James J. DiCarlo MD, PhD

Contact information

Department of Brain and Cognitive Sciences and
McGovern Institute for Brain Research
Massachusetts Institute of Technology
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Cambridge. MA 02139
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www: http://dicarlolab.mit.edu

Degrees

1998 Ph.D. Biomedical Engineering, Johns Hopkins University, Baltimore, MD
1998 M.D., Johns Hopkins University School of Medicine, Baltimore, MD
1990 B.S.E. with *Highest Distinction* in Biomedical Engineering,
Northwestern University, Evanston, IL

Employment

Present appointment

2021-present Peter de Florez Professor of Systems & Computational Neuroscience
Director, MIT Quest for Intelligence
Co-Director & Investigator, NSF Center for Brains, Minds and Machines (CBMM)
Investigator, McGovern Institute for Brain Research
Massachusetts Institute of Technology, Cambridge, MA

Previous appointments

2018-2021 Peter de Florez Professor of Neuroscience
Head, Department of Brain and Cognitive Sciences
Co-Director, MIT Quest for Intelligence
Investigator, NSF Center for Brains, Minds and Machines (CBMM)
Investigator, McGovern Institute for Brain Research
Massachusetts Institute of Technology, Cambridge, MA

2012-2021 Professor of Neuroscience
Head, Department of Brain and Cognitive Sciences
Investigator, McGovern Institute for Brain Research
Massachusetts Institute of Technology, Cambridge, MA

2007-2012 Associate Professor of Neuroscience (tenured 2009)
Department of Brain and Cognitive Sciences
Investigator, McGovern Institute for Brain Research
Massachusetts Institute of Technology, Cambridge, MA

2002-2007 Assistant Professor of Neuroscience
Department of Brain and Cognitive Sciences

	Investigator, McGovern Institute for Brain Research Massachusetts Institute of Technology, Cambridge, MA
1998 - 2002	Research Associate, Howard Hughes Medical Institute and Division of Neuroscience, Baylor College of Medicine, Houston, TX Laboratory of Dr. John H.R. Maunsell
1998	Postdoctoral Fellow, Krieger Mind/Brain Institute, Johns Hopkins University, Baltimore, MD Laboratory of Dr. Kenneth O. Johnson

Other research appointments

1992-1998	Research Assistant, Department of Biomedical Engineering and Krieger Mind/Brain Institute, Johns Hopkins University
1991	Research Assistant, Department of Psychology, Johns Hopkins University
1987-1990	Research Assistant, Department of Psychology, Northwestern University
1987-1989	Research Intern, National Aeronautics and Space Agency, Cleveland, OH

External positions held

Scientific Advisory Board*, Wu Tsai Institute, Yale University (2022-present)*
Advisory Committee*, Harvard Lefler Center, Harvard University (2024-present)*
External Review Committee*, Dept. of Psychology, University of Pennsylvania (2021-present)*
Scientific Advisory Board, *University of Tokyo Institute for AI and Beyond (2020-2024)*
Scientific Advisor*, Caption Health Inc. (formerly BayLabs Inc.) San Francisco, CA (2015-2023)*
Section Co-Editor, "Sensation and Perception", The Cognitive Neurosciences textbook (2011-2013)
General Co-Chair, *Computational and Systems Neuroscience (COSYNE)* (2011-2012)
Program Committee Co-Chair, *Computational and Systems Neuroscience (COSYNE)* (2010-2011)
Program Committee, *Computational and Systems Neuroscience (COSYNE)* (2008-2011)
Technical Advisory Board, *Numenta, Inc.*, Menlo Park, CA (2008-2011)
Consultant, *The PreTesting Company, Inc.*, Tenafly, NJ (2008)
Program Planning Committee, *Society for Neuroscience* (2007-2010)

Membership:

Society for Neuroscience (1994-present)
American Physiological Society
American Association for the Advancement of Science (AAAS)
Associate Member, Canadian Institute for Advanced Research (CIFAR), Neural Computation and Adaptive Perception (2010-2019)

Honors and awards

Elected to the American Academy of Arts & Science (2023-present)
Peter de Florez Professorship, MIT (2014-present)
McKnight Scholar Award in Neuroscience, McKnight Foundation, 2006-2009
Surdna Research Foundation Award, MIT, 2005
MIT School of Science Prize for Excellence in Undergraduate Teaching, 2005
Pew Scholar in the Biomedical Sciences, 2002-2006
Alfred P. Sloan Research Fellow, 2002
Martin and Carol Macht Young Investigator Research Prize, Johns Hopkins University, 1998

National Institutes of Health Medical Scientist Training Program Award, Johns Hopkins University, 1990-1998

Honors in Biomedical Engineering, Northwestern University, 1990

Student and postdoctoral supervision

Sponsored undergraduates in research (UROP/MSRP)

David Van Aken (MIT class of 2003), fall 2002
Nadja Oertelt (MIT class of 2007), 2003-2004, 2007
Jonathan Karr (MIT class of 2006), spring 2006
Prashant Dilwali (MIT class of 2008), spring 2006
Julia Green (Brown class of 2008), summer 2006
Michelle Fogerson (MIT class of 2007), spring 2005-2006
Imran Hendley (MIT class of 2007), summer 2006
Sabrina Tsang (MIT class of 2008), summer 2007 - 2008
Laura Mariano (UCONN class of 2008) AMGEN Scholar, summer 2007
Rebecca Rothkopf (Wellesley class of 2009), summer 2008
Radhika Palkar (Univ. of California at Irvine class of 2008), MSRP student, summer 2008
Isaac Buenrostro (MIT class of 2011), fall 2008
Ethan Solomon (MIT class of 2012), fall 2009-2012
Edith Reshef (MIT class of 2011), spring 2010-2011
Darren Seibert (U of Houston class of 2012), summer 2011
Cesar Echavarria (MIT class of 2012), fall 2011-2012
Christopher Compton (MIT class of 2018), spring 2015
Archana Ram (MIT class of 2018), summer 2015-
Richard Oates (MIT class of 2018), fall 2015-
Maryann Rui (University of California Berkeley class of 2018) summer 2016
Pawan Gaire (Howard University class of 2019) summer 2017
Jocasta Manasseh Lewis (MIT class of 2021) spring 2018-Fall 2020
Brianna Marsh (University of Kansas class of 2019) summer 2018
Anton Peraire Bueno (MIT class of 2022) fall 2018
Ajani Stewart (Hunter College class of 2021) summer 2020
Yahiya Hussain (University of Massachusetts Boston class of 2021) summer 2020
Reese Green (University of Vermont Class of 2022) MSRP student, summer 2021
Nga Yu Lo (Hunter College Class of 2022) MSRP student, summer 2021
Kristine Zheng (MIT class of 2023) fall 2021
Stephanie Olaya (Brown University class of 2023) MSRP student, summer 2022
Andrew Cirincione (Manhattan College class of 2022) MSRP student, summer 2022
Reginald Verrier (Manhattan College class of 2023) MSRP student, summer 2022
Jonathan Song (MIT Class of 2027) Fall 2024- Spring 2025
Cindy Wei (MIT Class of 2028) Fall 2024
Fiona Wang (MIT Class of 2028) Spring 2025

Masters students thesis supervised

Vuong, Yihvan, ME Biological Engineering, MIT, 2003-2004
Current position: Materials Engineer, US Department of Defense, Washington, DC (USA)

Oreper, Daniel, ME Electrical Engineering and Computer Science, MIT, 2004-2006
Current position: Bioinformatician, Genentech, San Francisco, CA (USA)

Pinto, Nicolas, ME Computer Science, UTBM, France 2006-2007
Current position: Deep Learning Lead, Apple, Palo Alto, CA (USA).

Radwan, Basma, ME Biomedical Engineering, Boston University, 2007-2008
Current position: Postdoctoral Research Associate, New York University, New York, NY (USA).

Ardila, Diego, ME Computational Neuroscience, MIT, 2013-2015.
Current position: Senior Deep Learning Specialist, Caption Health, San Francisco, CA (USA)

Lee, Hyodong, ME Electrical Engineering and Computer Science, MIT, 2014-2018
Current position: Software Engineer, Google, Mountain View, CA (USA)

Visiting students supervised

Pagan, Marino, ME Control Engineering, University of Pisa, Italy, 2008
Current position: Postdoctoral Researcher, Princeton University, Princeton, NJ (USA).

Corda, Benoit, ME Computer Science, University of Technology of Compiégne, France
Current position: Software Engineer, Google, New York, NY (USA).

Doukhan, David, École Pour l'Informatique et les Techniques Avancées, France
Current position: Speech Analysis Research Engineer, Institut national de l'audiovisuel (France)

Mirza-Mohammadi, Mehdi. MS Artificial Intelligence, Universitat Politècnica de Catalunya, Spain
Current position: Trainee at Idiap Research Institute, Martigny, (Switzerland)

Bendale, Abjijit. MS Computer Science, University of Colorado, 2009
Current position: Chief Technology Officer, NEON, San Francisco, CA (USA)

Barhomi, Youseff. MS Mathematics, Vision and Learning, École Polytechnique. France
Current position: Senior Machine Learning Scientist, Recursion, San Francisco, CA (USA)

Moghimi, Pantea. ME Biomedical Engineering, Chalmers University of Tech., Gothenburg, Sweden, 2011
Current position: Postdoctoral Researcher, U of Chicago (USA)

Zhang, Xiyaun. MS Mathematics, Vision and Intelligence, École Normale Superieur de Cachan, France, 2011

Toosi, Tahereh, (visiting PhD student), School of Cognitive Sciences, Iran, 2013-2014
Current position: Postdoctoral Associate, Columbia University (USA).

Iqbal, Asim. MSc Neural Systems and Computation, University and ETH Zurich, Switzerland, 2015-2016.
Current position: Visiting Research Scientist (Machine Learning), ETH Zurich, Switzerland

Zhuang, Chengxu. Tsinghua University, Beijing, China, 2015-2016.
Current position: PhD student at Stanford University (USA).

Tensen, Mark. University of Amsterdam, Netherlands, 2017-2018.
Current position: Senior Data Scientist, Sogeti, Amsterdam, Netherlands.

Sato, Fukushi. Technische Universität München, Germany, 2019.
Current position: Machine Learning Engineer for Computer Vision, SmileDirectClub, WA (US)

Franziska Geiger. Technical University of Munich, Munich, Germany, 2019-2020.

Current position: Masters student at University of Munich, Germany.

Marliawaty I Gusti Bagus. Ludwig-Maximilians-Universität, Munich, Germany, 2022.
Current position: Masters Student at Ludwig-Maximilians-Universität, Munich, Germany.

Aliya Ablitip. Technical University of Munich, Munich, Germany, 2023.
Current position: Masters Student at Technical University of Munich, Munich, Germany.

Theodor Cucu. Massachusetts Institute of Technology, 2024.
Current position: Software Engineer, Budy, San Francisco, CA.

Rouhan Liu Luo. Oxford University, Oxford, UK. 2024-2025.
Current position: PhD student at Oxford University, Oxford, UK.

Lucas Huber. University of Bern & University of Tübingen. Germany, 2025.
Current position: PhD student at University of Bern & University of Tübingen. Germany.

Ph.D. students supervised (primary advisor role)

Cox, David. *The role of visual experience in the tolerance of neuronal object representations in monkeys and humans.* Supervised 2002-2007 (PhD granted 2007 Dept. of Brain and Cog Sciences, MIT). Current position: Vice President of AI Research, IBM Watson, Cambridge, MA

Li, Nuo. *The construction of invariant neuronal object representations in the primate ventral stream*. Supervised 2005-2010 (PhD granted 2010 Dept. of Brain and Cog Sciences, MIT). Current position: Assistant Professor, Baylor College of Medicine, TX

Pinto, Nicolas. *High-throughput exploration of bio-inspired visual object recognition algorithms.* Supervised 2006-2010 (PhD granted 2010 Dept. of Brain and Cog Sciences, MIT). Current position: Deep Learning Lead, Apple, Palo Alto, CA (USA)

Aparicio, Paul (PhD candidate 2003-2013), Dept. of Brain and Cognitive Sciences, MIT. *Functional organization of object-selectivity in monkey temporal lobe.* Supervised 2005-2013 (PhD granted 2013 Dept. of Brain and Cog Sciences, MIT). Current position: Postdoctoral Associate, NIH, Laboratory of Dr. Bruce Cummings

Hong, Ha (PhD candidate 2009-2015), Health Sciences Technology Program, MIT.
The performance of the ventral visual stream in real-world visual object recognition.
Supervised 2009-2015 (PhD granted 2015 Dept. of Brain and Cog Sciences, MIT). Current position: Chief architect & Co-Founder of Caption Health Inc., San Francisco, CA

Rajalingham, Rishi (PhD candidate 2012-2018), Dept. of Brain and Cognitive Sciences, MIT. Supervised 2013-2018 (PhD granted 2018 Dept. of Brain and Cog Sciences, MIT). Current position: Research Scientists, Meta, Brooklyn, NY

Seibert, Darren (PhD candidate 2012-2018), Dept. of Brain and Cognitive Sciences, MIT. Supervised 2013-2018 (PhD granted 2010 Dept. of Brain and Cog Sciences, MIT). Current position: Medical student, SUNY Upstate, Syracuse

Lee, Hyodong (Masters & PhD candidate 2013-2020), Dept. of Electrical Engineering & Computer Science, MIT. Supervised 2014-2020 (PhD granted 2020 Dept. of Electrical Engineering and Computer Science, MIT). Current position: Software Engineer, Google, Mountain View, CA

Lee, Michael (PhD candidate 2015-2022), Dept. of Brain and Cognitive Sciences, MIT. Supervised

2016-2022 (PhD granted 2022 Dept. of Brain and Cog Sciences, MIT). Current position: Postdoctoral associate, Dept. of Brain and Cognitive Sciences, MIT

Schrimpf, Martin (PhD candidate 2017-2022), Dept. of Brain and Cognitive Sciences, MIT. Supervised 2017-2022 (PhD granted 2022 Dept. of Brain and Cog Sciences, MIT). Current position: Assistant Professor, EPFL, Lausanne, Switzerland.

Dapello, Joel (PhD candidate 2017-2022), SEAS, Harvard. Supervised 2018-2022 (PhD granted 2022 SEAS, Harvard). Current position: Senior Machine Learning Engineer, Altos Labs, San Francisco, CA

Zaidi, Syed Suleman (PhD candidate 2021-in progress) Dept. of Brain and Cognitive Sciences, MIT. Supervised 2021-present

Xie, Yu (PhD candidate 2020-in progress) Dept. of Brain and Cognitive Sciences, MIT. Supervised 2023-present

Tian, Weiwen (PhD candidate 2020-in progress), SEAS, Harvard University. Supervised 2023-present

Postdoctoral researchers supervised (primary supervisor role)

Hung, Chou (Ph.D.) 2002-2006
Read-out and write-in of neuronal object representations in non-human primates.
Current position: Assistant Professor, Department of Neuroscience, Georgetown University.

Op de Beeck, Hans (Ph.D., Human Frontiers Long-term Postdoctoral Fellow Award) 2003-2006
Functional organization of neuronal object representations in monkeys and humans; Effects of visual experience.
Current position: Tenured Associate Professor, Laboratory of Experimental Psychology, University of Leuven, Leuven, Belgium

Zoccolan, Davide (Ph.D., Human Frontiers Long-term Postdoctoral Fellow Award) 2003-2008
Selectivity and tolerance of neuronal populations underlying object recognition in clutter.
Current position: Associate Professor in Psychobiology and Physiological Psychology, Neuroscience Area, International School for Advanced Studies (SISSA), Trieste, Italy

Papanastassiou, Alexander (M.D.) 2005-2007
Spiking- and fMRI-determined spatial organization of object representations in monkeys.
Current position: Associate Professor, Department of Neurosurgery, University of Texas Health Science Center, San Antonio,Texas

Rust, Nicole (Ph.D., NIH NRSA Postdoctoral Award) 2006-2009
Transformation of visual representations along the ventral visual processing stream.
Current position: Associate Professor, Department of Psychology, University of Pennsylvania

Majaj, Najib (Ph.D., New York University) 2007-2012
The role of learning in building invariant neuronal object representation and supporting perception.
Current position: Research Assistant Professor, Center for Neural Science, New York University

Cadieu, Charles (Ph.D., University of California, Berkeley) 2011-2014
Understanding the neural basis of visual face processing
Current position: Co-Founder and President at Caption Health Inc., San Francisco, CA

Jia, Xiaoxuan (Ph.D., Albert Einstein College of Medicine) 2012-2015
Unsupervised learning of object representation in primate temporal lobe
Current position: Associate Professor, Tsinghua University, Beijing, China

Issa, Elias (Ph.D., Johns Hopkins University; NIH NRSA Postdoctoral Award) 2008-2017
Neural properties of fMRI identified face, body, and object selective regions in IT cortex
Current position: Assistant Professor of Neuroscience, Columbia University, NY

Afraz, Seyed Reza (Arash) (Ph.D., Harvard University) 2009-2017
Manipulation of the neural responses in IT cortex through light-sensitive channels.
Current position: Assistant Professor, US National Institutes of Health, Bethesda, MD

Yamins, Daniel (Ph.D., Harvard University) 2010-2017
High-throughput exploration of bio-inspired object recognition algorithms.
Current position: Assistant Professor, Stanford University, CA

Ohayon, Shay (Ph.D., California Institute of Technology) 2014-2018
Deep Brain Imaging Using Fluorescence Microendoscopy.
Current position: Software Engineer (Machine Perception Team), Google Research, Mountain View, CA

Kubilius, Jonas (Ph.D., University of Leuven, Leuven, Belgium; Marie Curie Postdoctoral Fellow Award) 2015-2018
Using deep convolutional neural networks to understand primate object perception
Current position: *Co-Founder, Three Thirds, Vilnius, Lithuania.*

Bashivan, Pouya (Ph.D., University of Memphis) 2016-2020
Closed-loop architectural search of object recognition algorithms through generation and evaluation
Current position: Assistant Professor, McGill University, Montreal, Quebec, Canada.

Jozwik, Kamila (Ph.D., University of Cambridge, UK) 2018-2020
Building better neural network models of primate vision
Current position: Postdoctoral Fellow, University of Cambridge, UK.

Kar, Kohitij (Ph.D., Rutgers University) 2015-present
Using large scale neurophysiology, chemogenetics and optogenetics to test the role of bi-directional computing in visual object recognition
Current position: Assistant Professor, Canada Research Chair in Visual Neuroscience, York University, Toronto, Ontario, Canada.

Murty, Apurva Ratan (Ph.D., India Institute of Science, Bangladore) 2017-2023
[co-supervised with Prof. Nancy Kanwisher, MIT]
Using fMRI and deep convolutional neural networks to map function along human visual cortices
Current position: Assistant Professor, Georgia Institute of Technology.

Marques, Tiago (Ph.D., Champilmaud Research, Portugal) 2019-2022
Using biological data to constrain and improve deep convolutional models of the non human primate visual ventral stream
Current position: Research Scientist and Project Manager, Champalimaud Clinical Centre, Champalimaud Foundation.

Guo, Chong (Ph.D. Harvard University) 2020-2022
The neural basis of robust visual object recognition in the primate brain
Current position: Techbiologist, Flagship Pioneering, Cambridge, MA

Peter, Alina (Ph.D. Ernst Strüngmann Institute (ESI) for Neuroscience, Frankfurt, Germany) 2020- 2024
Predicting and controlling amygdala responses using deep neural networks
Current position: Consultant, TWT GmbH Science and Innovation, Munich, Germany

Bai, Yoon (Ph.D., University of Texas) 2020-present
Longitudinal effects of unsupervised neural plasticity in inferior temporal cortex

Soerensen, Lynn (Ph.D. University of Amsterdam, Amsterdam, Netherlands) 2023-present
Dynamic object recognition in humans and deep neural networks

Gaziv, Guy (Ph.D. Weizmann Institute of Science, Rehovot, Israel) 2022 - present
Using generative deep neural networks to modulate neural activity and perception

Kim, Gwangsu (Ph.D. Korea Advanced Institute of Science and Technology, Daejeon, South Korea) 2024-present
Visual modulation of affective/arousal states in humans, non-human primates and machines.

Teaching experience

MIT 9.40 Introduction to Neural Computation
Department of Brain and Cognitive Sciences, MIT
Semesters taught: Spring 2025

MIT 9.000 Constructive Criticism of Primary Research in the Brain Sciences
(graduate seminar)
Department of Brain and Cognitive Sciences, MIT
Semesters taught: Fall 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023

CBMM Summer Course Instructor (graduate / postdoctoral course)
Woods Hole, MA
Summers taught: 2014, 2015, 2018, 2019, 2020, 2021, 2022, 2023
Role: Approximately 3 hours of direct lecture teaching.

MIT 9.02 Systems Neuroscience Laboratory (undergraduate neurophysiology laboratory)
Department of Brain and Cognitive Sciences, MIT
Semesters taught: spring 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2015*
Role: Lead instructor (along with one or two co-instructors), course design, organization, execution and administration.
Approximately 10 hours of lecture and 60 hours of direct laboratory teaching per semester.
(* reduced role: one week only)

MIT 9.720 Neural Basis of Object Recognition in Monkeys and Humans (graduate course)
Department of Brain and Cognitive Sciences, MIT
Semesters taught: spring 2005, fall 2006, spring 2008, fall 2009
Role: Co-instructor (of two), course design, organization, execution and administration
Approximately 10 hours of lecture and 30 hours of shared teaching per semester.

MIT Matlab (undergraduate IAP course)

Department of Brain and Cognitive Sciences, MIT
Semesters: IAP 2008, 2009

MIT 9.95 Research Topics in Neuroscience (undergraduate IAP course)
Department of Brain and Cognitive Sciences, MIT
Semesters taught: IAP 2004, IAP 2005, IAP 2006, IAP 2007, !AP 2009, IAP 2010, IAP 2011
Role: Lecturer, Approximately 3 hours of direct lecture teaching per semester.

MIT Responsible Conduct in Science
Department of Brain and Cognitive Sciences, MIT
Semesters taught: IAP 2004, IAP 2005, IAP 2006, IAP 2007, !AP 2009, IAP 2010
Role: Guest instructor on ethics of animal research, Approximately 3 hours of student instruction.

Computational Neuroscience of Vision (graduate / postdoctoral course)
Cold Spring Harbor Laboratories Summer Courses, Cold Spring, NY
Semesters taught: summer 2004
Role: Co-instructor, Approximately 4 hours of direct lecture teaching.

Methods in Computational Neuroscience (graduate / postdoctoral course)
Marine Biological Laboratory at Woods Hole, MA
Semesters taught: summer 2008, 2009, 2010
Role: Guest lecturer, Approximately 2 hours of direct lecture teaching.

BU CN730 Models of Visual Perception (graduate)
Department of Cognitive and Neural Systems, Boston University
Semesters taught: spring 2007
Role: Guest lecturer, Approximately 3 hours of direct lecture teaching.

