

FATIH DINC

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Summary

I work at the intersection of theoretical neuroscience, dynamical systems, and machine learning, developing mathematical and computational frameworks for understanding robust computation in biological and artificial neural networks. My approach pairs analytical theory with large-scale neural data analysis and close experimental collaboration. I have derived theoretical results on learning, memory, and neural computation in recurrent networks, while developing computational tools for analyzing large-scale neural recordings. The resulting manuscripts have appeared in high-impact journals including *Nature* and *Physical Review X*, as well as leading machine learning conferences including NeurIPS and ICML. I have closely mentored dozens of undergraduate and graduate researchers, many of whom have contributed to this research program and gone on to leading PhD programs. My dissertation, completed in an experimental neuroscience laboratory, received SIAM's 2026 [Richard C. DiPrima Prize](#).

Research interests: theoretical neuroscience; neural computation; dynamical systems; recurrent neural networks; machine learning for systems neuroscience; large-scale neural data analysis.

Academic and Research Appointments

University of California, Santa Barbara, California, USA January 2025–Present
Joint Postdoctoral Scholar, Kavli Institute for Theoretical Physics and Geometric Intelligence Lab
Postdoctoral advisors: *Boris Shraiman* and *Nina Miolane*

NTT Research, California, USA June 2022–December 2024
Part-time research intern during doctoral studies, working on foundational problems in interpretable artificial intelligence and optimization theory.
Advisor: *Hidenori Tanaka*

Education

Stanford University, California, USA 2019–2024
Ph.D. in Applied Physics
Advisor: *Mark J. Schnitzer*
Dissertation: *Extracting fundamental principles of computation in the mammalian brain from large scale neural recordings*

University of Waterloo and Perimeter Institute, Waterloo, Canada 2018–2019
M.Sc. in Physics, Perimeter Scholars International
Master's essay: *Light-matter interactions in the real space formalism*

Bogazici University, Istanbul, Turkey 2014–2018
B.S. in Electrical and Electronics Engineering
B.S. in Physics

Selected Awards, Fellowships, and Honors

- **SIAM Richard C. DiPrima Prize**, international SIAM prize recognizing an outstanding doctoral dissertation in applied mathematics; news releases: [UC Santa Barbara](#), [SIAM](#) 2026
- Graduate trainee at the Mind, Brain, Computation, and Technology Program, Stanford 2020–2023
- Outstanding Reviewer, *Physica Scripta* 2020
- IOP Trusted Reviewer, IOP Publishing 2020

• Perimeter Scholars International Award	2018–2019
• Turkish University Examination-Based Excellence Scholarships	2014–2018
• Yorgo Istefanopulos Best Senior Design Project Award	2018
• Valedictorian among double-major graduates, Bogazici University	2018
• High honor, Bogazici University	2018
• Turkish Higher Education Examination Ranking: top 3 among ca. 2 million examinees	2014

Research Funding

• KITP Early Career Development Fund , supplemental travel funding (\$3,000)	2025–2026
• Impact Scholarship, Bridge to Turkiye Fund , support for mentees (\$7,000)	2024–2025
• Feldman-McClelland Open-a-Door Fund , support for mentees (\$10,000)	2024–2025
• Stanford MBCT Program , continued travel funding (\$3,500)	2023
• Stanford MBCT Program , research funding (\$5,000)	2022

Open-Source Software and Research Tools

- **CORN**: convex optimization framework for rapid training of RNNs on neural recordings.
- **EXTRACT**: scalable, statistically robust software with GPU support for cellular signal extraction from large calcium-imaging datasets.
- **ActSort**: active-learning framework for accelerating sorting in large-scale calcium-imaging datasets.

Publications and Manuscripts

Legend: *(Co-)first author, †(Co-)last author, ‡Mentee-supervised work

Recent Preprints

1. **F. Dinc**, M. Blanco-Pozo, D. Klindt, F. Acosta, C. Sylber, Y. Jiang, S. Ebrahimi, A. Shai, H. