Martin Schrimpf

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Education

2017 - 2022	**Massachusetts Institute of Technology (MIT)**, *PhD* Department of Brain and Cognitive Sciences. GPA 5.0/5.0. Advisor: James DiCarlo.
2014 - 2017	**TU & LMU Munich & University of Augsburg,** *Master of Science* Elite Program Software Engineering. GPA 4.0/4.0 with honors. Thesis completed at **Harvard University**.
2011 - 2014	**TU Munich**, *Bachelor of Science* Program Information Systems. Thesis completed at the **University of Sydney**.

Research and Industry Experience

Fall 2023	**EPFL**, *Tenure-Track Assistant Professor*
Since 2022	**MIT Quest**, *Research Scientist* Leading a group of research scientists and engineers to bridge natural and artificial intelligence research across the institute.
2017	**Salesforce Einstein AI**, *Deep Learning Intern* Advisor: Richard Socher. Flexible architecture search for natural language processing with reinforcement learning (discovered highly novel architectures).
2016	**Harvard Medical School**, *Research Assistant* Advisor: Gabriel Kreiman. Recurrent computations for the recognition of occluded objects in humans and models (29% improvement in accuracy); Robustness of neural networks to weight perturbations.
2015 - 2016	**Oracle Labs**, *Research Assistant* Development of an on-demand cluster database module (now widely used by research teams).
2015 - 2020	**Integreat Digital Factory**, *Co-Founder / Technical Advisor (since 2017)* Platform for distributing local information to refugees, now used in 1 out of every 6 cities in Germany (*integreat-app.de/en*).
2015	**Siemens AG**, *Software Engineering Intern* Behavior-driven testing framework to run a test specification written in natural language (now used in three major business areas).
2012 - 2015	**Martin Schrimpf Software Solutions**, *Freelancer* Led the development of a document management system with optical character recognition to make the client company paper-free.

Peer-reviewed Publications

2022	Geiger*, F., **Schrimpf***, **M.**, Marques, T. & DiCarlo, J. J. Wiring Up Vision: Minimizing Supervised Synaptic Updates Needed to Produce a Primate Ventral Stream. *Spotlight*, *International Conference on Learning Representations (ICLR)*
2021	**Schrimpf**, **M.**, Blank, I., Tuckute, G., Kauf, C., Hosseini, E., Kanwisher, N., Tenenbaum, J. & Fedorenko, E. The neural architecture of language: Integrative modeling converges on predictive processing. *Proceedings of the National Academy of Sciences (PNAS)*
2021	Casper, S., Boix, X., D'Amario, V., Guo, L., **Schrimpf**, **M.**, Vinken, K. & Kreiman, G. Frivolous Units: Wider Networks are not really that Wide. *AAAI*
2020	Gan, C., Schwartz, J., Alter, S., **Schrimpf**, **M.**, Traer, J., De Freitas, J., Kubilius, J., Bhandwaldar, A., Haber, N., Sano, M., *et al.* ThreeDWorld: A platform for interactive multi-modal physical simulation. *Oral*, *Neural Information Processing Systems (NeurIPS)*
2020	Zhuang, C., Yan, S., Nayebi, A., **Schrimpf**, **M.**, Frank, M. C., DiCarlo, J. J. & Yamins, D. L. K. Unsupervised Neural Network Models of the Ventral Visual Stream. *Proceedings of the National Academy of Sciences (PNAS)*
2020	Dapello*, J., Marques*, T., **Schrimpf**, **M.**, Geiger, F. & DiCarlo, J. J. Simulating a Primary Visual Cortex at the Front of CNNs Improves Robustness to Image Perturbations. *Spotlight*, *Neural Information Processing Systems (NeurIPS)*
2020	**Schrimpf**, **M.**, Kubilius, J., Lee, M., Murty, N. A. R., Ajemian, R. & DiCarlo, J. J. Integrative Benchmarking to Advance Neurally-Mechanistic Models of Human Intelligence. *Neuron*
2019	Kubilius*, J., **Schrimpf***, **M.**, Nayebi, A., Bear, D., Yamins, D. L. K. & DiCarlo, J. J. Brain-Like Object Recognition with High-Performing Shallow Recurrent ANNs. *Oral*, *Neural Information Processing Systems (NeurIPS)*
2018	Bashivan, P., **Schrimpf**, **M.**, Ajemian, R., Rish, I., Riemer, M. & Tu, Y. Continual Learning with Self-Organizing Maps. *Neural Information Processing Systems (NeurIPS) Continual Learning Workshop*
2018	**Schrimpf***, **M.**, Merity*, S. & Socher, R. A Flexible Approach to Automated RNN Architecture Generation. *International Conference on Learning Representations (ICLR)*
2018	Tang*, H., **Schrimpf***, **M.**, Lotter*, W., Moerman, C., Paredes, A., Ortega Caro, J., Hardesty, W., Cox, D. & Kreiman, G. Recurrent computations for visual pattern completion. *Proceedings of the National Academy of Sciences (PNAS)*