Neural Networks (undergraduate course)
Department of Biomedical Engineering, Johns Hopkins University
Semesters taught: 1995
Role: Teaching assistant

Computational models of the Neuron (undergraduate course)
Department of Biomedical Engineering, Johns Hopkins University
Semesters taught: 1994
Role: Teaching assistant

Human Histology (medical student course)
School of Medicine, Johns Hopkins University
Semesters taught: 1994
Role: Teaching assistant

Service

MIT Internal service:

Departmental service (Dept. of Brain and Cognitive Sciences, BCS)

Department Head (2012-2021)
Chair, BCS Council (2012-2021)
BCS Education Committee, standing member (2009-present)
Principal Investigator for NEI-funded BCS Core Vision Processes Grant (2010-present).

Primary supervisor of BCS Computational Core (2019-present)
Primary supervisor of BCS Electronics Fabrication and Repair Core (2004-2019)
Primary supervisor of BCS Machining Core (2010-2019)
McGovern / Martinos Imaging Center user committee, McGovern Institute for Brain Research, MIT (2005-present).
BCS Graduate Admission Committee (2009-present)
Principal Investigator for NIH-funded Graduate Student Training Grant (2014-present)
BCS Research Rotation Coordinator (2009-2012)

MIT Faculty search committees:
McGovern Institute for Brain Research (2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012);
Dept. of Brain and Cognitive Sciences (2006, 2007, 2008, 2009, 2011, 2012, 2014-2021)

Institute-wide service

Director, MIT Quest for Intelligence (2021-present)
MIT College of Computing, Computing Council (2020-present)
MIT College of Computing, Computing Council Promotions Subgroup (2021-present)
Co-Director, MIT Quest for Intelligence (2018-2021)
Head, MIT's Department of Brain and Cognitive Sciences (2012-2021)
Science Council, School of Science (2012-2021)
MIT Committee on Curricula (CoC) (2011-2012)
MIT Pre-health Undergraduate Student Advisor (2009-2012)
Participation in MIT commencement 2003, 2011, 2012

Ph.D. student committees (MIT, outside of primary PhD mentorship role)
Liu, Jia. Dept. of Brain and Cognitive Sciences, MIT, 2002-2003 (PhD 2003)
Wu, Wan-Chen. Dept. of Mechanical Engineering, MIT, 2003-2006 (PhD 2006)
Serre, Thomas . Dept. of Brain and Cognitive Sciences, MIT, 2004-2006 (PhD 2006)
Balas, Benjamin. Dept. of Brain and Cognitive Sciences, MIT, 2006-2007 (PhD 2007)
Feingold, Joseph. Dept. of Brain and Cognitive Sciences, MIT, 2002-present
Haushofer, Johannes. Dept. of Neurobiology, Harvard, 2004-2007 (PhD 2007)
Schwarzlose, Rebecca. Dept. of Brain and Cognitive Sciences, MIT, 2005-2007 (PhD 2008)
Cronin, Beau. Dept. of Brain and Cognitive Sciences, MIT, 2007-2008 (PhD 2008)
Tan, Cheston. Dept. of Brain and Cognitive Sciences, MIT, 2009-2013 (PhD 2013).
Ghadooshahy, Azriel. Dept. of Brain and Cognitive Sciences, MIT, 2011-2015 (PhD 2015)
Sam Norman-Haignere. Dept. of Brain and Cognitive Sciences, MIT, 2011-2015 (PhD 2015)
Kornblith, Simon. Dept. of Brain and Cognitive Sciences, MIT, 2011-2017t (PhD 2017)
Lynch, Galen. Dept. of Brain and Cognitive Sciences, MIT, 2012-2020(PhD 2020)
Lafer-Sousa, Rosa. Dept. of Brain and Cognitive Sciences, MIT, 2014-2019 (PhD 2019)
Kell, Alex. Dept. of Brain and Cognitive Sciences, MIT, 2014-2019 (PhD 2019)
Serafyazd, Morteza. Dept. of Brain and Cognitive Sciences, MIT, 2017-present
Francl , Andrew. Dept. of Brain and Cognitive Sciences, MIT, 2019-2022
Feather, Janelle. Dept. of Brain and Cognitive Sciences, MIT, 2019-present
Saddler, Mark. Dept. of Brain and Cognitive Sciences, MIT, 20XX-2023
Tang, Vincent. Dept. of Brain and Cognitive Sciences, MIT, 20XX-present

MIT undergraduate advisees (past and present)
Kim, JinSuk (class of 2005), Won, Annie (class of 2005), Bobrow, Laurel (class of 2006), Golji, Javad (class of 2006), Liang, Joy (class of 2006), Dohlman, Thomas (class of 2007), Motola-Barnes, Rebecca (class of 2007), Evrony, Gilad (class 2007), Garcia, Adrian (class of 2007), Nakano, Lisa (class of 2008), Wentz, Christian (class of 2008), Chandawarker, Akash (class of 2009), Pollard, Courtney (class of 2009), Thornton, Elliot (class of 2009), Pointer, Kelli (class of 2009), Hatch, Mary (class of 2008), Greenman, Susan (class of 2011), DeBoer, Caroline (class of 2011), Dere, Kathryn

(class of 2013), Feather, Jenelle (class of 2013), Kim, Heejung (class of 2013), Gaur, Priyanka (class of 2016), Gaillard, Schuyler (class of 2017), Marzoughi, Maedeh(class of 2020), Anteneh, Melat (class of 2020), Chen, Maggie (class of 2022), Kelkar, Rucha (class of 2022), Ngo, Thomas (class of 2022), van Wijk, Nico (class of 2022), Wang, Brigette (class of 2022), Alvarez, Ronald (class of 202X), Garcia-Garcia, Maria (class of 202X), Jiang, Helen (class of 202X), Machino, Yuka (class of 202X), Shuttleworth, Reece (class of 202X), Zahorodnii, Andrei (class of 202X)

External Service:

Society for Neuroscience, Annual Meeting **Program Planning Committee** (2007-2010)

Computational and Systems Neuroscience (COSYNE), Annual Meeting **Program Committee** (2008-2010), **Program Committee Co-Chair** (2010-2011), **General Co-Chair** (2011-2012)

Reviewer for *Behavioral Brain Research, Biological Cybernetics, Cerebral Cortex, Computation and Systems Neuroscience (COSYNE), Current Biology, Journal of Cognitive Neuroscience, Journal of Neurophysiology, Journal of Neuroscience, Journal of Neuroscience Methods, Learning and Memory, Nature, Nature Neuroscience, Neural Information Processing Systems (NIPS), Neuron, Pattern Recognition Letters, Public Library of Science (PLOS), Proceedings of the National Academy of Sciences (PNAS), Visual Neuroscience, Science*

Study section reviewer

- NIH Sensorimotor Integration (SMI) study section, Ad hoc member.
- NSF study section, Ad hoc reviewer
- NIH Mechanisms of Sensory, Perceptual and Cognitive Neuroscience (SPC) Study Section, Ad hoc member (2012), Standing member 2012-2016.
- NIH NEI Core Grant Review Panel (2016) Ad hoc member.
- NIH BRAIN Initiative: U19 Ad hoc reviewer, 2022

Ph.D. student committees (outside of MIT)

Maimon, Gaby. Dept. of Neurobiology, Harvard Medical School, 2004-2005 (PhD 2005)
Mruczek, Ryan. Dept. of Neuroscience, Brown University, 2006-2007 (PhD 2007)
Cury, Kevin. Dept. of Neurobiology, Harvard Medical School (PhD 2011)
Ni, Amy. Dept. of Neurobiology, Harvard Medical School (PhD 2011)
Millman, Daniel. Dept. of Neurobiology, Harvard Medical School (PhD 2016)
Bai, Yoon. Baylor College of Medicine (PhD 2020)
Talbot, Morgan., Harvard/MIT Health Sciences and Technology, 2025-present (MD-PhD in progress)

Science Fair Judge: The Driscoll School Science Fair (Grades K-8), March 2011, 2012.

Publications

Refereed papers (* indicates papers arising from a supervised PhD thesis)

Margalit E, Lee H, Finzi D, DiCarlo JJ, Grill-Spector K, Yamins DL. A unifying framework for functional organization in early and higher ventral visual cortex. *Neuron*. 2024 Jul 17;112(14):2435-51.

Kar, K. and DiCarlo, J.J. The Quest for an Integrated Set of Neural Mechanisms Underlying Object Recognition in Primates. *Annual Review of Vision Science*. (2024).

Gaziv G, Lee MJ, DiCarlo JJ. Robustified ANNs Reveal Wormholes Between Human Category Percepts. *Advances in Neural Information Processing Systems*, 37. ***arXiv***. arXiv:2308.06887. (2023).
*Lee MJ and DiCarlo JJ. How well do rudimentary plasticity rules predict adult visual object learning? *PLoS Computational Biology* (2023).

Zador A, Escola S, Richards B, Ölveczky B, Bengio Y, Boahen K, Botvinick M, Chklovskii D, Churchland A, Clopath C, DiCarlo JJ, Ganguli S, Hawkins J, Körding K, Koulakov A, LeCun Y, Lillicrap T, Marblestone A, Olshausen B, Pouget A, Savin C, Sejnowski T, Simoncelli E, Solla S, Sussillo D, Tolias AS, Tsao D. Catalyzing next-generation Artificial Intelligence through NeuroAI. ***Nature Communications***. 14(1):1597. (2023).

Zhuang C, Yan S, Nayebi A, Schrimpf M, Frank MC, DiCarlo JJ, Yamins DLK. Unsupervised neural network models of the ventral visual stream. ***Proceedings of the National Academy of Sciences***. 118(3):e2014196118. (2021).

*Rajalingham R, Sorenson M, Azadi R, Bohn S, DiCarlo JJ, Afraz A. Chronically implantable LED arrays for behavioral optogenetics in primates. ***Nature Methods***. 18(9):1112-6. (2021).

Murty R, Bashivan P, Abate A, DiCarlo JJ, Kanwisher N. Computational models of category-selective brain regions enable high-throughput tests of selectivity. ***Nature Communications***. 12(1):5540. (2021).

Kar K, DiCarlo JJ. Fast recurrent processing via ventral prefrontal cortex is needed by the primate ventral stream for robust core visual object recognition. ***Neuron***. 109(1):164-76.e5. (2021).

* Rajalingham R, Sorenson M, Azadi R, Bohn S, DiCarlo JJ, Afraz A. Chronically implantable LED arrays for behavioral optogenetics in primates. ***Nature Methods***. 18(9):1112-1116. (2021).

Jia X, Hong H, DiCarlo JJ. Unsupervised changes in core object recognition behavior are predicted by neural plasticity in inferior temporal cortex. ***Elife***. 10:e60830. (2021).

* Rajalingham R, Kar K, Sanghavi S, Dehaene S, DiCarlo JJ. The inferior temporal cortex is a potential cortical precursor of orthographic processing in untrained monkeys. ***Nature Communications***. 11(1):1-13. (2020).

Tremblay S, Acker L, Afraz A, Albaugh DL, et al,. An Open Resource for Non-human Primate Optogenetics. ***Neuron***. (2020).

Kubilius J, Schrimpf M, Hong H, Majaj N, Rajalingham R, Issa EB, Kar K, Bashivan P, Prescott-Roy J, Schmidt K, Nayebi A, Bear D, Yamins D, DiCarlo JJ. Brain-Like Object Recognition with High-Performing Shallow Recurrent ANNs. ***Neural Information Processing Systems***. (2019).

Bashivan P, Kar K, DiCarlo JJ. Neural population control via deep image synthesis. ***Science.*** 364(6439):eaav9436. (2019).

Kar K, Kubilius J, Schmidt K, Issa EB, DiCarlo JJ. Evidence that recurrent circuits are critical to the ventral stream's execution of core object recognition behavior. ***Nature Neuroscience.*** 22(6):974. (2019).

