Moran Cerf

Kellogg School of Management, Northwestern University
and
Department of Neurosurgery, UCLA

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Employment

- 2013-present – Donald P. Jacobs Asst. Professor, **Kellogg School of Management**, Northwestern University
- 2013-present – Assistant professor, **Neuroscience**, Northwestern University
- 2009-present – Visiting professor, **Department of Neurosurgery**, UCLA
- 1998-present – Alfred P. Sloan screenwriting professor, **American Film Institute**

Affiliation

- 2013-present – **Recanati School of Business**, Tel-Aviv University
- 2013-present – **Sagol School of Neuroscience**, Tel-Aviv University
- 2013-present – **Complex Systems Institute**, Northwestern University
- 2012-present – **Department of Neurosurgery**, Long Island Jewish Medical Center
- 2010-present – **Stern School of Business**, NYU

Education

- 2010-2013 – Post-doctoral scholar, **Stern School of Business**, NYU
- 2005-2009 – Ph.D., **Neuroscience**, California Institute of Technology (advisor: Prof. Christof Koch)
- 2001 – M.A. *summa cum laude*, **Philosophy of Science**, Tel-Aviv University
- 1998-2000 – B.S., **Physics**, Tel-Aviv University

Work experience

- 2009-2010 – **Consultant**, Vivvva (Fashion on-line consumer website)
- 2008 – **Consultant**, Pharmaco-Kinesis
- 2002-2005 – **Hacker,** iMPERVA (NASDAQ: IMPV)
- 2002 – **Product architect, Customer instructor,** TTI Telecom (NASDAQ: TTIL)
- 2000-2002 – **R&D trainer**, Check Point Software Technologies (NASDAQ: CHKP)
- 2000 – **Inventor**, Systematic Inventive Thinking (S.I.T)
- 1998-2000 – **Software developer, Team leader**, Log-On Software
- 1995-1998 – **Intelligence** (soldier), Israeli Defense Forces
- 1998-2012 – **Freelance writer** for various technical publications (*Science*, *Scientific American*, etc.)

Professional service

- 2010-2012 – **President and Co-Founder**, Human Intracranial Research Foundation
- 2012 – **U.S. relations director**, Israel Brain Technologies (IBT)
- 2011 – **Co-chair**, Single neuron studies of the human brain bi-annual conference, Stern School of Business, New York University, New York
- 2005 – **Co-organizer,** Association for the Scientific Study of Consciousness annual conference, Caltech, Pasadena

Scholarly awards

- 2012 – Awarded the University of California *Instructional Grant* for teaching excellence
- 2012 – Winner of the Vision Science Society graphic figure competition
- 2009 – Work selected as 'Hot topic' in the *Society for Neuroscience* annual conference
- 2007 – Best poster, Eye-tracking Research and Application conference
- 2003 – The president scholarship for excellent Ph.D. students (*Highest award honored)*
- 2001 – Awarded full-tuition scholarship, *Tel-Aviv University*

Other awards

- 2011 – Winner of the New York *Makers Faire* "Editor's choice" (digital media art installation)
- 2010 – Winner of the *Reason Project* movie competition for the film: "Imagine"
- 2010 – Winner of the *Moth GradSlam* national story-telling competition (and 12 StorySlams)
- 2005 – Winner of the *Weizmann Institute* short-stories competition in memory of *Ofer Lider*
- 2004 – Winner of the *Jerusalem film festival*. Category: 'Short films,' for the film: "Parrots"
- 1994 – Best dissertation award, *Ministry of Education.* Title: 'Artificial Intelligence'

Teaching

- 2012 – Human neuro experiments design/analysis. *Stern School of Business, NYU* (Teaching score: 3.92/4)
- 2012 – Uses of eye-tracking in Marketing research, *NYU Workshop*
- 2011 – Guest lecture, Judgment and Decision Making, *Stern School of Business, NYU*

- 2007-2009 – Introduction to Neuroscience, *Neuroscience, Caltech*
- 2008-2009 – Brains, Minds and Society (with Colin Camerer, Antonio Rangel, and Ralph Adolphs), *Humanities and Social Sciences, Caltech*
- 2005 – Neural Networks, *Neuroscience, Caltech, (replacement teacher)*
- 2002 – Internet Security, *Graduate class in Computer Science, Tel-Aviv University*
- 2000 – Theoretical Methods in Physics, *Physics, Tel-Aviv University (replacement teacher)*

