas Houston, Christoph Bregler
Collective Intelligence, 2012

3D skeletal reconstruction from low-resolution multi-view images
Mayank Rana, Graham Taylor, Ian Spiro, Christoph Bregler
CVPR Int. Workshop on Human Activity Understanding from 3D Data, 2012

Learning Invariance by Imitation
Graham Taylor, Ian Spiro, Christoph Bregler, and Rob Fergus,
Proc. of the 24th IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR) 2011

Pose-Sensitive Embedding by Nonlinear NCA Regression
G. Taylor, R. Fergus, I. Spiro, G. Williams and C. Bregler
Proc. of Advances in Neural Information Processing Systems (NIPS) 23, 2011

Convolutional Learning of Spatio-temporal Features
G. Taylor, R. Fergus, Y. LeCun and C. Bregler
Proc. of the 11th European Conference on Computer Vision (ECCV), 2010

**Body Motion Analysis for Multi-Modal Identity Verification**
G. Williams, G. Taylor, K. Smolskiy, C. Bregler
IEEE Int. Conf. on Pattern Recognition, 2010

**Hands by hand: crowd-sourced motion tracking for gesture annotation**
I. Spiro, G. Taylor, G. Williams, C. Bregler
IEEE CVPR Workshop on Automatic Vision with Humans in the Loop, 2010

**Learning local spatio-temporal features for activity recognition**
G. Taylor, C. Bregler
Snowbird Learning Workshop, 2010

**Identifying People based on their Motion Signature**
G. Williams, G. Taylor, I. Spiro, C. Bregler
Snowbird Learning Workshop, 2010

**Convolutional learning of spatio-temporal features**, Graham Taylor, Rob Fergus, Yann LeCun, and Christoph Bregler. In New York Academy of Sciences Machine Learning Symposium, 2010

**Improving Acoustic Speaker Verification with Visual Body-Language Features**
C. Bregler, G. Williams, S. Rosenthal, I. McDowall
Proc. IEEE Int. Conference on Acoustics Speech and Signal Processing, 2009

**Large Displacement Optical Flow**
T. Brox, C. Bregler, J. Malik
Proc. IEEE Conf. Computer Vision and Pattern Recognition, 2009

**ILM's Multitrack: A new visual tracking framework for high-end VFX production**
C. Bregler, K. Bhat, J. Saltzman, B. Allen
ACM SIGGRAPH 2009 talks/abstracts (formerly known as sketch)

**Non-Rigid Structure-From-Motion: Estimating Shape and Motion with Hierarchical Priors**
L. Torresani, A. Hertzmann, C. Bregler
IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 30, No. 5, May 2008

**Learning Motion Style Synthesis from Perceptual Observations**
Lorenzo Torresani, Peggy Hackney, Christoph Bregler
Proc. Of Neural Information Processing (NIPS) 2007.

**Learning to Synthesize Motion Styles**
L. Torresani, P. Hackney, C. Bregler
Snowbird Learning Workshop, 2006

**Squidball: An Experiment in Large Scale Motion Capture and Game Design**
C. Bregler, C. Castiglia. J. DeVincenzo, L. Dubois, K. Feeley, T. Igoe, J. Meyer, M. Naimark, A. Postelnicu, M. Rabinovich, S. Rosenthal, K. Salen, J. Sudol, B. Wright
Proc. Intelligent Technologies for Interactive Entertainment (INTETAIN) 2005, Springer Lecture Notes in Artificial Intelligence

**Mood Swings: Expressive Speech**
Erika Chuang, Chris Bregler
Transactions on Graphics 2005

Speaking with Hands: Creating Animated Conversational Characters from Recordings of Human Performance
M. Stone, D. DeCarlo, I. Oh, C. Rodriguez, A. Stere, A. Lees, C. Bregler
Proc. ACM SIGGRAPH 2004.

Estimation of skeletal kinematics through high feature density video based motion capture
Gene Alexander, Tom Andriacci, Chris Bregler
Eighth International Symposium on the 3-D Analysis of Human, 2004

Twist based Acquisition and Tracking of Animal and Human Kinematics
Christoph Bregler, Jitendra Malik, Kathy Pullen
Int. Journal of Computer Vision (IJCV), 56(3), 179-194, 2004.