* Rajalingham R, and DiCarlo JJ. Reversible Inactivation of Different Millimeter-Scale Regions of Primate IT Results in Different Patterns of Core Object Recognition Deficits. ***Neuron.*** 102, 1-13. (2019). PMCID30878289.

Issa EB, Cadieu CF, DiCarlo JJ. Neural dynamics at successive stages of the ventral visual stream are consistent with hierarchical error signals. ***eLife.*** 7:e42870. (2018).

Nayebi A, Bear D, Kubilius J, Kar K, Ganguli S, Sussillo D, DiCarlo JJ, Yamins DL, editors. Task-driven convolutional recurrent models of the visual system. ***Neural Information Processing Systems***. (2018).

* Rajalingham R, Issa EB, Bashivan P, Kar K, Schmidt K and DiCarlo JJ. Large-scale, high-resolution comparison of the core visual object recognition behavior of humans, monkeys, and state-of-the-art deep artificial neural networks. ***Journal of Neuroscience*** 38(33), 7255-69. (2018). PMC6096043.

Ohayon S, Caravaca-Aguirre A, Piestun R, and DiCarlo JJ. Minimally invasive multimode optical fiber microendoscope for deep brain fluorescence imaging. ***Biomed Opt Express*** 9(4), 1492-509. (2018).

* Aparicio P*, Issa E* and DiCarlo JJ. Neurophysiological organization of the middle face patch in macaque inferior temporal cortex. ***Journal of Neuroscience.*** 36(50), 12729-12745. (2016).

* Hong H, Yamins DL, Majaj NJ, and DiCarlo JJ. Explicit information for category-orthogonal object properties increases along the ventral stream. ***Nature Neuroscience***. (2016).

* Majaj NJ, Hong H, Solomon EA, and DiCarlo JJ. Simple Learned Weighted Sums of Inferior Temporal Neuronal Firing Rates Accurately Predict Human Core Object Recognition Performance. ***Journal of Neuroscience.*** 35(39): 13402-18 (2015) PMID: 26424887

* Rajalingham R, Schmidt K, DiCarlo JJ. Comparison of Object Recognition Behavior in Human and Monkey. ***Journal of Neuroscience.*** 35(35) 2127-12136 *(*2015). PMCID: PMC4556783

Afraz A, Boyden ES, DiCarlo JJ. Optogenetic suppression of “face neurons” reveals their causal role in face gender discrimination behavior. ***PNAS.*** 112 (21) 6730–6735 (2015) PMCID: PMC4450412

Cadieu CF, Hong H, Yamins D, Pinto N, Ardila D, Soloman EA, Majaj NJ, and DiCarlo JJ. Deep Neural Networks Rival the Representation of Primate IT Cortex for Core Visual Object Recognition. ***PLoS Computational Biology***. 10(12):e1003963 (2014). PMCID: PMC4270441

Yamins D, Hong H, Cadieu C, Soloman E, Siebert D and DiCarlo JJ. Performance-Optimized Hierarchical Models Predict Neural Responses in Higher Visual Cortex. ***PNAS.*** 111 (23) 8619-8624 (2014) PMCID: PMC4060707

Issa EB, Papanastassiou AM, and DiCarlo JJ. Large-scale, high-resolution neurophysiological maps underlying FMRI of macaque temporal lobe. ***Journal of Neuroscience.*** 33(38): 15207-19 (2013).

Yamins DL, Hong H, Cadieu C, and DiCarlo JJ. Hierarchical Modular Optimization of Convolutional Networks Achieves Representations Similar to Macaque IT and Human Ventral Stream. ***Neural Information Processing Systems.*** (2013). PMCID: PMC4060707

Baldassi C, Alemi-Neissi A, Pagan M, DiCarlo JJ, Zecchina R, Zoccolan D. Shape similarity, better than semantic membership, accounts for the structure of visual object representations in a population of monkey inferotemporal neurons. ***PLoS Computational Biology*** 9(8): e1003167 (2013).

Rust N and DiCarlo JJ. Balanced increases in selectivity and tolerance produce constant sparseness along the ventral visual stream. ***Journal of Neuroscience*** 32(30): 10170-10182 (2012).

Issa EB and DiCarlo JJ. Precedence of the eye region in neural processing of faces. ***Journal of Neuroscience*** 32(47: 16666-82 (2012).

* Li N and DiCarlo JJ. Neuronal learning of invariant object representation in the ventral visual stream is not dependent on reward. ***Journal of Neuroscience*** 32(19): 6611-20 (2012).

DiCarlo JJ, Zoccolan DD, and Rust N. How does the ventral visual stream solve object recognition? Refereed Perspective in ***Neuron*** 73(3): 415-34 (2012).

Majaj N, Hong H, Solomon E, and DiCarlo JJ. A unified neuronal population code fully explains human object recognition. Accepted for oral presentation (top 3% of papers); ***Computation and Systems Neuroscience (COSYNE)***, Salt Lake City, UT (2012).

* Pinto N, Barhomi Y, Cox DD, and DiCarlo JJ. Comparing State-of-the-Art Visual Features on Invariant Object Recognition Tasks. ***IEEE Workshop on Applications of Computer Vision,*** Kona, HI (2011).

Rust N and DiCarlo JJ. Selectivity and tolerance ("invariance") both increase as visual information propagates from cortical area V4 to IT. ***Journal of Neuroscience*** 30: 12978 - 12995 (2010).

* Li N and DiCarlo JJ. Unsupervised Natural Visual Experience Rapidly Reshapes Size-Invariant Object Representation in Inferior Temporal Cortex. ***Neuron*** 67(6): 1062 - 1075 (2010).

* Pinto N, Doukan D, DiCarlo JJ, and Cox DD. A high-throughput screening approach to discovering good forms of visual representation. ***PLoS Computational Biology*** 5(11): e1000579 (2009).

* Li N, Cox DD, Zoccolan D, DiCarlo JJ. What response properties do individual neurons need to underlie position and clutter “invariant” object recognition? ***J Neurophysiology***: 102: 360-376 (2009).

* Zoccolan D, Oertelt N, DiCarlo JJ, and Cox DD. Rodent model for the study of invariant object recognition, ***PNAS*** 106 (21):8748-53 (2009)

* Pinto N, DiCarlo JJ, and Cox DD. How far can you get with a modern face recognition test set using only simple features? ***IEEE Computer Vision and Pattern Recognition*** (2009)

* Cox DD, Papanastassiou A, Oreper D, Andken B, and DiCarlo JJ. High-resolution three-dimensional microelectrode brain mapping using stereo microfocal x-ray imaging, ***Journal of Neurophysiology*** 100: 2966-2976 (2008)

Op de Beeck H, DiCarlo JJ, Goense J, Grill-Spector K, Papanastassiou A, Tanifuji M, and Tsao D. Fine-scale spatial organization of face and object selectivity in the temporal lobe: Do fMRI, optical imaging, and electrophysiology agree? ***Journal of Neuroscience.*** 28: 11796-11801 (2008).

* Pinto N, DiCarlo JJ, and Cox DD. Establishing Good Benchmarks and baselines for Face Recognition. Proceedings of the ***European Conference on Computer Vision.*** (ECCV) (2008).

* Li N and DiCarlo JJ. Unsupervised natural experience rapidly alters invariant object representation in visual cortex ***Science.*** 321:1502-07 (2008).

* Cox DD and DiCarlo JJ. Does learned shape selectivity in inferior temporal cortex automatically

generalize across retinal position? ***Journal of Neuroscience.*** 28: 10045-55 (2008).

* Pinto N, Cox DD, DiCarlo JJ. Why is real-world object recognition hard? ***PLoS Computational Biology.*** 4(1): e27 (2008).

Op de Beeck H, Deutsch J, Vanduffel W, Kanwisher N, DiCarlo JJ. A stable topography of selectivity for unfamiliar shape classes in monkey inferior temporal cortex. ***Cerebral Cortex.*** 18: 1676-94 (2008).

Zoccolan D, Kouh M, Poggio T and DiCarlo JJ. Trade-off between shape selectivity and tolerance to identity-preserving transformations in monkey inferotemporal cortex. ***Journal of Neuroscience.*** 27: 12292-307 (2007).

* DiCarlo JJ and Cox DD. Untangling invariant object recognition. ***Trends in Cognitive Neuroscience.*** 11: 333-341 (2007).

Op de Beeck H, Baker C, DiCarlo JJ and Kanwisher N. Discrimination training alters object representations in human extrastriate cortex. ***Journal of Neuroscience.*** 26: 13025-36 (2006).

Kreiman GK, Hung CP, Kraskov A, Quian Quiroga R, Poggio TA, DiCarlo JJ. Object selectivity of local field potentials and spikes in the macaque inferior temporal cortex. ***Neuron.*** 49: 433-445 (2006).

Hung CP, Kreiman GK, Poggio T, and DiCarlo JJ. Fast read-out of object identity from macaque inferior temporal cortex. ***Science.*** 310: 863-866 (2005).

* Zoccolan, D, Cox DD, DiCarlo JJ. Multiple objects response normalization in monkey inferotemporal cortex. ***Journal of Neuroscience.*** 36: 8150-64 (2005).

* Cox DD, Meier P, Oertelt N, and DiCarlo JJ. “Breaking” position invariant object recognition. ***Nature Neuroscience.*** 8:1145-1147 (2005).

DiCarlo JJ and Maunsell JHR. Using neuronal latency to determine sensory-motor processing pathways in reaction time tasks. ***Journal of Neurophysiology.*** 5: 2974-86 (2005).

DiCarlo JJ and Maunsell JHR. Anterior inferotemporal neurons of monkeys engaged in object recognition can be highly sensitive to object retinal position. ***Journal of Neurophysiology.*** 89: 3264-3278 (2003).

DiCarlo JJ and Maunsell JHR. Form representation in monkey inferotemporal cortex is virtually unaltered by free viewing. ***Nature Neuroscience.*** 3: 814-821 (2000).

DiCarlo JJ and Johnson KO. Changes in stimulus scanning direction reveal the spatial and temporal receptive field structure of neurons in primary somatosensory cortical area 3b of the alert monkey. ***Journal of Neuroscience.*** 20: 495-510 (2000).

DiCarlo JJ and Johnson KO. Velocity invariance of receptive field structure in somatosensory cortical area 3b of the alert monkey. ***Journal of Neuroscience.*** 19: 401-419 (1999).

DiCarlo JJ, Johnson KO, Hsiao SS. Structure of receptive fields in area 3b of primary somatosensory cortex in the alert monkey. ***Journal of Neuroscience.*** 18: 2626-2645 (1998).

DiCarlo JJ, Lane JW, Hsiao SS, and Johnson KO. Marking microelectrode penetrations with fluorescent dyes. ***Journal of Neuroscience Methods.*** 64: 75-81 (1996).

Schmajuk NA and DiCarlo JJ. Stimulus configuration, classical conditioning and hippocampal function.

Psychological Review. 99: 268-305 (1992).

Schmajuk NA and DiCarlo JJ. A neural network approach to hippocampal function in classical conditioning. ***Behavioral Neuroscience.*** 105: 125-153 (1990).

Non-refereed publications

Ferguson Jr ME, Ngo J, Lee M, DiCarlo JJ, Schrimpf M. How Well is Visual Search Asymmetry predicted by a Binary-Choice, Rapid, Accuracy-based Visual-search, Oddball-detection (BRAVO) task?.

Peters, B., DiCarlo, J.J., Gureckis, T., Haefner, R., Isik, L., Tenenbaum, J., Konkle, T., Naselaris, T., Stachenfeld, K., Tavares, Z. and Tsao, D. How does the primate brain combine generative and discriminative computations in vision?. *arXiv* preprint arXiv:2401.06005. (2024).