- Also *Teaching Assistant* for 10 classes at Caltech and Tel-Aviv University between 2004-2009

Grants

- 2012-2013 – Instructional Improvement Grant, for development of novel teaching methods *($40,000)*
- 2009-2012 – NIH/Institute of Drug Abuse, "The Neural Correlates of Effective Messages" *($1,100,000)*
- 2009-2011 – The *Mathers* Foundation *($170,000)*

Member

Neuroscience
- Association for the Scientific Study of Consciousness (ASSC)
- Cognitive Neuroscience Society (CNS)
- New York Academy of Sciences (NYAS)
- Social and Affective Neuroscience Society (SANS)
- Society for Neuroscience (SfN)
- Vision Science Society (VSS)

Business
- American Marketing Association (AMA)
- Association for Consumer Research (ACR)
- Institute for Operations Research and Management Sciences (INFORMS)
- Society for Consumer Psychology (SCP)

Other
- American Institute of Architects (AIA)
- Postdoc Association Council
- Skeptics Society

Metrics

- H-Index: 9
- Erdös number: 3

Professional services

Editor

- Frontiers in Decision Neuroscience

Reviewer

Business, Economics and Psychology
- Association for Consumer Research (ACR)
- Cognitive Neurodynamics
- Frontiers in Decision Neuroscience (*Associate Editor*)
- Journal of Consumer Psychology
- Journal of Neuroscience and Neuroeconomics
- Perception

Neuroscience
- Cortex
- European Association for Computer Graphics
- IEEE Transactions of Patterns Analysis and Machine Intelligence (PAMI)
- Journal of Nature and Science of Sleep
- Journal of Neuroscience
- Journal of Vision
- Lecture Notes in Computer Sciences (LNCS)
- Nature
- Neural Information Processing Systems (NIPS)
- Neural Networks
- Public Library of Science (PLoS)
- Vision Research

Grants

- US-Israel Binational Science Foundation

Patents

- US patent and trademark office

		now at…
Mentor	Clay Kippen	*School of Visual Arts*
	Stepan Boltalin	*Interactive Telecommunications Program (ITP), NYU*
	Michael Mackay	*Cambridge* University, medical school
	Mor Regev	*Princeton*, neuroscience department
	Nikhil Thiruvengadam	*Stanford*, medical school
	Paxon Frady	*UCSD*, neuroscience department
	Alex Huth	*Berkeley*, neuroscience department
	Simon Kornblith	*MIT*, neuroscience department
	Sami Zerrade	*Facebook*

Publications

Moran Cerf, Hagar Gelbard-Sagiv, Itzhak Fried (2013), "Studying thoughts and deliberations using single-neuron recordings in humans" ***Atoms of Cognition. Probing single neurons in the human brain***, Editors: Itzhak Fried, Moran Cerf, Ueli Rutishauser, Gabriel Kreiman, Publisher: MIT Press

Ueli Rutishauser, **Moran Cerf**, Gabriel Kreiman (2013), "Data analysis techniques for human microwire recordings: spike detection and sorting, decoding, relation between units and local field potentials" ***Atoms of Cognition. Probing single neurons in the human brain***, Editors: Itzhak Fried, Moran Cerf, Ueli Rutishauser, Gabriel Kreiman, Publisher: MIT Press

Moran Cerf, Michael MacKay, Christof Koch (2012), "Evidence for two distinct mechanisms directing gaze in natural scenes" ***Journal of Vision***, Volume 12, Issue 4, Article 9, Pages 1-12

Elina Birmingham, **Moran Cerf**, Ralph Adolphs (2011), "Comparing social attention in autism and amygdala lesions: effects of stimulus and task condition" ***Social Neuroscience***, Volume 6(5-6), Pages 420-435