* = equal contribution

Selected Peer-reviewed Abstracts

2021	**Schrimpf, M.**, Mc Grath, P. & DiCarlo, J. Topographic ANNs Predict the Behavioral Effects of Causal Perturbations in Primate Visual Ventral Stream IT. *Champalimaud Research Symposium (CRS21)*
2021	Kar, K., **Schrimpf, M.** & DiCarlo, J. Chemogenetic suppression of macaque V4 neurons produces retinotopically specific deficits in downstream IT neural activity patterns and core object recognition behavior. *Vision Sciences Society Annual Meeting*
2020	**Schrimpf, M.**, Blank, I., Tuckute, G., Kauf, C., Hosseini, E., Kanwisher, N., Tenenbaum, J. & Fedorenko, E. Predictive Neural Language Models Capture Language Processing in the Brain. **Oral**, *Society for the Neurobiology of Language* **Merit Award Honorable Mention**
2020	**Schrimpf*, M.**, Kubilius*, J., Nayebi, A., Bear, D., Yamins, D. L. K. & DiCarlo, J. J. Brain-Like Object Recognition with High-Performing Shallow Recurrent ANNs. **Oral**, *neuromatch*
2020	Marques, T., **Schrimpf, M.** & DiCarlo, J. J. Hierarchical neural network models that more closely match primary visual cortex also better explain high-level vision. *Computational and Systems Neuroscience (Cosyne)*
2019	**Schrimpf*, M.**, Kubilius*, J., Hong, H., Majaj, N. J., Rajalingham, R., Issa, E. B., Kar, K., Ziemba, C., Bashivan, P., Prescott-Roy, J., Schmidt, K., Yamins, D. L. K. & DiCarlo, J. J. Using Brain-Score to Evaluate and Build Neural Networks for Brain-Like Object Recognition. *Computational and Systems Neuroscience (Cosyne)*
2018	**Schrimpf*, M.**, Kubilius*, J., Hong, H., Majaj, N. J., Rajalingham, R., Issa, E. B., Kar, K., Bashivan, P., Prescott-Roy, J., Schmidt, K., Yamins, D. L. K. & DiCarlo, J. J. Brain-Score: Which Artificial Neural Network Best Emulates the Brain's Neural Network? *Cognitive Computational Neuroscience (CCN)*
2016	**Schrimpf, M.**, Tang, H., Lotter, W., Paredes, A., Ortega Caro, J., Hardesty, W., Cox, D. & Kreiman, G. Recurrent computations for pattern completion. *Neural Information Processing Systems (NIPS) Brains and Bits Workshop*

Preprints

2022	Dapello, J., Kar, K., **Schrimpf, M.**, Geary, R., Ferguson, M., Cox, D. D. & DiCarlo, J. J. Aligning Model and Macaque Inferior Temporal Cortex Representations Improves Model-to-Human Behavioral Alignment and Adversarial Robustness. *bioRxiv*
2021	Marques, T., **Schrimpf, M.** & DiCarlo, J. Multi-scale hierarchical neural network models that bridge from single neurons in the primary visual cortex to primate object recognition behavior. *bioRxiv*

2019	Jozwik, K. M., **Schrimpf**, **M.**, Kanwisher, N. & DiCarlo, J. J. To find better neural network models of human vision, find better neural network models of primate vision. *bioRxiv*
2018	Arend, L., Han, Y., **Schrimpf**, **M.**, Bashivan, P., Kar, K., Poggio, T., DiCarlo, J. J. & 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, N. J., Rajalingham, R., Issa, E. B., Kar, K., Bashivan, P., Prescott-Roy, J., Schmidt, K., Yamins, D. L. K. & DiCarlo, J. J. Brain-Score: Which Artificial Neural Network for Object Recognition is most Brain-Like? *bioRxiv*
2017	Cheney*, N., **Schrimpf***, **M.** & Kreiman, G. On the Robustness of Convolutional Neural Networks to Internal Architecture and Weight Perturbations. *CBMM Memo*

Invited Talks

2022	WorldWideNeuro SNUFA
2022	MPI, Kornfeld lab
2022	Tenyx
2022	EPFL
2022	Erlangen AI meetup
2022	MIT, BCS interviews
2021	MIT, Fiete lab
2021	Telluride Workshop
2021	MIT, Yang lab
2021	Stanford University, NLP seminar
2021	MIT, Saxe Lab
2020	GDR TAL, France NLP
2020	MIT, Kanwisher Lab
2020	Brown University, Serre lab
2020	Cosyne Workshop: Decision Making
2020	Cosyne Workshop: Neural Networks and the Brain
2019	MIT, BCS Cog Lunch
2019	IBM, AI Week
2019	Center for Brain-Inspired Computing (C-BRIC)
2019	Center for Brains, Minds and Machines (CBMM; MIT/Harvard)
2018	MIT, Tenenbaum Lab
2016	Harvard Medical School, Systems Club

