

Franco Pestilli, PhD

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Education

- 2008 Ph.D. Psychology, Cognition & Perception, New York University, NY Advisor: Marisa Carrasco.
- 2006 M.A. Psychology, Cognition & Perception, New York University, NY.
- 2000 Laurea. Experimental Psychology (*summa cum laude*), University of Rome *La Sapienza*, ITALY.

Positions

- 2015- Assistant Professor, Department of Psychological and Brain Sciences, Indiana University.
Program in Neuroscience.
Program in Cognitive Science.
- 2017- Adjunct Professor, Department of Intelligent Systems Engineering, Indiana University.
Department of Computer Science.
School of Optometry.
- 2013-14 Research Associate, Stanford University, Stanford, CA.
- 2011-13 Postdoctoral Researcher, Stanford University, Stanford, CA.
- 2008-11 Postdoctoral Fellow, Columbia University, New York, NY.
- 2010 Fellow Italian Academy, Columbia University, New York, NY.
- 2009 Visiting Researcher, RIKEN Brain Science Institute, Wako, Japan.
- 2002-2008 PhD Candidate, New Your University, New York, NY.

Publications

1. **Pestilli F.**, Human white matter and knowledge representation. *PLoS Biology*
<https://doi.org/10.1371/journal.pbio.2005758>
2. Avesani, P., Caiafa, C., McPherson, B. Saykin, A., Hayashi, S., Herschel, R., A., Garyfallidis, E., Kitchell, L., Bullock, D., Patterson, A., Olivetti, E., Sporns, O., Saykin, A., Wang, L., Dinov, I., and **Pestilli, F.** Reproducible Neuroimaging Via Open Cloud Services: Data Upcycling To Advance Discovery In Network Neuroscience. *Nature Scientific Data*. In revision.
3. Yoshimine, S., Ogawa, S., Horiguchi, H., Terao, M., Miyazaki, A., Tsuneoka, H., Masuda, Y., and **Pestilli, F.** Age-related macular degeneration affects the optic radiation white matter projecting to locations of retinal damage. *Brain Structure and Function*. <https://doi.org/10.1007/s00429-018-1702-5>
4. Glzman, T., Bruckert, L., **Pestilli, F.**, Yecies, D.W., Guibas, L., Yeom, K. (2018) Framework for Shape Analysis of White Matter Bundles. *Neuroimage*. 167:466-477.
5. Kellar, D., Newman, S., **Pestilli, F.**, Cheng, Hu., Port, N., Comparing fMRI activation during smooth pursuit eye movements among contact sport athletes, non-contact sport athletes, and non-athletes. *Neuroimage: Clinical*. <https://doi.org/10.1016/j.nicl.2018.01.025>
6. Caiafa C. and **Pestilli, F.** (2017) Multidimensional encoding of brain connectomes. *Nature Scientific Reports*. [doi:10.1038/s41598-017-09250-w](https://doi.org/10.1038/s41598-017-09250-w)
7. Miller J.K., Hermes, D., **Pestilli, F.**, Wig, G.S., and Ojemann, J.O. (2017) Face percept formation in human ventral temporal cortex. *Journal of Neurophysiology*, DOI: 10.1152/jn.00113.2017
8. Takemura H, **Pestilli F.**, Weiner KS, Keliris GA, Landi SM, Sliwa J, Ye FQ, Barnett MA, Leopold DA, Freiwald WA, Logothetis NK, Wandell BA. (2017) Occipital white matter tracts in human and macaque. *Cerebral Cortex* 27 (6): 3346-3359. DOI: 10.1093/cercor/bhx070.
9. Rokem, A. Takemura, H., Bock, A. Scherf, S., Bridge, H., Fine, I., Behrman, M., Wandell, B., and **Pestilli, F.** (2017) The visual white matter: Application of diffusion MRI and fiber tractography to vision science. *Journal of Vision*. 17(2):4. [doi: 10.1167/17.2.4](https://doi.org/10.1167/17.2.4)
10. K.L. Main, S. Soman, **Pestilli, F.** A. Furst, A. Noda, J. Kong, J. Cheng, J.K. Fairchild, L. Kinoshita, J.