Florian Mormann, Julian Dubois, Simon Kornblith, Milica Milsavljevic, **Moran Cerf**, Matias Ison, Naotsugu Tsuchiya, Alexander Kraskov, Rodrigo Quian Quiroga, Ralph Adolphs, Itzhak Fried, Christof Koch (2011), "A category-specific response to animals in the right human amygdala" ***Nature Neuroscience***, Volume 14, Pages 1247-149

Matias Ison, Florian Mormann, **Moran Cerf**, Christof Koch, Itzhak Fried, Rodrigo Quian Quiroga (2011), "Selectivity of Pyramidal cells and interneurons in the human medial temporal lobe" ***Journal of Neurophysiology***, Volume 106, Issue 4, Pages 1713-1721

Moran Cerf, Michael Mackay (2011), "Studying consciousness using direct recording from single neurons in the human brain" ***Research and Perspective in Neuroscience,*** Editors Stanislas Dehaene and Yves Christien. Pages 133-146. Publisher: Springer

Moran Cerf, Nikhil Thiruvengadam, Florian Mormann, Alexander Kraskov, Rodrigo Quian Quiroga, Christof Koch, Itzhak Fried (2010), "On-line, voluntary control of human temporal lobe neurons" ***Nature***, Volume 467, Issue 7319, Pages 1104-1108

Faculty of 1000 rating ('11')	▪ 'Exceptional,' F1000.com/6320961 ▪ 'Recommended,' *F1000.com/5895957*

Carlos Pedreira, Florian Mormann, Alexander Kraskov, **Moran Cerf,** Itzhak Fried, Christof Koch, Rodrigo Quian Quiroga (2010), "Responses of human medial temporal lobe neurons are modulated by stimulus repetition" ***Journal of Neurophysiology***, Volume 103, Pages 97-107

Moran Cerf, Paxon Frady, Christof Koch (2009), "Faces and text attract gaze independent of the task: Experimental data and computer model" ***Journal of Vision***, Volume 9, Issue 12, Pages 1-15

Florian Mormann, Simon Kornblith, Rodrigo Quian Quiroga, Alexander Kraskov, **Moran Cerf**, Itzhak Fried, Christof Koch (2008), "Latency and selectivity of single neurons indicate hierarchical processing in the human medial temporal lobe" ***Journal of Neuroscience***, Volume 28, Issue 36, Pages 8865-8872

Moran Cerf, Milica Milsavljevic, (2008), "What matters is attention not intention: Insights from computational neuroscience of vision" ***International Journal of Advertising***, Volume 27, Number 3, Pages 381-398

Wolfgang Einhäuser, Frank Schumann, Johannes Vockeroth, Klaus Bartl, **Moran Cerf**, Jonathan Harel, Erich Schneider, Peter König, (2008), "Distinct roles for eye and head movements in selecting salient image parts during natural exploration" ***Annals of the New York Academy of Sciences***, Volume 1137, Pages 188-193

Moran Cerf, Jonathan Harel, Alex Huth, Christof Koch (2008), "Decoding what people see from where they look: Predicting visual stimuli from scanpaths" ***Lecture Notes in Artificial Intelligence***, LNAI 5395, Pages 15-26

Wolfgang Einhäuser, Frank Schumann, Johannes Vockeroth, Klaus Bartl, **Moran Cerf**, Jonathan Harel, Christof Koch, Erich Schneider, Peter König (2008), "True and spurious face detections attract attention during free exploration" ***Proceedings of the International Workshop on Attention and Performance in Computational Vision*** (WAPCV 2008)

Moran Cerf, E. Paxon Frady, Christof Koch (2008), "Using semantic content as cues for better scanpath prediction" ***Proceedings of the symposium on Eye tracking research & applications***, (ETRA 2008)

Moran Cerf, Dan R. Cleary, Rob J. Peters, Wolfgang Einhäuser, Christof Koch (2007), "Observers are consistent when rating image conspicuity" ***Vision Research***, Volume 47, Issue 27, Pages 3052-3060

Moran Cerf, Jonathan Harel, Wolfgang Einhäuser, Christof Koch (2007), "Predicting human gaze using

low-level saliency combined with face detection" ***Advances in Neural Information Processing Systems***, Vol. 21 (NIPS 2007)

Reviews

- **Moran Cerf** (2012), "Known unknowns" ***Science***, Volume 336, Issue 6087, Page 1382

Book chapters

- **Moran Cerf** (2011), "On Imagery and projecting thoughts" In: "Seeing with Eyes closed," Pages 50-55. Editors: Ivana Franke and Ida Momennejad
- **Moran Cerf** (2005), "What is it like to be Beethoven?" In: "Towards a Science of Consciousness" Editor: Avshalom C. Elitzur. World Scientific Publishing Co.