DiCarlo JJ, Yamins DLK, Ferguson ME, Fedorenko E, Bethge M, Bonnen T, Schrimpf M. Let's move forward: Image-computable models and a common model evaluation scheme are prerequisites for a scientific understanding of human vision. *Behav Brain Sci*. Dec 6;46:e390. (2023).

Margalit E, Lee H, Finzi D, DiCarlo JJ, Grill-Spector K, Yamins DLK. A Unifying Principle for the Functional Organization of Visual Cortex. ***bioRxiv***.2023.05.18.541361.(2023).

*Lee MJ, DiCarlo JJ. An empirical assay of view-invariant object learning in humans and comparison with baseline image-computable models. **bioRxiv**.2022.12.31.522402. (2023).

Nayebi A, Sagastuy-Brena J, Bear DM, Kar K, Kubilius J, Ganguli S, Sussillo D, DiCarlo JJ, Yamins DLK. Recurrent Connections in the Primate Ventral Visual Stream Mediate a Tradeoff Between Task Performance and Network Size During Core Object Recognition. ***bioRxiv.*** 2021.02.17.431717. (2022).

*Dapello J, Kar K, Schrimpf M, Geary R, Ferguson M, Cox DD, DiCarlo JJ. Aligning Model and Macaque Inferior Temporal Cortex Representations Improves Model-to-Human Behavioral Alignment and Adversarial Robustness. ***bioRxiv***.2022.07.01.498495. (2022).

Baidya A, Dapello J, DiCarlo JJ, Marques T. Combining Different V1 Brain Model Variants to Improve Robustness to Image Corruptions in CNNs. ***arXiv preprint arXiv:2110.10645***. (2021).

Gan C, Zhou S, Schwartz J, Alter S, Bhandwaldar A, Gutfreund D, Yamins DL, DiCarlo JJ, McDermott J, Torralba A. The ThreeDWorld Transport Challenge: A Visually Guided Task-and-Motion Planning Benchmark for Physically Realistic Embodied AI. ***arXiv preprint arXiv:2103.14025***. (2021).

Schrimpf M, Kubilius J, Lee MJ, Murty NAR, Ajemian R, DiCarlo JJ. Integrative Benchmarking to Advance Neurally Mechanistic Models of Human Intelligence. ***Neuron***. (2020).

Kar K, DiCarlo JJ. Fast recurrent processing via ventral prefrontal cortex is needed by the primate ventral stream for robust core visual object recognition. ***bioRxiv***. (2020).

* Lee H, Margalit E, Jozwik KM, Cohen MA, Kanwisher N, Yamins DL, DiCarlo JJ. Topographic deep artificial neural networks reproduce the hallmarks of the primate inferior temporal cortex face processing network. ***bioRxiv***. (2020).

* Dapello J, Marques T, Schrimpf M, Geiger F, Cox DD, DiCarlo JJ. Simulating a Primary Visual Cortex at the Front of CNNs Improves Robustness to Image Perturbations. ***bioRxiv***. 2020.06.16.154542. (2020).

Gan C, Schwartz J, Alter S, Schrimpf M, Traer J, De Freitas J, Kubilius J, Bhandwaldar A, Haber N, Sano M, Wang E, Mrowca D, Lingelbach M, Curtis A, Figelis K, Gutfreund D, Cox D, DiCarlo JJ, McDermott J, Tenenbaum JB, Yamins DLK. Threedworld: A platform for interactive multi-modal physical simulation. ***arXiv preprint arXiv:2007.04954****.* (2020).

Jia X, Hong H, DiCarlo JJ. Unsupervised changes in core object recognition behavioral performance are accurately predicted by unsupervised neural plasticity in inferior temporal cortex. **bioRxiv**. 2020.01.13.900837. (2020).

Geiger F, Schrimpf M, Marques T, DiCarlo JJ. Wiring Up Vision: Minimizing Supervised Synaptic Updates Needed to Produce a Primate Ventral Stream. ***bioRxiv***. 2020.06.08.140111. (2020).

Kar K, DiCarlo JJ. Fast recurrent processing via ventral prefrontal cortex is needed by the primate ventral stream for robust core visual object recognition. ***NEURON****-D-20-00886.* ***bioRxiv.*** 2020.05.10.086959.(2020).

Zhuang C, Yan S, Nayebi A, Schrimpf M, Frank MC, DiCarlo JJ, Yamins DLK. Unsupervised Neural Network Models of the Ventral Visual Stream. ***bioRxiv***. 2020.06.16.155556. (2020).

Jozwik KM, Schrimpf M, Kanwisher N, DiCarlo JJ. To find better neural network models of human vision, find better neural network models of primate vision. ***BioRxiv***. 2019:688390. (2019).

* Lee H, DiCarlo JJ. Topographic Deep Artificial Neural Networks (TDANNs) predict face selectivity topography in primate inferior temporal (IT) cortex. ***arXiv***:190909847. (2019).

Harris KD, Groh JM, DiCarlo JJ, Fries P, Kaschube M, Laurent G, MacLean JN, McCormick DA, Pipa G, Reynolds JN, Schwartz AB, Sejnowski TJ, Singer W, Vinck M. Funcitional Properties of Circuits, Cellular Populations, and Areas. In: Singer W, Sejnowski TJ, Rakic P, editors. The Neocortex. Cambridge, MA: MIT Press; 2019. p. 223-65.

Arend L, Han Y, Schrimpf M, Bashivan P, Kar K, Poggio T, DiCarlo JJ, Boix X. Single units in a deep neural network functionally correspond with neurons in the brain: preliminary results. ***CBMM Memo****.* (2018).

* Schrimpf M, Kubilius J, Hong H, Majaj NJ, Rajalingham R, Issa EB, Kar K, Bashivan P, Prescott-Roy J, Schmidt K, Yamins DLK and DiCarlo JJ. Brain-Score: Which Artificial Neural Network for Object Recognition is most Brain-Like? ***bioRxiv***. (2018).

Kubilius J, Schrimpf M, Nayebi A, Bear D, Yamins DLK and DiCarlo JJ. CORnet: Modeling the Neural Mechanisms of Core Object Recognition. ***bioRxiv***. (2018).

* Rajalingham R and DiCarlo JJ. Reversible inactivation of different millimeter-scale regions of primate IT results in different patterns of core object recognition deficits. ***bioRxiv***. (2018).

Nayebi A, Bear D, Kubilius J, Kar K, Ganguli S, Sussillo D, DiCarlo JJ and Yamins DL. Task-Driven Convolutional Recurrent Models of the Visual System. ***arXiv*** (2018).

Kar K, Kubilius J, Schmidt KM, Issa EB and DiCarlo JJ. Evidence that recurrent circuits are critical to the XSventral stream's execution of core object recognition behavior. ***bioRxiv***. (2018).

Rajalingham R, Issa EB, Bashivan P, Kar K, Schmidt K, DiCarlo JJ. Large-scale, high-resolution comparison of the core visual object recognition behavior of humans, monkeys, and state-of-the-art deep artificial neural networks. ***bioRxiv*** 240614.

Yamins DL and DiCarlo JJ. Using goal-driven deep learning models to understand sensory cortex. ***Nature Neuroscience*** 19(3):356-65 (2016).

Yamins DL and DiCarlo JJ. Eight open questions in the computational modeling of higher sensory cortex. ***Current Opinion in Neurobiology***, 37, 114-120 (2016).

Afraz A, Yamins DL, DiCarlo JJ. Neural Mechanisms Underlying Visual Object Recognition. In ***Cold Spring Harbor symposia on quantitative biology*** (Vol. 79, pp. 99-107). Cold Spring Harbor Laboratory Press (2014)

DiCarlo JJ. Do we have a strategy for understanding how the visual system accomplishes object recognition? ***Object Categorization: Computer and Human Vision Perspectives,*** Dickenson A, Leonardis A, Schiele B, and Tarr MJ (Eds.), Cambridge University Press (2010)

DiCarlo JJ. Making faces in the brain (*News & Views)*. ***Nature*** 442: 644 (2006).

Kourtzi Z and DiCarlo JJ. Learning and neural plasticity in visual object recognition. ***Current Opinion in Neurobiology*** 16: 152-8 (2006).

Hung CP, Kreiman GK, Poggio TA, DiCarlo JJ. Ultra-fast object recognition from few spikes, ***MIT AI Memo 2005-022*** (2005).

Kreiman GK, Hung CP, Poggio TA, DiCarlo JJ. Selectivity of local field potentials in macaque inferior temporal cortex, ***MIT AI Memo 2004-020*** (2004).

DiCarlo JJ and Johnson KO. Receptive field structure in cortical area 3b of the alert monkey. ***Behavioral Brain Research*** 135: 167-178 (2002).

Hsiao SS, Johnson KO, Twombly IA, DiCarlo JJ. Form processing and attention effects in somatosensory cortex. ***Somesthesis and the Neurobiology of the Somatosensory Cortex***, Birkhauser, O. Franzen, R. Johansson, and L. Terenius (Eds.), Birkhauser Verlag Basel, Switzerland (1996).

Schmajuk NA and DiCarlo JJ. Neural dynamics of hippocampal modulation of classical conditioning. ***Neural Network Models of Conditioning and Action***, M. Commons, S. Grossberg, and J.E.R. Staddon (Eds.), Lawrence Erlbaum Assoc., Hillsdale, NJ, (1991).

Schmajuk NA and DiCarlo JJ. A hippocampal theory of schizophrenia. ***Behavioral and Brain Sciences*** 14: 47-49 (1991).

Abstracts

Talbot, Morgan B, Kreiman, Gabriel, DiCarlo JJ, Gaziv. L-WISE: Boosting human visual category learning through model-based image selection and enhancement. ***The Thirteenth International Conference on Learning Representations***, rXiv preprint rXiv:2412.09765. Singapore. (2025).

Xie Y, Huang W, Alter E, Schwartz J, Tenenbaum JB, DiCarlo JJ. Vision CNNs trained to estimate spatial latents learned similar ventral-stream-aligned representations. ***The Thirteenth International Conference on Learning*** Representations, arXiv preprint arXiv:2412.09115. Singapore. (2025).

Xie Y, Alter E, Schwartz J, DiCarlo JJ. Learning only a handful of latent variables produces neural-aligned CNN models of the ventral stream.***Computational and Systems Neuroscience***. Lisbon, Portugal. (2024).

Mieczkowski E, Abate A, De Faria W, Lydic K, DiCarlo JJ, Kanwisher N, Apurva Ratan Murty N. fROI-level computational models enable broad-scale experimental testing and expose key divergences between models and brains. ***Journal of Vision***. 23(9):5788. (2023).

Sörensen, L.K.A., DiCarlo, J.J., & Kar, K. Probing the effects of object category learning on the macaque inferior temporal cortex. Society for Neuroscience Annual Meeting, Washington D.C., US. (2023).

Guo C, Lee MJ, Leclerc G, Dapello J, Rao Y, Madry A, DiCarlo JJ. Adversarially trained neural representations may already be as robust as corresponding biological neural representations. ***International Conference on Machine Learning***, *arXiv preprint arXiv:220611228. Baltimore, Maryland.* (2022).

Kar K, Green R, DiCarlo JJ. Linking neural dynamics across macaque V4, IT, and PFC to trial-by-trial object recognition behavior. ***Computational and Systems Neuroscience***. Lisbon, Portugal. (2022).

Bagus AMIG, Marques T, Sanghavi S, DiCarlo JJ, Schrimpf M. Primate Inferotemporal Cortex Neurons Generalize Better to Novel Image Distributions Than Analogous Deep Neural Networks Units. ***SVHRM Workshop at Neural Information Processing Systems***. Lisbon, Portugal**.** (2022).