Learning Non-Rigid 3D Shape from Video
Lorenzo Torresani, Aaron Hertzmann, Christoph Bregler
Proc. Of Neural Information Processing Systems (NIPS) 2003.

Nonrigid Modeling of Body Segments for Improved Bone Motion Estimation
Eugene J. Alexander, Christoph Bregler, Tom P. Andriacchi
Computer Modeling in Engineering and Science, Vol. 4, Number 3 & 4, pp. 351-364, 2003.

Facial Expression Space Learning,
Erika Chuang, Hrishi Deshpande, Christoph Bregler
Proc. Pacific Graphics, 2002.

Turning to the Masters: Motion Capturing Cartoons
Chris Bregler, Lorie Loeb, Erika Chuang, Hrishi Deshpande
Proc. ACM SIGGRAPH 2002, 399-407.

Motion-Capture assisted Animation: Texturing and Synthesis
Kathy Pullen, Chris Bregler
Proc. ACM SIGGRAPH 2002, 501-508.

CVPR Best Student Paper Award:
Tracking and Modelling Non-Rigid Objects with Rank Constraints
Lorenzo Torresani, Danny Yang, Gene Alexander, Christoph Bregler
Proc. IEEE Computer Vision and Pattern Recognition (CVPR), 2001.

Limb Segment Pose from Range Data Streams Through Homogenous Factorization
Eugene J. Alexander, Christoph Bregler, Tom P. Andriacchi
BED-Vol.50, Bioengineering Conference ASME 2001.

Animating by Multi-level Sampling
Katherine Pullen and Christoph Bregler
Proc. IEEE Computer Animation 2000, 36-42.

Recovering Non-Rigid 3D Shape from Image Streams
Christoph Bregler, Aaron Hertzmann and Henning Biermann
Proc. IEEE Computer Vision and Pattern Recognition (CVPR), 2000, 2/690-696.
From Motion Capture to Motion Texture
K. Pullen, C. Bregler
ACM SIGGRAPH 2000 Sketches.

Tracking People with Twists and Exponential Maps
Christoph Bregler and Jitendra Malik
Proc. IEEE Computer Vision and Pattern Recognition (CVPR), 1998. 8-15.

Video Rewrite: Driving Visual Speech with Audio
Christoph Bregler, Michele Covell, and Malcolm Slaney
Proc. ACM SIGGRAPH 1997, 353-360.

Learning and Recognizing Human Dynamics in Video Sequences
Christoph Bregler
Proc. IEEE Computer Vision and Pattern Recognition (CVPR), 1997.

Learning Appearance Based Models: Mixtures of Second Moment Experts
Christoph Bregler, Jitendra Malik
Advances in Neural Information Processing Systems (NIPS), 1996, 845-850.

Eigen-Points
Michele Covell, Christoph Bregler
Proc. IEEE Int. Conf. on Image Processing (ICIP), 1996.

Finding Naked People
Margaret M. Fleck, David A. Forsyth, Christoph Bregler
Proc. 4th European Conf. Computer Vision, Cambridge, UK, (ECCV) 1996, 594-602.

Finding Objects in Image Databases by Grouping
J. Malik, D. Forsyth, M. Fleck, H. Greenspan, T. Leung, C. Carson, S. Belongie, and C. Bregler
Proc. IEEE Int. Conf. on Image Processing (ICIP-96), special session on “Images in Digital Libraries”, 1996.

Nonlinear Manifold Learning for Visual Speech Recognition
Christoph Bregler, Stephen M. Omohundro
Int. Conf. Computer Vision (ICCV), 1995, 494-499.

Nonlinear Image Interpolation using Manifold Learning
Christoph Bregler, Stephen M. Omohundro
Advances in Neural Information Processing Systems (NIPS), 1994, 973-980.

"Eigenlips" for Robust Speech Recognition
Christoph Bregler, Yochai Konig
Proc. IEEE Int. Conf. on Acoustics, Speech, and Signal Processing, Adelaide, Australia, 1994.

Surface Learning with Applications to Lipreading
Christoph Bregler, Stephen M. Omohundro
Advances in Neural Information Processing Systems (NIPS), 1993, 43-50.