- Taylor, J. Yesavage, J.W. Ashford and M. Adamson (2017) DTI metrics from the right inferior longitudinal fasciculus and thalamic tract best discriminate TBI patients from neurologically healthy controls: a receiver operator characteristic analysis of US Veterans. *NeuroImage: Clinical. In press.*
11. Glozman, T., Solomon, J., **Pestilli, F.**, and Guibas, L. (2017) Shape descriptors as imaging biomarkers for Alzheimer's disease. *Journal of Alzheimer's disease.* 56(1): 287–295.
 12. Takemura, H., Caiafa, C., Wandell, B.A., and **Pestilli, F.** (2016) Ensemble tractography. *PLoS Computational Biology.* doi: 10.1371/journal.pcbi.1004692
 13. Leong, J. **Pestilli, F.**, Wu, C., Samanez-Larkin, G., and Knutson, B. (2016) Anatomical identification of the white-matter pathways between the NAc to Insular cortex. *Neuron.* 89(1): 63–69.
 14. Libero LE, Berge WK, Deshpande HD, **Pestilli F.**, & Kana RK (2016) White Matter Diffusion of Major Fiber Tracts Implicated in Autism Spectrum Disorder. *Brain Connectivity.* 6(9): 691-699.
 15. Aijna, S. **Pestilli, F.**, Rokem, A., and Brigde, H. (2015) Human blindsight is mediated by an intact geniculo-extrastriate pathway. *eLife.*
 16. Goldstone, R. **Pestilli, F.**, and Börner, K., (2015) Self-portraits of the brain: cognitive science, data visualization, and communicating brain structure and function. *Trends in Cognitive Science. Cover.*
 17. **Pestilli, F.** (2015) Test-retest measurements and digital validation for in vivo neuroscience, *Nature: Scientific Data* 2 (140057) doi:10.1038/sdata.2014.57.
 18. Takemura, H., Yeatman, J. Rokem, A., Winawer, J., Wandell, B. and **Pestilli, F.** (2015) A major human white-matter pathway between dorsal and ventral visual cortex. *Cerebral Cortex.*
 19. Allen, B., Spiegel, D., Thompson, B., **Pestilli, F.***, Rokers, B*. (2015) Altered white matter in visual pathways as a result of amblyopia. *Vision Research. *Equal senior contribution.*
 20. Saber, G.*, **Pestilli, F.*** and Curtis, C. (2015) Saccade planning increases topographic activity in visual cortex. *The Journal of Neuroscience.* 35(1):245-252. **Equal contribution.*
 21. Gomez, J., **Pestilli, F.**, Witthoft, N., Golarai, G., Liberman, A., Poltoratski, A., Yoon, J., Grill-Spector, K. (2015) Development of high-level visual fasciculi correlates with face perception. *Neuron.* 85 (1).
 22. Rokem, A. Yeatman, J. **Pestilli, F.** Mezer, A. Wandell, B. (2014) Evaluating models of MRI diffusion. *PLoS one.*
 23. **Pestilli, F.**, Yeatman, J. Rokem, A., Kay, K. and Wandell, B. (2014) Evaluation and statistical inference in living connectomes. *Nature Methods.* doi:10.1038/nmeth.3098.
 24. Yeatman, J.D., Weiner, K.S., **Pestilli, F.**, Rokem, A., Mezer, A., Wandell, B.A. (2014) The vertical occipital fasciculus: A century of controversy resolved by in vivo measurements. *Proceedings of the National Academy of Sciences* 111.48:E5214-E5223.
 25. Ling, S., Jehee, J., and **Pestilli, F.** (2014) A review of the mechanisms by which attentional feedback shapes visual selectivity. *Brain Structure and Function.* doi:10.1007/s00429-014-0818-5.
 26. Main, K.*, **Pestilli, F.***, Mezer, A. Yeatman, J. Martin, R. Phipps, S. Wandell, B. (2014) Speed discrimination predicts word but not pseudo-word reading rate in adults and children. *Brain and Language. *Equal contribution.*
 27. Hara, Y., **Pestilli, F.**, and Gardner, JL (2014) Differing predictions for single-units and neuronal populations of the normalization model of attention. *Frontiers in Computational Neuroscience.*
 28. Ogawa, S., Takemura, H., Horiguchi, H., Terao, M., Haji, T., **Pestilli, F.**, Yeatman, J., Tsuneoka, H., Wandell, B., Masuda, Y. (2014) White matter consequences of retinal receptor and ganglion cell damage. *Investigative Ophthalmology and Vision Science, IOVS.*
 29. **Pestilli, F.**, Heeger, D., Carrasco, M., & Gardner, J. (2011) Attentional enhancement via selection and pooling of early sensory responses in human visual cortex. *Neuron.* 72(5): 832–846.
 30. **Pestilli, F.**, Ling, S., & Carrasco, M. (2009) A population-coding model of attention's influence on contrast response: estimating neural effects from psychophysical data. *Vision Research.* 49(7):735.
 31. Montagna, B., **Pestilli, F.**, & Carrasco, M. (2009) Attention trades off spatial acuity. *Vision Research.*
 32. Ferrera V, Teichert T, Grinband J, **Pestilli F.**, Dashnaw S, & Hirsch J. (2008) Functional Imaging with Reinforcement, Eyetracking, and Physiological Monitoring *JoVE.* 21
 33. **Pestilli, F.**, Viera, G., & Carrasco M. (2007) How do attention and adaptation affect contrast sensitivity? *Journal of Vision.* 7 (7):1-12.