Books

- Itzhak Fried, **Moran Cerf**, Ueli Rutishauser and Gabriel Kreiman (2013) "Atoms of Cognition. Probing single neurons in the human brain". MIT Press.
- **Moran Cerf** (expected 2014), "Brainihack. How our brain is fooled and fools us." Simon & Schuster.

Theses

- **Moran Cerf** (2009), "Competition and Attention in the human brain. *Eye-tracking and single neuron recordings in healthy controls and individuals with neurological and psychiatric disorders*" Ph.D. thesis, California Institute of Technology
- **Moran Cerf** (2002), "On the mind-body problem – without the mind" Master's thesis, Tel-Aviv University

Patents

- Josh Shachar, Thomas Chen, Leslie Farkas, Winston Wu, Kyle Zimmerman, **Moran Cerf**, Bruce Marx, David Johnson, Laszlo Farkas (2010), "Brain retractor apparatus for measuring and predicting electrophysiological parameters" and "Magnetic breather pump for delivery of Chemotherapeutic agents into the brain" U.S. Patent no. US20100160737A1. Filed June 24, 2010
- **Moran Cerf**, Christof Koch (2008), "Automatic prediction of human gaze in visuals by localizing high-level elements" Provisional patent application CIT-5033-P. Filed November 19, 2007

Security

- **Moran Cerf**, Amichai Shulman (2005), "File access and Denial of Service vulnerabilities in business object 'Crystal report'" ***Bugtraq.*** ID: 10260.
- **Moran Cerf**, Amichai Shulman (2004), "How safe is it out there?" ***Security Focus***
- **Moran Cerf**, Amichai Shulman (2004), "SuperVeda penetration test. Demonstration of a website hacking" ***Security Focus***

Research in progress

- **Moran Cerf**, Ralph Adolphs, Itzhak Fried, "Single neuron correlates of emotions regulation in humans"
- **Moran Cerf**, Eric Greenleaf, Geeta Menon, Tom Meyvis, Vicki Morwitz, "Single neuron correlates of emotions regulation in moving images"
- **Moran Cerf**, Uri Hasson, David Heeger, Eric Greenleaf, Geeta Menon, Tom Meyvis, Vicki Morwitz, Mor Regev, "Visual distractions as a measure of engagement in moving images"

Research interests

- Measuring high-level complex emotional reactions (using intracranial recording)
- Saliency and attention models of consumer processing of visual images, movies and public-service-ads.
- Computational models of attention
- Visual attention allocation in individuals with neurological and psychiatric disorders (autism, amygdala-lesion, AgCC and prosopagnosia)
- Dreams and conscious mechanisms during sleep

Conference presentations

Business

- Predicting the choice of a subject before it was made, using direct recording from human brains.

Interdisciplinary Symposium on Decision Neuroscience, Philadelphia, Pennsylvania, 2013

- Experiencing and evaluating in the brain: fMRI and single-neurons studies. (special session; chair) ***Advances in Consumer Research***, Vancouver, Canada 2012
- Reading the mind of the consumer: promises and challenges of predictive methods in consumer neuroscience. (roundtable) ***Advances in Consumer Research***, Vancouver, Canada 2012
- Single-neuron correlates of emotion regulation in humans, ***Society for Consumer Psychology****, International Conference*, Florence, Italy. 2012
- Single-neuron correlates of emotion regulation in humans, ***Marketing Science***, Boston, Massachusetts. 2012
- Voluntary control of single-neuron in humans, ***Single neuron studies of the human brain***. Stern School of Business, NYU, New York, New York. 2011
- Single-neuron correlates of emotion regulation in humans, ***Single neuron studies of the human brain***. Stern School of Business, NYU, New York, New York. 2011
- Real-time decoding of neural spikes, ***Single neuron studies of the human brain***. Stern School of Business, NYU, New York, New York. 2011