Improving Connected Letter Recognition by Lipreading
Christoph Bregler, Herman Hild, Stefan Manke, Alex Waibel
in Proc. IEEE Int. Conf. on Acoustics, Speech, and Signal Processing, 1993.

Bimodal Sensor Integration on the Example of "Speachreading"
Christoph Bregler, Stefan Manke, Herman Hild, Alex Waibel
Proc. of IEEE Int. Conf. on Neural Networks, 1993.
KEY-NOTES, PANELS, MISC PUBLICATIONS

**MWC Barcelona, Feb 2020**, DeepFakes/CheapFakes and other Google activities

**Deep-Vision** CVPR 2019 Workshop, Key-Note Speaker

**Panel:** July 19, 2018, DeepFakes: A Looming Challenge for Privacy, Democracy, and National Security. Washington DC, Heritage Foundation, featuring Senator Marco Rubio

**Newton Lecture, U.C. Berkeley:** Chris Bregler, Sep 5, 2016

**Beyond The Kiss-Cam: Measuring The Fan With Computer Vision Based Analytics**
George Williams, Ian Spiro, Chris Bregler
ESPN / MIT Sloan Sports Analytics Conference, Evolution of Sports Paper/Talk, March 2, 2013

Co-authored / Co-produced NY Times articles / features:

**What Romney and Obama’s Body Language Says to Voters**, New York Times, October 2, 2012

**How to Win: The High Dive**, New York Times, August 9, 2012

**One With the Water**, New York Times, July 27, 2012

**The Maestro’s Mojo**, New York Times, April 8, 2012

**Connecting Music and Gesture**, New York Times, April 6, 2012

**The Eye of the Crowd**
Christoph Bregler
Ends of Audience Conference Keynote, London, 2012, invited paper forthcoming in Journal of Participation, 2013

**Video Based Speech Animation**
Book Chapter with Malcolm Slaney,
Audiovisual Speech Processing. Vatikiotis-Bateson, E., G. Bailly & P. Perrier ,Cambridge, UK. Cambridge University Press. in press, 2013

**Non-Rigid Models in Science and Entertainment**
Christoph Bregler
Invited Talk & Abstract in Journal of Perception, APGV-ECVP Joint Symposium, Toulouse, August 28th, 2011

**Next Gen Motion Capture: From the Silver Screen to the Stadium**
Christoph Bregler
ESPN / MIT Sloan Sports Analytics Conference, Evolution of Sports Paper/Talk, March 4th, 2011

**Key-Note: Open and Solved Problems in Norigid Motion Estimation**
Christoph Bregler
4th Non-Rigid Shape Analysis IEEE CVPR 2011 Workshop, June 24, 2011

“**Familiar but Strange: Exploring our Relationship with Robots**”, New York Academy of Sciences Panel, December 5, 2011

“**Technological Advances in Clinical Practice**” American College of Sports Medicine Annual Conference at NYU Medical Center, November 12, 2011
Panel at TRIBECA DOOMSDAY FILM Festival, “The Singularity is Nigh”, New York City, October 22, 2011

Experiments in Crowd Gaming (Squidball 3) at Ars Electronica 2010 Festival
Sep 2 - 7, 2010

New York Times Magazine Interactive Feature for Mariano Rivera's Pitching Motion
July 4th, 2010 (Co-Producer)

Motion Capture Technology for Entertainment
C. Bregler, IEEE Signal Processing Magazine, November 2007

Symmetries of Dance
Y. Liu, X. Yang, M. Spivak, C. Bregler (TR CMU-RI 2007)

ACM SIGGRAPH Performance-Driven Facial Animation Course
Chris Bregler, SIGGRAPH, 2006

The Annual Reese Prosser Memorial Lecture: The Modern Mathematics of Motion Capture – From Muybridge through Disney and Beyond, Dartmouth College, Oct, 2005

Invited I.E. Block Community Lecture (Plenary Talk) SIAM 50th Anniversary and 2002 Annual Meeting, Chris Bregler, Philadelphia, 2002

Key-Note Speaker at Dynamics Workshop, European Conference on Computer Vision (ECCV) 2002,

Key-Note Speaker at Vision, Modeling, and Visualization (VMV), 2000.