34. Liu T., **Pestilli F.**, & Carrasco M. (2005) Transient attention enhances performance and fMRI response in human visual cortex. *Neuron*. 45 (3): 469–47.
35. **Pestilli F.** & Carrasco M. (2005) Attention enhances contrast sensitivity at cued and impairs it at uncued locations. *Vision Research*. 45 (14): 1867–75.

Peer reviewed conference articles and public archives

1. Caiafa, C., Saykin, A., Sporns, O., and **Pestilli, F.** (2017) Tensor encoding and decomposition of brain connectomes with application to tractography evaluation. *Neural Information Processing Systems (NIPS)*. (Spotlight talk, Top 2% of all accepted submissions. NIPS acceptance rate 20%)
2. Caiafa, C., Cichocki A. **Pestilli, F.** (2017) A Sparse Tensor Decomposition with Multi-Dictionary Learning Applied to Diffusion Brain Imaging. *The Signal Processing with Adaptive Sparse Structured Representations (SPARS)*, Lisbon, Portugal.
3. Gugnani, S., Lu, X., **Pestilli, F.**, Caiafa, C., Panda, D.K. (2017) MPI-LIFE: Designing High-Performance Linear Fascicle Evaluation of Brain Connectome with MPI. *IEEE 24th International Conference on High Performance Computing (HiPC)*, Jaipur, India.
4. Caiafa, C., and **Pestilli, F.** (2015) Sparse multiway decomposition for analysis and modeling of diffusion imaging and tractography. <http://arxiv.org/abs/1505.07170>
5. Zheng, C., **Pestilli, F.**, and Rokem, A. (2014) Deconvolution of High Dimensional Mixtures via Boosting, with Application to Diffusion-Weighted MRI of Human Brain. *Neural Information Processing Systems (NIPS)*.
6. Zheng, C., **Pestilli, F.**, and Rokem, A. (2014) Quantifying error in estimates of human brain fiber directions using Earth Mover's Distance. *arXiv:1411.5271. (NIPS – Workshop.)*

Research grants

Title: NCS-FO: Connectome mapping algorithms with application to community services for big data neuroscience.