Neuroscience

- How many minds are there in your brain? ***Towards a science of consciousness***, Stockholm, Sweden. 2011
- Neural correlates of emotion regulation in the human brain, ***Cognitive Neuroscience Society*** *(CNS)*, San Francisco, California. 2010
- There's plenty of time at the bottom: The time spent before a saccade is generated is a complex interplay of competing saliency and decision, ***Vision Sciences Society*** *(VSS)*. Naples, Florida. 2010
- Projecting thoughts using the decoded activity of single neurons in the human brain, ***Towards a Science of Consciousness***, Tucson, Arizona. 2010
- On-line voluntary control of single neurons by human thought, ***Society for Neuroscience*** *(SfN)*. San Diego. 2010
- The role of amygdala in orienting attention to eyes within complex social scenes, ***Vision Sciences Society*** *(VSS)*. Naples, Florida. 2009
- Single neurons in the human MTL during visual working memory and rapid series visual presentation, ***Society for Neuroscience*** *(SfN)*. Chicago, Illinois. 2008
- Decoding what people see from where they look: predicting visual stimuli from scanpath, *Proceedings of the* ***International Workshop on Attention and Performance in Computational Vision*** *(WAPCV)*. Santorini, Greece. 2008
- Subjects' inability to avoid looking at faces suggests bottom-up attention allocation mechanism for faces, ***Society for Neuroscience*** *(SfN)*. Chicago., Illinois. 2008
- Conscious control of a single neuron in the human MTL using imagery, visual and auditory feedback, ***Society for Neuroscience*** *(SfN)*. Washington D.C., 2007
- Dynamics of selective single neurons in the human MTL in a visual working memory task, ***Society for Neuroscience*** *(SfN)*. San Diego, California. 2007
- Eye tracking to social scenes: comparisons between amygdala lesions and autism, ***Cognitive Neuroscience Society*** *(CNS)*. San Francisco, California. 2007

Other

- Seeing with eyes closed, ***Venice Art Biennale***, Venice, Italy. 2011
- The sound of touch, ***SIGGRAPH***, San Diego, California. 2007

Invited talks

Business

- Fox School of Business, Temple University, Philadelphia, Pennsylvania. 2013
- Kellogg School of Management, Northwestern University, Evanston, Illinois. 2012
- Wharton, University of Pennsylvania, Philadelphia, Pennsylvania. 2012
- University of California, Berkeley, California. 2012
- Tel-Aviv University, Tel-Aviv, Israel. 2012
- Johns Hopkins University, Baltimore, Maryland, 2012
- Hebrew University of Jerusalem, Jerusalem, Israel. 2012
- University of California, San Diego, California. 2012
- Technion, Haifa, Israel. 2012
- The Interdisciplinary Center, Herzliya, Israel. 2012
- Erasmus University, Rotterdam, Netherland. 2012

Neuroscience

- Northeastern University, Boston, 2013
- Massachusetts General Hospital, Boston, 2013
- Zhejiang University, Hangzhou, China. 2011
- Princeton University, Princeton, New Jersey. 2010
- University College of London, London, England. 2010
- Harvard University, Boston, Massachusetts. 2010
- New York University, New York, New York. 2009

Popular
(over 500 people)

- WIRED conference, London, 2013
- World Economic Forum, Davos, 2013
- THiNK, Goa, India, 2013
- International Conference on Cyber Security, Tel-Aviv, Israel, 2013
- DLD Women, Munich, Germany, 2013
- Glimpses, Red-Bull annual conference, Los Angeles, California, 2013
- TED-Ed (Technology, Entertainment, Design), 2013
- Google Zeitgeist, 2013
- DLD (Digital Life Design), 2012, 2013
- AST (*Art, Science, Technology*), Shanghai, China, 2012 *(viewed by 200,000 people live)*
- PopTech, Camden, Maine, 2012
- Pecha Kucha, Tel-Aviv, Israel, 2012
- Mindshare (50th anniversary), Los Angeles, California, 2012
- Ministry of Education, Shanghai, China, 2011
- Humanity+, New York, New York, 2009 and 2010
- Mindshare, Los Angeles, California, 2008, 2009 and 2010