ACM SIGGRAPH Image Based Modeling and Rendering Course, 1998,1999,2000

Probabilistic Models of Verbal and Body Gestures
C.Bregler, S.Omohundro, M.Covell, M.Slaney, S.Ahmad, D.A.Forsyth, J.A.Feldman as chapter in Computer Vision in Man-Machine Interfaces (R. Cipolla and A.Pentland eds), Cambridge University Press, 1998

Video Rewrite
C.Bregler, M.Covell, M.Slaney
Machines that Learn, Snowbird, Utah, 1998 and
Imagina, Monaco, 1998

A Hybrid Approach to Bimodal Speech Recognition
C.Bregler, S.Omohundro, Y.Konig
in Proc. of 28th Annual Asilomar Conf. on Signals, Systems, and Computers, Pacific Grove, CA 1994.

Learning Visual Motion Models for Lip Reading
Christoph Bregler, Stephen M. Omohundro
Chapter in Motion-Based Recognition, (M. Sha and R. Jain eds), Kluwer Academic Press, 1996.

PATENTS:
Issued Patents:

US Patent 5,880,788: Automated synchronization of video image sequences to new soundtracks  
Christoph Bregler  
Issued March-9, 1999

US Patent 6,188,776: Principle component analysis of images for the automatic location of control points  
Michele Covell, Christoph Bregler  
Issued Feb-13, 2001

US Patent 6,888,549: Method, apparatus and computer program for capturing motion of a cartoon and retargetting the motion to another object  
Christoph Bregler, Lorie Loeb  
Issued May-03, 2005

US Patent 8649555 B1: Visual Tracking Framework  
Bregler, Bhat, Allen.  
Issued Feb 11, 2014

System, method and computer-accessible medium for providing body signature recognition  
Bregler, Williams, McDowall, Rosenthal

System, method, software arrangement and computer-accessible medium for providing audio and/or visual information  
Rosenthal, Bregler, Castiglia, DeVincenzo, DuBois, Feeley, Igoe, Meyer, Naimark, Postelnicu, Rabinovich, Salen, Sudol, Wright

OTHER MEDIA:

My team released directly or via collaborators following blog posts that caused various press coverings (I am NOT the blog author, but I lead the team/research/collaboration):

Feb 22, 2017: Google Research and Daydream Labs: Seeing eye to eye in mixed reality

Jul 28, 2017: Expressions in Virtual Reality

Mar 8, 2019: Real-Time AR Self-Expression with Machine Learning

Sep 24, 2019: Contributing Data to Deepfake Detection Research

Feb 4, 2020: Disinformation is more than fake news

C-SPAN, July 19, 2018: Represented Google at a DeepFakes panel in Washington DC with Senator Mark Rubio.

New York Times upcoming feature on 3D Ballet Capture with David Hallberg, 2015

WSJ, SlashGear, Gizmodo, Phys.org, Gigaom, Engadget, UK Daily Mail, PC Magazine, etc

Oculus snaps up Nimble, 13th Lab and Chris Bregler (various articles in 12/14)

Gigaom -- Researchers are using deep learning to predict how we pose. It’s more important than it sounds, Oct 17, 2014.

Variety -- Academy Unveils 21 Feats on Oscar’s Sci-Tech Short List, Aug 15, 2014
NPR Radio Interview for Bob Garfield's "ON THE MEDIA", April 26, 2013, “THE FUTURE OF SURVEILLANCE"

Scientific American Online, April 18, 2013, “Crowd Watching: Video Analytics Could Flag Crimes Before They Happen"

Time Magazine, March 14, 2013, 10 Ideas That Make A Difference, “Spy on Sports Fans”

New York Times 2012: The Year in Graphics, December 30, 2012 (“Olympics Diving”, "Olympics One with the Water", "What Romney and Obama's Body Language Says to Voters", and "Connecting Music and Gesture (The Maestro's Mojo, Alan Gilbert and the NY Philharmonics)"

BBC World News, October 4, 7:30pm London Time, 2012, Interview on Obama / Romney Presidential Debate

CNN, August 24, 2012, "Can 3-D movie technology improve an athlete's performance? Olympic gold medalist Dana Vollmer demos the future of athletic training" VIDEO is here

CNN, August 24, 2012, "Olympian Dana Vollmer demonstrates how she uses 3D movie technology to improve her swimming performance"

ABC News, August 10, 2012, "Olympics: Best Swimmers Are Like Dolphins"

Scientific American, August 6, 2012, "Dana Vollmer's Butterfly Stroke Features Dolphinlike Moves."