Source: *National Science Foundation (special program The BRAIN Initiative)*.

Location: Indiana University.

Total Award Amount: \$650,000

Dates: 09/01/17-08/31/2020

PI F. Pestilli. co-PI E. Garyfallidis, R. Herschel (Indiana University), Ivo Dinov (University of Michigan), Lei Wang (Northwestern University).

Title: Brain-Life.org: A public platform for reproducible biomedical science imaging.

Source: *XSEDE Allocation, National Science Foundation (passthrough)*.

Location: Indiana University.

Total Award Amount (in credits): \$617,039

Dates: 2018/01/01-12/31

PI F. Pestilli.

Title: White matter in human behavior: harnessing computing and data science methods for a biological understanding of human learning mechanisms.

Source: *National Science Foundation. SBE Postdoctoral Research Fellowship-Fundamental Research.*

Location: Indiana University.

Total Award Amount: \$138,000

Dates: PENDING

PI: Sophia Vinci-Booher. co-PI F. Pestilli.

Title: Workshop on Learning in Humans and Machines.

Source: *Association for Psychological Science & Psychonomics Society (Estes Fund for Teaching and Education).*

Total Award: \$20,000

Dates: 12/01/17-05/30/2018

PI Pestilli F., co-PI Smith, L., Goldstone, R.

Title: Learning: Brains, Machines and Children

Source: *Indiana University, Area of emerging research.*

Total Award: \$3,000,000

Dates: 05/01/17-04/30/2020

PI Smith, L., co-PI Sporns, O., Crandall, D., White, M., James, K., Goldstone, R., Landy, D., Pestilli, F.

Title: Cloud computing and data storage for neuroscience research using the NSF Big Data Hub Azure allocation.

Source: *Microsoft Research, Azure Cloud Systems.*

Total Award: \$100,000

Dates: 03/01/17-02/28/2018

PI Pestilli, F.

Title: Advanced Computational Neuroscience Network (ACNN).

Source: *National Science Foundation (Special Program for Big Data)*

Location: Collaborative Proposal. U. Michigan, Indiana University, Northwestern University, Ohio State University, Case Western University

Total Award Amount: \$332,000

Dates: 09/01/16-08/31/19

PI F. Pestilli. co-PI O. Sporns, A. Saykin, (Indiana University), Lei Wang (Northwestern University, IL).

Title: Advanced methods for prediction of the effects of glaucoma on the brain white matter.

Source: *Algemene Nederlandse vereniging ter voorkoming van blindheid General Dutch foundation to prevent blindness)*

Location: University of Groningen, The Netherlands.

Total Award Amount: €30,000

Dates: 09/01/17-

PI F. Cornelissen. co-PI S. Hanekamp, (University of Groningen), F. Pestilli (Indiana University).

Title: Improved accuracy for anatomical mapping and network structure of the Alzheimer's brain.

Source: *Indiana Clinical and Translational Sciences Institute (CTSI) NIH Passthrough.*

Total Award Amount: \$200,000

Dates: 09/01/2015-08/31/2017

PI F. Pestilli Collaborators: J. Goñi, Sporns, O., Shen L., Yu-Shien, W. and A. Saykin.

Title: Modern diffusion-weighted MRI protocol and analyses for early profiling and detection of reading disabilities in preschool children

Source: *Indiana Clinical and Translational Sciences Institute (CTSI)*

Total Award Amount: \$10,000

Dates: 01/01/2016-12/31/2017

PI F. Pestilli and K. James

Fellowships, Honors and Awards

- 2017 Fellow Psychonomics Society
- 2016 Janet Taylor Spence Award for Transformative Early Career Achievements Association for Psychological Science.
- 2016 Fellow Association for Psychological Science
- 2016 Japanese Society for Neuroscience, Early Career Travel Award.
- 2016 Exceptional Reviewer Recognition. Journal of Vision.
The Association for Research in Vision and Ophthalmology <http://dx.doi.org/10.1167/16.8.r>
- 2016 IU Nomination for the Blavatnik Award (only one nominee yearly for Indiana University).
- 2000 *Summa cum laude*, University of Rome La Sapienza, ITALY.