***** Schrimpf M, Mc Grath P, DiCarlo JJ, Topographic ANNs Predict the Behavioral Effects of Causal Perturbations in Primate Visual Ventral Stream IT. ***Champalimaud Research Symposium (CRS21)***, Lisbon, Portugal. (2021).

Kar K, Schrimpf M, Schmidt K, DiCarlo JJ. Chemogenetic suppression of macaque V4 neurons produces retinotopically specific deficits in downstream IT neural activity patterns and core object recognition behavior. ***Journal of vision***. 21(9):2489-2489. (2021).

Chung S, Dapello J, Cohen U, DiCarlo JJ, Sompolinksy H, editors. Separable Manifold Geometry in Macaque Ventral Stream and DCNNs. ***Computational and Systems Neuroscience,*** Denver, Colorado. (2020).

Kar K, DiCarlo JJ, editors. Evidence that recurrent pathways between the prefrontal and inferior temporal cortex are critical during core object recognition. ***Computational and Systems Neuroscience,*** Denver, Colorado. (2020).

Margalit E, Lee H, Marques T, DiCarlo JJ, Yamins D, editors. Correlation-based spatial layout of deep neural network features generates ventral stream topography. ***Computational and Systems Neuroscience***, Denver, Colorado. (2020).

Marques T, Schrimpf M, DiCarlo JJ, editors. Hierarchical neural network models that more closely match primary visual cortex tend to better explain higher level visual cortical responses. ***Computational and Systems Neuroscience,*** Denver, Colorado. (2020).

* Lee MJ, DiCarlo JJ. Comparing novel object learning in humans, models, and monkeys. ***Journal of Vision***. 19(10):114b-b. (2019).

Rajalingham R, Kar K, Sanghavi S, Dehaene S, DiCarlo JJ. A precursor of reading: Neural responses to letters strings in the untrained primate inferior temporal cortex predict word recognition behavior. ***Journal of Vision***. 19(10):172b-b. (2019).

Kar K, DiCarlo JJ, editors. Evidence that recurrent pathways between the prefrontal and inferior temporal cortex is critical during core object recognition. ***Society for Neuroscience***, Chicago, Illinois. (2019).

Schrimpf M, Kubilius J, Hong H, Majaj NJ, Rajalingham R, Issa EB, Kar K, Bashivan P, Nayebi A, Bear D, Prescott-Roy J, Schmidt K, Yamins DL, DiCarlo JJ. Using Brain-Score to Evaluate and Build Neural Networks for Brain-Like Object Recognition. ***Computational and Systems Neuroscience,*** Lisbon, Portugal. (2019).

Jozwik KM, Kanwisher N, DiCarlo JJ. Are Topographic Deep Convolutional Neural Networks Better Models of the Ventral Visual Stream? ***Conference on Cognitive Computational Neuroscience***, Berlin, Germany. (2019).

Rajalingham R, DiCarlo JJ. Focal reversible inactivation of macaque inferior temporal (IT) cortex reveals a topographically selective causal role in primate core object recognition behavior. ***Gordon Research Conference, Neurobiology of Cognition***, Newry, ME, (2018).

Lee H and DiCarlo JJ Topographic Deep Artificial Neural Networks (TDANNs) predict face selectivity topography in primate inferior temporal (IT) cortex. ***Conference on Cognitive Computational Neuroscience,*** Philadelphia, PA, (2018).

Kubilius J, Kar K, Schmidt K and DiCarlo JJ. Can Deep Neural Networks Rival Human Ability to Generalize in Core Object Recognition? ***Conference on Cognitive Computational Neuroscience,*** Philadelphia, PA, (2018).

Kar K, Schmidt K and DiCarlo JJ. Linking image-by-image population dynamics in the macaque inferior temporal cortex to core object recognition behavior. ***Conference on Cognitive Computational Neuroscience,*** Philadelphia, PA, (2018).

Schrimpf M, Kubilius J, DiCarlo JJ, editors. Brain-Score: Which Artificial Neural Network Best Emulates the Brain's Neural Network? ***Conference on Cognitive Computational Neuroscience***, Philadelphia, Pennsylvania. (2018).

Bashivan P, Kar K and DiCarlo JJ. Neural Population Control via Deep ANN Image Synthesis. ***Conference on Cognitive Computational Neuroscience,*** Philadelphia, PA, (2018)

Nayebi A, Kubilius J, Bear D, Ganguli S, DiCarlo JJ, Yamins D, editors. Convolutional recurrent neural network models of dynamics in higher visual cortex. ***Computational and Systems Neuroscience,*** Denver, Colorado. (2018).

Rajalingham R, DiCarlo JJ, editors. Focal reversible inactivation of macaque inferior temporal (IT) cortex reveals a topographically selective causal role in primate core object recognition behavior. ***Society for Neuroscience***, San Diego, California. (2018).

Rajalingham R, Lee H and DiCarlo JJ. Selective behavioral deficits from focal inactivation of primate inferior temporal (IT) cortex: a new quantitative constraint for models of core object recognition. ***Conference on Cognitive Computational Neuroscience,*** Philadelphia, PA, (2018).

Kar K, DiCarlo JJ, Chemogenetic down-regulation of macaque V4 responses produce reversible deficits in core object recognition behavior. ***Society for Neuroscience***, San Diego, California. (2018).

Kar K, Kubilius J, Issa EB, Schmidt K, & DiCarlo JJ. Evidence that feedback is required for object identity inferences computed by the ventral stream. ***COSYNE****,* Salt Lake City, UT (2017).

Kar K, Kubilius J, Schmidt K, Issa EB, DiCarlo JJ, editors. Does the primate ventral stream need cortical feedback to compute rapid online image-by-image object identity? ***Society for Neuroscience***, Washington, DC. (2017).

***** Rajalingham R, Issa EB, Schmidt K, Kar K & DiCarlo JJ. Feedforward deep neural networks diverge from humans and monkeys on core visual object recognition behavior. ***Conference on Cognitive Computational Neuroscience****,* Columbia University, New York City, New York (2017).

Issa EB, Schmidt K, Ohayon S & DiCarlo JJ. A simple, wireless system for remote, high-throughput behavioral testing of nonhuman primates. ***Society for Neuroscience***, San Diego, CA (2016).

* Rajalingham R, Issa EB, Kar K, Schmidt K & DiCarlo JJ. Image-grain comparisons of core object recognition behavior in humans, monkeys and machines. ***Society for Neuroscience***, San Diego, CA (2016).

Ohayon S, Aguirre M, Piestun R, DiCarlo JJ. Deep brain fluorescence imaging using an ultra-thin optical fiber. ***Society for Neuroscience***, San Diego, California. (2016).

Issa EB, Cadieu C & DiCarlo JJ. Evidence that the ventral stream uses gradient coding to perform hierarchical inference. ***COSYNE,*** Salt Lake City, UT (2015).

Yamins D, Hong H, DiCarlo JJ. Emergence of identity-independent object properties in ventral visual cortex. ***COSYNE***, Salt Lake City, UT (2015).

Hong H, Yamins D, Majaj N, DiCarlo JJ. IT cortex contains a general-purpose visual object representation. ***COSYNE***, Salt Lake City, UT (2014).

Seibert D, Yamins D, Hong H, DiCarlo JJ, Gardner J. Quantifying and modeling the emergence of object recognition in the vernal stream. ***COSYNE***, Salt Lake City, UT (2014).

Yamins D, Hong H, Seibert D, DiCarlo JJ. Predicting IT and V4 neural responses with performance-optimized neural networks. ***COSYNE***, Salt Lake City, UT (2014).

Afraz A, Boyden ES, DiCarlo JJ. Optogenetic and pharmacological suppression of face-selective neurons reveal their causal role in face discrimination behavior. ***Vision Sciences Society***, St. Pete Beach, Florida (2014).

* Rajalingham R, Schmidt K, DiCarlo JJ. Comparison of object recognition behavior in human and monkey. ***Vision Sciences Society,*** St. Pete Beach, Florida (2014).

Jia X, Hong H, DiCarlo JJ. A quantitative link between unsupervised neuronal plasticity in inferior temporal cortex and unsupervised human object learning. ***Society for Neuroscience*** *Annual Meeting*, Washington DC (2014).

Cadieu C, Hong H, Yamins D, Pinto N, Majaj N and DiCarlo JJ. The Neural Representation Benchmark and its Evaluation on Brain and Machine. ***International Conference of Learning Representations*** (2013).

Afraz A, Boyden ES, DiCarlo JJ. Optogenetic suppression of “face neurons” reveals their causal role in face discrimination behavior. **S*ociety for Neuroscience*** *Annual Meeting*, San Diego, CA (Nov 2013)

*Cadieu C, *Issa EB & DiCarlo JJ. A neural encoding model of area PL, the earliest face selective region in monkey IT. ***COSYNE,*** Salt Lake City, UT (2013).

Cadieu, C., Issa, EB and DiCarlo, JJ. Understanding the neural basis of face processing in functionally defined area PL. ***COSYNE***, Salt Lake City, UT (2013).

Reshef E, Afraz A, DiCarlo, JJ. Varying object identity while maintaining the continuity of its movement breaks position invariant perception. ***Vision Science Society*** *Annual Meeting* (2012)

Issa, EB and DiCarlo, JJ. Neuronal responses in fMRI-targeted face-selective regions in posterior inferotemporal cortex. ***Society for Neuroscience*** *Annual Meeting*, Washington, DC (Nov. 2011)

Aparicio, EB and DiCarlo, JJ. Is the monkey middle face patch a module for face detection? ***Society for Neuroscience*** *Annual Meeting*, Washington, DC (Nov. 2011)

Pagan A, Alemi-Neissi A, Baldassi C, Zecchina R, DiCarlo JJ, Zoccolan D. From luminance to semantics: how natural objects are represented in monkey inferotemporal cortex. ***COSYNE***, Salt Lake City, UT (2011).

Aparicio P, Issa EB, and DiCarlo, JJ. What is the middle face patch? ***Society for Neuroscience*** *Annual Meeting*, San Diego, CA (Nov. 2010)

Pinto N, Majaj NJ, Barhomi Y, Solomon EA, Cox DD, DiCarlo JJ. Human versus machine: comparing visual object recognition systems on a level playing field. Learning Workshop, Snowbird, UT (2010).

Pinto N, DiCarlo JJ, Cox DD. A High-Throughput Screening Approach to Biologically-Inspired Object Recognition. Learning Workshop, Snowbird, UT (2010).

Pinto N, Majaj NJ, Barhomi Y, Solomon EA, Cox DD, DiCarlo JJ. Human versus machine: comparing visual object recognition systems on a level playing field. ***COSYNE***, Salt Lake City, UT (2010).

Li N, DiCarlo JJ. Does the visual system use natural experience to construct size invariant object representations? ***COSYNE***, Salt Lake City, UT, (2010).

Pinto N, Cox DD, DiCarlo JJ. Unlocking Brain-Inspired Computer Vision. ***GPU@BU***, Boston University, MA (2009).

Pinto N, Cox DD, DiCarlo JJ. The Visual Cortex and GPUs. ***GPU Computing for Biomedical Research***, MGH Boston, MA (2009).

Pinto N, Cox DD, DiCarlo JJ. Unlocking Biologically-Inspired Computer Vision: a High-Throughput Approach. ***NVIDIA GPU Technology Conference***, San Jose, CA (2009).