Selected Awards and Funding

2022	MIT, *Open Data Prize (Brain-Score)*
2021	Neuro - Irv and Helga Cooper Foundation, *Open Science Prize*
2021	**McGovern Institute**, *Fellowship* [tuition and stipend]
2021	MIT, *Walle Nauta Award for Continuing Dedication in Teaching*
2020	DAAD, *Postdoc-NeT-AI Fellow*
2020	**Takeda**, *Fellowship in AI+Health* [tuition and stipend]

2019	**Grant: IBM ThreeDWorld**
2019	MIT, *Shoemaker Fellowship* [tuition and stipend]
2019	McGovern Institute, *Travel award* [travel scholarship]
2018	**Grant: C-BRIC brain-inspired neural network models**
2018	**Google.org**, *Impact Challenge (Integreat)* [finalist, 250,000€]
2017	MIT, *Singleton Fellowship* [tuition and stipend]
2017	Council of Europe, *European Youth Award (Integreat)* [winner]
2016	DAAD German Academic Exchange Service, *FITweltweit* [scholarship]
2016	University of Augsburg, *Teilstipendium* [scholarship]
2015	Federal Ministry for Education and Research, *Deutschlandstipendium* [scholarship]
2014	Bavarian State Ministry, *Ministeriumsstipendium* [scholarship]

Mentored Students

Since 2021	**Marliawaty I Gusti Bagus**, *CDTM* Generalization of neural representations
2020 - 2021	**Paul McGrath**, *TUM* Modeling neural perturbations
2020 - 2021	**Tilak Sharma**, *Facebook / MIT* Local learning without backpropagation
2019 - 2020	**Caleb Littlejohn**, *MIT* Brain-Score submission platform
2020	**Sachi Sanghavi**, *MIT* Dependence of action recognition on temporal integration
2019 - 2020	**Franziska Geiger**, *TUM / LMU / UNA* Compressing neural network weights into structured distributions
2019	**Fukushi Sato**, *TUM* Building temporal models of the ventral stream
2018 - 2019	**William Hartman**, *MIT* Identifying high-performance substructures within architectures
2016	**Jacklyn Sarette**, *Emmanuel College* Behavioral experiments on visual context
2016	**Doré de Morsier**, *ETH Zurich* Behavioral experiments on the recognition of novel objects
2016	**Wendy Fernandez**, *City University of New York* Behavioral experiments and data analysis on the identification of occluded objects (MIT Summer Research Program)

Teaching

2022	**Brains, Minds, and Machines summer school** Computational Models of Vision and Language
2021	**Systems Neuroscience Core II (Prof. Halassa)** Teaching Assistant / Co-Lecturer
2021	**Guest Lecture, Program for Software Engineering UNA TUM LMU** Engineering an Artificial Biological Intelligence

2020	**Systems Neuroscience Core II (Prof. Halassa)**
	Teaching Assistant
2019	**Computational Cognitive Science (Prof. Tenenbaum)**
	Teaching Assistant
2019	**Harvard-MIT Computational Neuroscience Journal Club**
	Deep Networks and PyTorch
2019	**Neural Mechanisms of Cognitive Computation (Prof. Halassa)**
	Teaching Assistant
2017	**MIT BCS Peer Lectures**
	Introduction to Deep Learning

Service

2022	**Brains, Minds, and Machines summer school**, *Course Consultant*
2022	**Neural Information Processing Systems (NeurIPS)**, *Reviewer*
2022	**Cosyne Workshop**, *Organizer*
	Brain-Score and beyond: confronting brain-like ANNs with neuroscientific data
2022	**Intl. Conference on Learning Representations (ICLR)**, *Reviewer*
2021	**Neural Information Processing Systems (NeurIPS)**, *Reviewer*
2021	**International Conference on Machine Learning (ICML)**, *Reviewer*
2021	**Nature Communications**, *Reviewer*
2021	**Neuron**, *Reviewer*
2020	**CCN GAC Workshop**, *Organizer*
	Is it that simple? The use of linear models in neuroscience
2020	**eLife**, *Reviewer*
2020	**iScience**, *Reviewer*
2020	**Cosyne Workshop**, *Organizer*
	Closing the Gap between Neural Networks and the Brain
Since 2020	**Underrepresented minorities in Machine Learning**, *Mentor*
2019	**NeurIPS Real Neurons & Hidden Units Workshop**, *Reviewer*
Since 2018	**CBMM (MIT & Harvard)**, *Trainee Leadership Council*
2016	**University of Augsburg AI Workshop**, *Organizer*

References

James DiCarlo, *MIT (advisor)*	dicarlo@mit.edu
Peter de Florez Professor of Neuroscience	
Joshua Tenenbaum, *MIT*	jbt@mit.edu
Paul E. Newton Career Development Professor of Cognitive Science	
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Assistant Professor	