Open science software projects

Brain-Life Open platform for data, algorithms with seamless deployment on cloud systems and high performance clusters for collaborative reproducible research.

brainlife.io | github.com/brain-life | hub.docker.com/u/brainlife

ENCODE Technology for representing brain connectomes.

github.com/brain-life/encode

LiFE Technology for mapping, evaluation and statistical inference in human connectomes.

<https://francopestilli.github.io/life>

MBA Code to generate accurate and reproducible brain anatomy images.

<https://github.com/francopestilli/mba>

LiFE_scripts Code for sharing scientific methods and knowledge on brain mapping.

https://github.com/francopestilli/life_scripts

Brain function, activity and behavior

VISTASOFT Code for brain mapping and analysis of Diffusion and BOLD imaging.

<https://github.com/francopestilli/vistasoft>

mrTools Code for analysis of brain activity and behavior.

<http://gru.stanford.edu/doku.php/mrTools/overview>

MGL Code for measuring human behavior and designing experimental protocols.

<http://gru.stanford.edu/doku.php/mgl/overview>

Teaching

- 2018 Fall Cognitive Psychology (Undergraduate), P335
- 2018 Spring Cognitive Psychology (Undergraduate), P335
- 2017 Fall Cognitive Psychology (Undergraduate), P335
- 2017 Spring The new digital neuroanatomy. P657 github.com/francopestilli/pestilli-teaching-2017.
- 2016 Fall. Cognitive Psychology (Undergraduate), P335
- 2016 Spring. Statistics techniques, K310 github.com/francopestilli/stats-k310
- 2015 Fall Cognitive Psychology (Undergraduate), P335
- 2015 Spring Statistics techniques (Undergraduate), K310 github.com/francopestilli/stats-k310
- 2012 Statistics and data analysis in MatLab (Graduate), talks.stanford.edu/psych-216a
Stanford University, Department of Psychology, CA. Course: co-Instructors: J. Yeatman, K.Kay.
- 2002 Introduction to Psychology (Undergraduate).
Hunter College, City University of New York, Department of Psychology, NY.
- 2002 Cognitive Processes (Undergraduate).
Hunter College, City University of New York, Department of Psychology, NY.

Scientific and academic service

Editorial Board Member

- Nature Scientific Data (*Nature Publishing Group*) Editor Andrew Hufton.
- Brain Structure and Function (*Springer*) Editors Karl Zilles and Laszlo Zaborszky.
- Cognitive Processing (*Springer*) Editor M. Olivetti-Belardinelli.

Guest or Acting Editor

- 2018 PNAS Proceedings of the National Academy of Science.
- 2018 Nature Scientific Data.
- 2016-2018 Cognitive Processing.

Scientific reviewer

- PNAS Proceedings of the National Academy of Science
- Nature Neuroscience
- Nature Methods
- Nature Communications
- Nature Scientific Reports
- Nature Scientific Data
- Journal of Neuroscience
- Cerebral Cortex
- PLoS Biology
- PLoS Computational Biology
- Brain Structure and Function
- Human Brain Mapping
- Journal of Alzheimer Disease
- Brain Imaging and Behavior
- Journal of Vision
- Vision Research
- Frontiers in Human Neuroscience
- Visual Neuroscience
- Neuroscience and Neuroeconomics
- Journal of Cognitive Psychology
- Neuroscience
- Investigative Ophthalmology & Visual Science
- NIPS (Neural Information processing systems)
- Journal of Magnetic Resonance Imaging
- Neuroimage
- Transaction in Medical Imaging
- Attention Perception and Psychophysics