Li N, and DiCarlo JJ. The size invariance of neuronal object representations can be reshaped by temporally contiguous visual experience ***Society for Neuroscience*** *Annual Meeting*, Chicago, IL (Oct. 2009)

Rust N and DiCarlo JJ. Balanced increases in selectivity and invariance produce constant sparseness across the ventral visual pathway, ***Vision Science Society*** *Annual Meeting*, (May. 2009)

Papanastassiou A, Op de Beeck H, Andken B and DiCarlo JJ. A systematic exploration of the relationship of fMRI signals and neuronal activity in the primate temporal lobe, ***Society for Neuroscience*** *Annual Meeting (mini-symposium)*, Washington, DC (Nov. 2008)

Majaj N, Li N and DiCarlo JJ. Inferior temporal cortex robustly signals encounters with new objects, but is not an online representation of the visual world***, Society for Neuroscience*** *Annual Meeting*, Washington, DC (Nov. 2008)

Rust N and DiCarlo JJ. Increases in selectivity are offset by increases in tolerance ("invariance") to maintain sparseness across the ventral visual pathway, ***Society for Neuroscience*** *Annual Meeting*, Washington, DC (Nov. 2008)

Li N, and DiCarlo JJ. Unsupervised natural experience rapidly alters invariant object representation in visual cortex, ***Society for Neuroscience*** *Annual Meeting*, Washington, DC (Nov. 2008)

Rust N, and DiCarlo JJ. Concurrent increases in selectivity and tolerance produce constant sparseness across the ventral visual stream. ***COSYNE***, Salt Lake City, Utah (Feb. 2008).

Li N, and DiCarlo JJ. Natural experience drives online learning of tolerant object representations in visual cortex. ***COSYNE***, Salt Lake City, Utah (Feb. 2008).

Cox DD*, Pinto N*, Doukhan D, Corda B and DiCarlo JJ. A high-throughput screening approach to discovering good forms of visual representation. ***COSYNE***, Salt Lake City, Utah (Feb. 2008).

Pinto N*, Cox DD*, Corda B, Doukhan D and DiCarlo JJ. Why is real-world object recognition hard?: Establishing honest benchmarks and baselines for object recognition. ***COSYNE***, Salt Lake City, Utah (Feb. 2008).

Zoccolan D, Cox D, Oertelt N, Radwan B, Tsang S and DiCarlo JJ. Is the rodent a valuable model system for studying invariant object recognition? ***COSYNE***, Salt Lake City, Utah (Feb. 2008).

Li N, Cox DD, Zoccolan D, and DiCarlo JJ. Flexible and robust object recognition in inferior temporal cortex supported by neurons with limited position and clutter tolerance. ***Society for Neuroscience***, Atlanta, GA, Oct. (2006).

Zoccolan D, Kouh M, Poggio T and DiCarlo JJ. Trade-off between shape selectivity and tolerance to identity-preserving transformations in monkey inferotemporal cortex. ***Gordon Conference:*** *Sensation and the Natural Environment*, Bozeman, MT, Aug. (2006).

Op de Beeck H, Deutsch J, Vanduffel W, Kanwisher N, DiCarlo JJ. A large-scale shape map in monkey inferior temporal cortex. ***Society for Neuroscience***, Atlanta, GA, Oct. (2006).

Cox DD and DiCarlo JJ. Is the “binding problem” a problem in inferotemporal cortex? ***Society for Neuroscience***, Washington, DC, Nov. (2005).

Zoccolan D, Cox DD and DiCarlo JJ. Multiple object response normalization in monkey inferotemporal cortex. ***Society for Neuroscience***, Washington, DC, Nov. (2005).

Hung CP, Kreiman GK, Quiroga R, Kraskov A, Poggio T, and DiCarlo JJ. Using ‘read-out’ of object identity to understand object coding in the macaque anterior inferior temporal cortex**. *Computational and Systems Neuroscience (COSYNE),*** Salt Lake City, UT, March (2005).

Cox DD and DiCarlo JJ. The effect of visual experience on the position tolerance of primate object representations. ***Society for Neuroscience,*** San Diego, CA, Nov. (2004).

Kreiman GK, Hung CP, Poggio TA, and DiCarlo JJ. Object recognition by selective spike and LFP data in macaque inferior temporal cortex. ***Society for Neuroscience***, San Diego, CA, Nov. (2004).

DiCarlo JJ and Maunsell JHR. Mapping functional neuronal processing chains underlying sensory-motor tasks in the primate. ***Gordon Research Conference: Sensory coding and the natural environment***, Oxford, UK, August (2004).

DiCarlo JJ and Maunsell JHR. Using reaction time tasks to map sensory-motor chains in the monkey. ***Society for Neuroscience***, Orlando, FL, Nov. (2002).

DiCarlo JJ and Maunsell JHR. Inferotemporal representations underlying object recognition in the free viewing monkey. ***Society for Neuroscience***, New Orleans, LA, Nov. (2000).

DiCarlo JJ and Johnson KO. Form processing in area 3b. ***International Symposium on Brain Mechanisms of Tactile Perception,*** Stockholm, Sweden, Oct. (1999).

DiCarlo JJ, Hsiao SS, and Johnson KO. Spatial and temporal properties of neural receptive fields in area 3b of the awake monkey. ***Society for Neuroscience***, New Orleans, LA, Nov. (1997).

Twombly IA, DiCarlo JJ, Hsiao SS and Johnson KO. Linear and non-linear processing of tactile spatial form in area 3b of the awake macaque. ***Society for Neuroscience***, Washington, D.C., Nov. (1996).

DiCarlo JJ, Twombly IA, Hsiao SS and Johnson KO. Laminar differences in spatiotemporal receptive field structure of neurons in area 3b of the awake macaque. ***Society for Neuroscience***, Washington, D.C., Nov. (1996).

Hsiao SS, DiCarlo JJ and Johnson KO. Interlaminar processing of tactile spatial form in area 3b of the somatosensory system. ***Biomedical Engineering Society***, Boston, Oct. (1995).

DiCarlo JJ, Hsiao SS and Johnson KO. Transformation of tactile spatial form within a cortical column in area 3b of the macaque. ***Society for Neuroscience***, Miami, FL, Nov. (1994).

Schmajuk NA and DiCarlo JJ. The short-term memory regulation hypothesis of hippocampal function. ***Midwestern Psychology Association***, Chicago, IL, May, (1990).

Schmajuk NA and DiCarlo JJ. Neural dynamics of hippocampal modulation of classical conditioning. ***12th Symposium on Models of Behavior: Neural Network Models of Conditioning and Action***, Cambridge, MA, June, (1989).

Invited presentations and lectures

1. Stanford University, Department of Neurobiology, Palo Alto, CA (1997)
2. Baylor College of Medicine, Division of Neuroscience, Houston, TX (1997)
3. Johns Hopkins University, Department of Biomedical Engineering, Baltimore, MD (1997)
4. Massachusetts Institute of Technology, Department of Brain and Cognitive Sciences, Cambridge, MA (2001)
5. University of California at Davis, Center for Neuroscience, Davis, CA (2001)
6. University of California at Santa Barbara, Institute for Theoretical Physics, Santa Barbara, CA (2001)

7. McGovern Institute 1st Annual Retreat, M.I.T., Falmouth, MA (2002)
8. Harvard University, Department of Psychology, Cambridge, MA (2002)
9. Harvard Medical School, Department of Neurobiology, Boston, MA (2002)
10. Pew Scholars and Fellows Annual Meeting, Bahamas (2002)
11. Johns Hopkins University, Krieger Mind/Brain Institute, Baltimore, MD (2003)
12. Conte Center Annual Meeting, Detection and Recognition of Objects in Visual Cortex, Cambridge, MA (2004)
13. Computational and Systems Neuroscience annual meeting (COSYNE), Salt Lake City, UT (2005)
14. Conte Center Annual Meeting, , Detection and Recognition of Objects in Visual Cortex, Cambridge, MA (2005)
15. Stanford University, Neuroscience Institute, Palo Alto, CA (2005)
16. Massachusetts General Hospital Martinos Imaging Center, Charlestown, MA (2005)
17. University of Washington, Dept. of Physiology and Biophysics, Seattle, WA (2006)
18. Massachusetts Institute of Technology, Dept. of Brain and Cognitive Sciences and CSAIL, Cambridge, MA (2006)
19. Pew Scholars and Fellows Annual Meeting, Costa Rica (2006).
20. Harvard University, Department of Psychology, Cambridge, MA (2006)
21. DARPA NeoVision workshop, Washington, DC (2006)
22. Gordon Research Conference: Sensory coding and the natural environment, Big Sky, MO (2006)
23. University of California at San Diego, Dept. of Neuroscience, San Diego, CA (2006)
24. California Institute of Technology, Pasadena, CA (2006)
25. Smith-Kettlewell Eye Institute, San Francisco, CA (2007)
26. University of California at San Francisco, Dept. of Neuroscience, San Francisco, CA (2007)
27. Computational and Systems Neuroscience annual meeting (COSYNE), Salt Lake City, UT (2007)
28. Cold Spring Harbor Laboratory Invited Lecture, Cold Spring Harbor, NY (2007)
29. Functional Requirements of Visual Theory Group Meeting, Montana State University, MT (2007)
30. European Brain and Behavior Society Annual Meeting, Trieste, Italy (2007)
31. International Conference on Computer Vision (ICCV), Rio de Janeiro, Brazil (2007)
32. Harvard Medical School, Department of Neurobiology, Boston, MA (2007)
33. Columbia University, New York, NY (2008)
34. University of California at Los Angeles, CA (2008)
35. University of Southern California, CA (2008)
36. National Institutes of Health, Washington, DC (2008)
37. Cognitive Neuroscience Society (CNS) Annual Meeting, San Francisco, CA (2008)
38. Principles of Biological Computation workshop, Santa Fe Institute, Santa Fe, NM (2008)
39. Perceptual Expertise Network (PEN) workshop, Banff, Canada (2008)
40. Japan Annual Neuroscience Meeting, Tokyo, Japan (2008)

41. RIKEN Brain Science Institute, Wako, Japan (2008)
42. National Institute for Physiological Sciences, Okazaki, Japan (2008)
43. Harvard University, Brigham and Women's, Cambridge, MA (2008)
44. Workshop of Learning and Dynamics in Vision, Glion, Switzerland (2008)
45. 26th Army Science Conference, Orlando, FL (2008)
46. Yale University, Swartz Computational Systems Series, New Haven, CT (Jan. 2009)
47. University of Rochester, Center for Visual Science, Rochester, NY (Jan. 2009)
48. Center for Nonlinear Studies Colloquium, Los Alamos National Laboratory Los Alamos, NM (March 2009)
49. New York University, Center for Neural Science, New York, NY (March 2009)
50. The Thirteenth International Conference on Cognitive and Neural Systems (ICCNS), Boston University,Boston, MA (May 2009)
51. McKnight Endowment Fund Annual Neuroscience Conference, Aspen, CO (June 2009)
52. Annual Meeting of the Sloan-Swartz Centers for Theoretical Neurobiology, Harvard, Cambridge, MA (July 2009)
53. Frankfurt Institute for Advanced Studies, Frankfurt, Germany (Oct. 2009)
54. International Conference on Computer Vision Systems (ICVS), Keynote speaker (Oct. 2009)
55. University of California at San Diego (UCSD), Cognitive Science colloquium, San Diego, CA (Feb. 2010)
56. Computational and Systems Neuroscience (COSYNE) Annual Meeting invited speaker, Salt Lake City, UT (March 2010).
57. Stanford University, Center for Mind, Brain and Computation Minisymposium, Palo Alto, CA (March 2010).
58. University of Texas at Austin, Workshop of Natural Environments, Tasks, and Intelligence, Austin, TX (March 2010).
59. Boston University, Department of Psychology, Boston, MA (April 2010).
60. Woods Hole MBL, Woods Hole, MA (August 2010).
61. McGill University, Montreal Canada (Oct. 2010)
62. Columbia University, New York, NY (Oct. 2010)
63. Vanderbilt University, Nashville, TN (Nov. 2010)
64. KU Leuven, Leuven, Belgium (Dec. 2010)
65. Scene Understanding Symposium (SUnS), MIT, Cambridge, MA (Jan 2011)
66. Boston University Cognitive and Neural Systems Conference, Boston, MA (May 2011)
67. DARPA NeoVision2 workshop, Washington, DC (May 2011)
68. Dolby Research Laboratories, San Franscisco, CA (June 2011)
69. Dartmouth College, Workshop in Neural Computation, Burlington, VT (August 2011)
70. Frontiers in Computer Vision Workshop, Cambridge, MA (August 2011)
71. Champalimaud Inaugural Neuroscience Symposium, Lisbon, Portugal (Sept. 2011)
72. Workshop of Learning and Plasticity, International Mathematics Meeting Center (CIRM), Marseille, France (Nov. 2011)

