








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.
Committee: Evelina Fedorenko, Pieter Roelfsema, Gabriel Kreiman.
- 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., Bhandwadar, 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

- 2022 I Gusti Bagus*, A. M., Marques*, T., Sanghavi, S., DiCarlo*, J. J. & **Schrimpf*, M.** Primate Inferotemporal Cortex Neurons Generalize Better to Novel Image Distributions Than Analogous Deep Neural Networks UnitsDownload PDF. *SVRHM @ NeurIPS*
- 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., Kumbhani*, 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 MPI Tübingen Intelligent Systems, Brendel group
- 2022 WorldWideNeuro SNUFA
- 2022 MPI Biological Intelligence, 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, <i>Open Science Prize</i>
2021	McGovern Institute , <i>Fellowship</i> [tuition and stipend]
2021	MIT, <i>Walle Nauta Award for Continuing Dedication in Teaching</i>
2020	DAAD, <i>Postdoc-NeT-AI Fellow</i>
2020	Takeda , <i>Fellowship in AI+Health</i> [tuition and stipend]
2019	Grant: IBM ThreeDWorld
2019	MIT, <i>Shoemaker Fellowship</i> [tuition and stipend]
2019	McGovern Institute, <i>Travel award</i> [travel scholarship]
2018	Grant: C-BRIC brain-inspired neural network models
2018	Google.org , <i>Impact Challenge (Integreat)</i> [finalist, 250,000€]
2017	MIT, <i>Singleton Fellowship</i> [tuition and stipend]
2017	Council of Europe, <i>European Youth Award (Integreat)</i> [winner]
2016	DAAD German Academic Exchange Service, <i>FITweltweit</i> [scholarship]
2016	University of Augsburg, <i>Teilstipendium</i> [scholarship]
2015	Federal Ministry for Education and Research, <i>Deutschlandstipendium</i> [scholarship]
2014	Bavarian State Ministry, <i>Ministeriumsstipendium</i> [scholarship]

Mentored Students

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