National Geographic, France, August 7, 2012, "La nageuse à l'aise comme un dauphin dans l'eau"

TEDxNYU, April 14, 2012: NYU in Motion & Squidball

New York Times, April 13, 2012, In 3D: How Mariano Rivera Dominates Hitters (interactive feature on nytimes.com for 3D glasses)

PhysOrg feature, December 28 2011, “Social robotics: Beyond the uncanny valley”

Scienceline, January 3rd, 2010, “Almost human – Navigating the uncanny valley”

The Independent, October 4, 2011, "How to dub a film"

Scientific American, September 27, 2011, "Something in the Way You Move: Cameras May Soon Recognize Criminals by Their Gait" (Also at PBS News Hour)

New York Times, August 27, 2011, "Animated or Real, Both Are Believable"

NYU collaboration with C-Mon and Kypski on crowd-sourcing:
  o NYU Today (May 17, 2011)
  o Futurity (May 18, 2011)
  o Computer Vision Central (May 18, 2011)
  o Pressetext (in German, May 18, 2011)
  o Gizmag (May 19, 2011)
  o I Programmer (May 21, 2011)
  o Ninja Marketing (in Italian, May 25, 2011)
  o 3voor12 (in Dutch, May 30, 2011)
  o Public Radio International: The World (June 1, 2011)
    - also featured on podcast (June 17,2011)
  o The Fox is Black (June 2, 2011)
o Radio Netherlands Worldwide (June 8, 2011)

Discovery/Science Channel, December 29, 2010, NYU 3D Innovation Nation by Miles O’Brien (a CBS / NSF produced short segment about the NYU Movement Lab)

DiscoverNews (Discovery Channel online), October 6, 2010, “Athletes Use 3-D Imaging to Improve Their Game”

The New York Observer, October 4, 2010, “Computer Avatars Train Pro Athletes At NYU’s Movement Lab”

New York Times, October 3, 2010, Page A1, “From the ‘Avatar’ Playbook, Pro Teams Adopt 3-D Imaging”

Crowd2cloud show at Ars Electronica Festival 2010, Linz, Austria:
- ORF 2 TV, Interview, August 29, 2010
- WIRED Blog, Squidball in "Hallucinatory Art Snags Attention …", August 31, 2010
- ORF FM4, September 4, 2010
- Repair TV, September 5, 2010
- Servus TV, September 11, 2010

New York Times Magazine, 4th of July, NYU Movement Lab created 3D reconstructions for Interactive Feature “Rivera’s Cut Fastball” for “Mariano Rivera, King of the Closers” article.

NYU Today July 1, 2010, “NYU’s Movement Lab Reconstructs Mariano Rivera’s Pitching Motion for Animated 3D Look at His Delivery”

International Business Times, July 1, 2010, “3D Motion Capture Recreates Yankees Closer”

NYU Today, Vol 22, No 11, 2009 “Bregler Receives $1.47 Million Grant to Enhance Motion Capture Tools”

CIMS Alumni, Fall 2009, “Chris Bregler: A Motion Capture Expert Who’s Always on the Move”

Technology Review, interview (quoted) for APRIL 29, 2009, Second Skin Captures Motion

NYU Today, Vol 22, No 98, 2008 “Tina Fey Moves Like Sarah Palin, NYU Researchers Find”

CBSnews.com, UWIRE, Washington Square News, Nov 17, 2008, NYU Analysis Finds Fey’s Palin Near Perfect

Kerrang Radio, UK, Interview on GreenDot Project, Nov 5, 2008

BoingBoing 10/27 2008, GreenDot Project, "Biometric Identification by body language"

Der Spiegel Online 10/29 2008 GreenDot Project

Interviewed (quoted) for NewScientist Nov 26, 2007, “Cheap sensors could capture your every move”

New York Academy of Science Magazine, Autumn 2007, “Winning Science”.