73. International Conference on Computer Vision (ICCV), Keynote speaker, Barcelona, Spain (Nov. 2011)
74. Johns Hopkins University, Ken Johnson Memorial Speaker (Nov, 2011)
75. Harvard Medical School, Dept. of Neurobiology Systems Group (March, 2012)
76. MIT Museum public lecture, Cambridge, MA (March, 2012)
77. VisoNYC (Greater New York City vision scientists), Columbia/NYU/Suny College of Optometry (March, 2012)
78. Canonical Neural Computation, Florence, Italy (May, 2012)
79. Johns Hopkins University, Center for Lnaguage and Speech Processing (July, 2012)
80. University of Pennsylvania, Dept. of Psychology (July 2012)
81. Princeton University (Nov. 2012)
82. Collaborative Research in Computational Neuroscience Meeting, MIT (June, 2013)
83. Assembly and Function of Neural Circuits Meeting, Ascona, Switzerland (Sept. 2013)
84. CIFAR Meeting, San Francisco, California (Dec. 2013)
85. NIPS, Tahoe, Nevada (Dec. 2013)
86. SPC Meeting, San Francisco, California (Feb. 2014)
87. Cornell University, Ithaca New York (March 2014)
88. VSS Meeting, St. Petersburg, Florida (May 2014)
89. McKnight Neuroscience Conference, Aspen, Colorado (June 2014)
90. Shitsukan Symposium, Tokyo, Japan (July 2014)
91. Gordon Conference, Maine (July 2014)
92. University of Tubingen, Germany (Oct. 2014)
93. SfN, Washington, DC (Nov. 2014)
94. University of Chicago (Feb. 2015)
95. New York University (Feb. 2015)
96. COSYNE, Salt Lake City, Utah (March 2015)
97. Technion and Bar Ilan University, Israel (March 2015)
98. Emory University, Atlanta, Georgia (April 2015)
99. Columbia University, Center for Theoretical Neuroscience, New York, New York (May 2015)
100. IBM Educational Panel, Washington, DC (July 2015)
101. Computer Vision Summer School, Germany (July 2015)
102. Brains, Minds and Machines, Woods Hole, Massachusetts (Aug. 2015)
103. MURI meeting, Stanford University, Stanford, California (Aug. 2015)
104. SCGB 1st Annual Meeting (Simons Foundation), New York City, New York (Sept. 2015)
105. Max Planck Symposium, Germany (Sept. 2015)
106. Baylor Neuroscience Seminar, Houston, TX (November 2015)
107. MURI meeting, University of California, Berkeley, CA (January 2016)
108. SCGB (Simons Foundation) Multiregional Models of Population Coding Workshop (January 2016)

109. Center for Molecular & Behavioral Neuroscience, Rutgers University, Newark, NJ (January 2016)
110. Future of Primate Neuroscience, Shenzhen, China (March 2016)
111. University of Texas at Austin, Workshop of Natural Environments, Tasks, and Intelligence, Austin, TX (April 2016).
112. HHMI Janelia Research Campus, Complexity of Neural Computation and Cognition (May 2016)
113. PBS Colloquium, Dartmouth College, Hanover, NH (October 2016)
114. IBM World of Watson, Las Vegas, NV (October 2016)
115. MURI meeting, Stanford University, Stanford, CA (October 2016)
116. CNBC, Pittsburg, PA, (November 2016)
117. CBMM, Palo Alto, CA (March 2017)
118. University of Waterloo, Ontario, Canada (April 2017)
119. MURI meeting, Washington DC (April 2017)
120. McKnight Foundation, Aspen CO (June 2017)
121. Brainy Days, Jerusalem, Israel (June 2017)
122. CVPR Keynote, Honolulu, Hawaii (July 2017)
123. Brains, Minds and Machines, Woods Hole, Massachusetts (Aug. 2017)
124. Annual Conference on Cognitive Computational Neuroscience, Columbia University, New York City, NY (September 2017)
125. National Institutes of Health, Neuroscience Seminar Series, Bethesda, Maryland (October 2017)
126. Center for Brains Minds and Machines GoogleX Workshop, Palo Alto, CA (January 2018)
127. Duke University, Duke Neurobiology Seminar Series, Durham, NC (January 2018)
128. Caltech, Seminar Series of the Computation and Neural Systems, Pasadena, CA (March 2018)
129. Canonical Neural Computation Symposium, NYU, New York City, New York (March 2018)
130. Cerebral Cortex 3.0: Complexity and Computation, Frankfurt am Main, Germany (April 2018)
131. RUCCS Computational Neuroscience Workshop, Rutgers University, New Brunswick, NJ (May 2018)
132. ICVSS 2018 - Computer Vision after Deep Learning, Sicily, Italy (July 2018)
133. Neurobiology of Cognition Gordon Research Conference, Newry, ME (July 2018)
134. BCCN, Program Board of the Bernstein Conference, Berlin, Germany (September 2018)
135. 5th annual symposium of the Stanford Neurosciences Institute, Stanford University, Stanford, California (October 2018)
136. ICTP-SISSA, Winter School, Trieste, Italy (November 2018)
137. University of Montreal, University of Montreal Seminar Series, Montreal, Canada (January 2019)
138. University of California San Diego, Artificial Intelligence meets Human Intelligence, San Diego,CA (May 2019)
139. DAC Keynote Speaker, Design Automation Conference, Las Vegas, NV (June 2019)
140. CVR 2019, York University Centre for Vision Research International Conference on Predictive Vision, Toronto, Canada (June 2019)
141. EPFL Symposium, Neuroscience meets Deep Learning, Lausanne, Switzerland (July 2019)

142. Brains, Minds and Machines, Woods Hole, Massachusetts (August 2019)
143. Purdue Engineering Distinguished Lecture Series, Purdue University (October 2019)
144. AI & Neuroscience: Cell Press Conference, Beijing, China (November 2019)
145. Yale Neuroscience Department Seminar, Yale University, New Haven, CT (November 2019)
146. Cognitive Sciences Colloquium series at the Institute d'Etudes Cognitive, Paris France (January, 2020)
147. Physics of Neural Circuits and Network Dynamics, Stony Brook University, Stony Brook, NY (January 2020)
148. Computational and Systems Neuroscience (COSYNE), Denver & Breckenridge, CO (March 2020)
149. Grand Rounds, Harvard University, Boston, MA (June, 2020)
150. Marine Biological Institute Summer School, Wellesley, MA (August 2020)
151. Conference on Cognitive Computational Neuroscience, Woods Hole, MA (September 2020)
152. Simons Collaboration on the Global Brain (SCGB), New York, NY (September 2020)
153. Center for Brain-inspired Computing Enabling Autonomous Intelligence (C-BRIC), West Lafayette, IN (October 2020)
154. International Symposium on Artificial Intelligence, Tokyo Japan, (October 2020)
155. Champalimaud Symposium on Neural and Machine Intelligence, Lisbon, Portugal, (October 2020)
156. International Test Conference, New York, NY (November 2020)
157. Neuroscience to Artificially Intelligent Systems (NAISys), Cold Spring Harbor, NY (December 2020)
158. Army Science Planning and Strategy Meeting (ASPSM), Research Triangle Park, NC (December 2020)
159. Simons Collaboration on the Global Brain (SCGB), New York, NY (January 2020)
160. Computational and Systems Neuroscience (COSYNE), Denver & Breckenridge, CO (March 2020)
161. US Office of Naval Research and Dept. of Defense (virtual, May 2021)
162. Vision Sciences Society, Switzerland (virtual, May 2021)
163. US National Science Foundation (NSF) speaker and panel on: AI and understanding the brain (virtual, June 2021)
164. Marine Biological Institute CBMM Summer School, Wellesley, MA (virtual, August 2021)
165. Allan Brain Institute Workshop on Theories of Visual Coding and Cell Types (virtual, September 2021)
166. Conference on Cognitive Computational Neuroscience (GAC), New York, New York (virtual, September 2021)
167. Keynote Speaker, Champaulimaud Annual Symposium (Lisbon) (virtual talk, October 2021)
168. Future of Computing Symposium I Coordinated Science Laboratory, Urbana, IL (virtual, October 2021)
169. Vanderbilt Brain Institute Neuroscience Seminar Series: Brain, Mind, and Society, Nashville, TN (virtual, November 2021)
170. Keynote speaker, Montreal AI and Neuroscience (MAIN) Annual Symposium (virtual, Dec 2021)

171. Office of Naval Research (ONR) Multidisciplinary University Research Initiatives (MURI), (virtual, January 2022)
172. Simons Collaboration on the Global Brain Annual Conference (New York, March 2022)
173. U. of Pittsburgh CNUP Graduate Student Retreat (West Virginia, Sept 2022)
174. Princeton University (virtual, October 2022)
175. NeurIPS Workshop invited speaker (December 2022)
176. Keynote Speaker, 17th Annual IEEE International Conference on Automatic Face and Gesture Recognition (January 2023)
177. International Titisee Conference on NeuroAI, Titisee, Germany (March 2023)
178. Simons Flatiron Institute, NewYork (June 2023)
179. National Institutes of Health (NIH), Bethesda, MD (September 2023)
180. New York University, New York, NY (October 2023)
181. University of Grenada, Spain (virtual) (February 2024)
182. National Academies of Science, Washington, DC (March 2024)
183. Simons Collaboration on the Global Brain, New York NY (May 2024)
184. Center for Brain, Minds and Machines & Hebrew University workshop (May 2024)
185. Weizmann Vision and AI seminar (virtual) (June 2024)
186. National MD/PhD Student Retreat, Breckenridge, CO (July 2024)
187. NYU Medical School, New York, NY (September 2024)
188. Santa Fe Institute, Santa Fe, NM (October 2024)
189. Columbia University, New York, NY (October 2024)
190. Johns Hopkins University, Baltimore, MD (October 2024)
191. National University of Singapore, Singapore (January 2025)
192. Somerset Club, Boston MA (March 2025)

Research summary

DiCarlo's research team's goal is to discover and artificially emulate the brain mechanisms that underlie human visual intelligence. Over the past 20 years, using the non-human primate animal model organism, DiCarlo and his collaborators have helped develop our contemporary, engineering-level understanding of the neural mechanisms that underlie visual information processing in the ventral visual stream — a complex series of interconnected brains areas — and how that processing supports core cognitive abilities such as object and face recognition. He and his collaborators aim to use this newly emerging scientific understanding to guide the development of more robust artificial vision systems ("AI"), to reveal new ways to beneficially modulate brain activity via modulations of images striking our eyes, to expose new methods of accelerating visual learning, to provide a basis for new neural prosthetics (brain-machine interfaces) to restore lost senses, and to provide a scientific foundation to understand how sensory processing is altered in conditions such as agnosia, autism and dyslexia.