University level service

- 2018-current Indiana University Network science Institute (IUNI) Advisory Board Member.
- 2015-2017 Indiana University Neuroimaging Center Database Management System. nims.uits.iu.edu
- 2016, 2018 IU Hutton Honors College Selection committee for Undergraduate Awards (Rhodes, Mitchell scholarships).
Selected 2016 Rhodes Scholar IU Law Student Morgan Mohr
honorsandawards.iu.edu/search-awards/honoree.shtml?honoreeID=8041

Department level service: Psychological and Brain

- 2016, 2017, and 2018 PBS Space Committee.
- 2017 PBS Ad Hoc member POSTCOM Committee for PBS Faculty Retreat.
- 2015, 2016, 2017 and 2018 PBS Technological Advisory Committee.
- 2017 EAR Search Committee (*Successful hire of Rick Betzel as IU faculty*).
- 2018 EAR Search Committee Diversity for Social Psychology (*Successful hire of Amanda Diekman and Kurt Hugenberg as IU faculty*).

Scientific meetings organizer

2018

- *BrainHack Global*, Bloomington, IN, May 2-4 <https://brainhack.sice.indiana.edu>
- *APS Workshop on Learning Human and Machines*
Bloomington, IN, May 14-15 <http://www.indiana.edu/~earbmc/LIHAM/>
- *Midwest Cognitive Science Conference*,
Bloomington, IN, May 11-13 <http://www.indiana.edu/~pcl/mwcoqsci>
- *NSF Workshop on Big Data Neuroscience*
Cleveland, OH, September 7-9 neurosciencenetwork.org/ACNN_Workshop_2018.html

2017

- *NSF Workshop on Big Data Neuroscience*
Bloomington, IN, September 5-6 neurosciencenetwork.org/ACNN_Workshop_2017.html
- *BrainHack Global*, Bloomington, IN, <https://www.soic.indiana.edu/news/story.html?story=IU-ISE-set-to-host-Brainhack-Global-Bloomington>

2016

- *NSF Workshop on Big Data Neuroscience*
Ann Arbor, MI, September neurosciencenetwork.org/ACNN_Workshop_2016.html
- *Vision Social Chair, Society for Neuroscience San Diego*.
- *Advances in computational neuroanatomy: Symposium held at Annual meeting of the Japanese Society for Neuroscience Yokohama, JAPAN, July*.

2015

- *Linking behavior to cortical activity: Symposium at the Annual meeting of the Vision Science Society, St. Pete, FL, May*.

2014

- *The visual white-matter matters: Symposium at the Annual meeting of the Vision Science Society, St. Pete, FL, May*.
- *Neurotechniques: New Approaches to Understanding Mind, Brain and Behavior*.
Italian Academy for Advanced Studies, Columbia University, NY.
http://www.italianacademy.columbia.edu/events_calendar.html
- *Vision Lunch*:
Department of Psychology, Stanford University, Stanford, CA.
http://vistalab.stanford.edu/newlm/index.php/Vision_Lunch

References

Brian Wandell,	Stanford University,	+1 (650) 725 2466,	wandell@stanford.edu
Justin Gardner,	-	+1 (650) 725-2417,	jlg@stanford.edu
Kalanit Grill-Spector,	-	+1 (212) 998 7868,	kalanit@stanford.edu
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Robert Goldstone,	-	+1 (812) 855-4853,	rgoldsto@indiana.edu
Katy Börner,	-	+1 (812) 855-3256,	katy@indiana.edu

Extra academic

2011-2014	Stanford University Alpine Club
2009-2010	Member, Columbia University Cycling Club
2001	Consultant ATEL, a boutique Information Technology consulting firm based in ITALY.
1994	Finalist Track and Field, European Team Championships, Warsaw, Poland (4 th position), Fiamme Gialle Italiane
1991-1994	Gold Medalist Track & Field and Cross-country National Team Championships, ITALY, Fiamme Gialle Italiane.

Citizenship

Italy and USA.