Selected Media Coverage

- **Focus, "**Neuroscientist Moran Cerf's vision of remote people**"**
- **Haaretz,** "Israeli hacker turned brain researcher making waves"
- **Hangzhou News**, "What is Human2.0? U.S. scientist Moran Cerf tells you"
- **Slate.Com,** "Product placement goes digital"
- **NPR,** "The man who could record your dreams"
- **Wired,** "Neuron recordings capture brain focus on Josh Brolin"
- **Wired,** "Human brains are primally wired to notice animals"
- **Time,** "Controlling your world with a single neuron"
- **Time,** "Forget Inception. Try extraction: dream recorder is 'possible'"
- **Time China,** "American scientist talks on the future of the brain research's limitless possibilities"
- **Reuters,** "Marilyn Monroe or Johnny Cash? How the brain chooses"
- **Scientific American,** "Being John Malkovich"
- **BBC,** "Will we ever… decode dreams?"
- **BBC,** "Dream recording device 'possible' researcher claims"
- **Bloomberg,** "Marilyn Monroe photos fuel research for paralyzed patients"
- **MSNBC,** "New brain machine reads minds"
- **Science,** "Mind over matter: study shows we consciously exert control over individual neurons"
- **Gizmodo,** "Electronic scanner could let psychologists read and record dreams"
- **MIT Technology review,** "Single cell brain control"
- **Nature news,** "'Marilyn Monroe' neuron aids mind control"
- **NIH,** "From touchpad to thought-pad"
- **Kurzweill,** "Controlling individual cortical nerve cell by human thought"
- **Engadget,** "UCLA/Caltech researchers help patients move mouse cursors with their brains"
- **New Scientist,** "Brain link lets people choose images by thought alone"
- **AOL News,** "Dream recording and playback comes closer to reality"
- **Herald Sun,** "US Scientists hope to record people's dreams"
- **The Scientist,** "A new brain-machine interface demonstrates how humans direct their thoughts"
- **The Scientist,** "Directing attention via machine"
- **Neurology today,** "Neurons moved through thought in another advance for brain-machine interface"
- **Current Biology,** "Neural control: Closed loop human brain reading"
- **IEEE,** "Brain-computer interface eavesdrops on a daydream"
- **Discover,** "Harnessing your Marilyn Monroe neurons"
- **Euroka alert,** "Controlling individual cortical nerve cells by human thought"
- **Herald Sun,** US Scientists hope to record people's dreams"
- **Daily mail,** "Scientists hope to record our dreams after successful experiments using brain implants"
- **Yorkshire evening post,** "Science: Volunteers control screen images by thought alone"
- **io9,** "Mind-reading machines could soon record your dreams"
- **Jetlib news**, "A brain-machine interface built on images of Marilyn Monroe"
- **Telegraph.co.uk,** "Scientists plan to record people's dreams"
- **Thaindian news,** "Dr. Moran Cerf working on a dream recording machine"
- **NYU Stern Marketing Newsletter.** *Fall/Winter Edition 2010.* Featured research.
- **Health canal,** "Mind over matter: Study shows we consciously exert control over individual neuron"
- **ChattahBox.com,** "Scientists developing real-life 'dream catcher'"
- **Daily India,** "Device that reads and interprets your dreams may soon be a reality"
- **The Telegraph,** "Scientists plan to record people's dreams"
- **Zhejiang news,** "Moran Cerf connects the brain to machines"
- **Metro,** "We are on the brink of recording our dreams, scientists say"
- **Neurology today,** "Neurons moved through thought in another advance for Brain-Machine Interface"
- **Discovery,** "Mind over machine"
- **Yeeyan news,** "Mind-reading scanners record and parse dreams"
- **China daily,** "What is Human version 2.0? American neurobiologist answers"
- **China Beta,** "U.S. scientist on the future of reading dreams from the brain"
- **Xinmin news,** "If the stocks would have been connected to pain - people would know when to sell"
- **Zhejiang Art, Science, Technology,** "Scientist Moran Cerf talks on the future of brain research"
- **China TV,** "How the brain is deceived"
- **CBC Radio, Australia,** Featured scientist.