NYU Alumni Magazine, Fall 2007, “Movers, shakers and … software”

Business Week, April 2nd, 2007: Video Interview on businessweek.com, & NYU’s Mocap Suit made the cover.

NYU Today “Courant Students Explore Body Movement with Laban Analysis”, Oct 24, 2005

SIGGRAPH 2004 Interviews:
- Animation Magazine, Sep 2004, “The Quest for the Best Eye Candy”
- Animation Magazine, Sep 2004, “The Next MoCap Frontier: Animation With Soul”
Computer Graphics World, Aug 2004, Portfolio, SIGGRAPH Electronic Theater
Computer Graphics World, Sep 2004, Portfolio, SIGGRAPH Animation Theater
Variety, August 9-15, 2004, “Aping Mother Nature”
Hollywood Reporter, Aug 6-8, 2004, “Geek Week”
Millimeter Magazine, June 2004, “An Animation Celebration”
Video Systems, June 2004, “An Animation Celebration”
Millimeter Magazine, May 4, 2004, “SIGGRAPH Announces Best Animated Short & Jury Award”
VFX Pro, May 4, 2004, “SIGGRAPH Announces Best Animated Short & Jury Award”
Shoot, Aug 6, 2004, “Fine Art Collection”
CG Channel, 07/20/04, “SIGGRAPH Computer Animation Festival”
Animation Flash, June 26, 2004, SIGGRAPH Sets Computer Animation Festival Program
Sony Pictures Imageworks Moves forward with IMAGE MOTION (in Channel 5 News, VFXWorld)
NHK (Main Japanese TV). Sep-19, 2004 1h documentary “Digital Stadium: SIGGRAPH2004 Special”
G4Tech TV, Aug 11, 2004

New York Times, 10/09/03, “Decoding the Subtle Dance of Ordinary Movements”
*New York 1 TV*, 08/13/03, NYU Motion Capture Lab Coverage
*SIAM News*, Vol 36, 3, 04/03, “Step by Step” (Article about Kathy Pullen + some of our research)
Technology Review, 11/30/02, “Automating Animation”
Computer Graphics World, 02/20, “Masterful Animation”
CG Focus, 12/03/01, “Cartoon Motion Capture”
Technology Review, 06/30/00, “Lying With Pixels”
*NBC Nightly News*, 09/14/97, Video Rewrite coverage
*Los Angeles Times*, 09/01/97, “Watch What They Say –Even If They Didn’t”

**OTHER ENTERPRENEURAL ACTIVITY:**

Developed partnership between Digitas North America and Manhattan Mocap / NYU, December, 2012. -- Press Release: [bit.ly/UIP9WL](http://bit.ly/UIP9WL)
Digitas is the largest digital brand agency in the U.S. with clients such as American Express, Master Card, Delta, Comcast, Puma, Emerson, Sprint, Olympics, US Open, etc.

Created & direct new studio & motion capture lab at Digitas that occupies 8,000+ square feet floor at Digitas’s NYC headquarter. This space is used for NYU non-profit research, and for-profit development of new brand based experiences and product campaigns.

**HackNY**, Admissions Committee, 2012
A New York City-based initiative seeking to create and empower a community of student-technologists

**Advisory Board**, MaMoCa, Los Angeles, since 2006, sold to Motion Analysis in 2011.
Advisory Board, Machine Perception Technologies, San Diego, Jan 2008 to Jan 2013

Board of Directors, SONA Research, San Francisco, since 2009
SONA Research founder and CEO: Scott Snibbe. Clients include Philip Glass, Björk, LAX.

Executive Producer & Festival Chair of SIGGRAPH 2004 Electronic Theater, Computer Animation Festival, and Squidball Preshow: Assembled and led production team, jury, staff of 37 people and produced largest Motion Capture Game and Electronic Theater show (according to World Records in the Motion Capture Society). Created partnerships with HBO Studio Productions, Curious Pictures, Psyop, ILM, and secured funding from Apple, AMD, Vicon, Segway, and 3DTV.

Partner, Yellow Computing, Mobile Devices Startup, 1988-1991, Developed PDA software and sync apps (precursor for Palm devices)

Founder, CB Software, Startup, Germany, 1985-1991. Developed software products with European wide distribution.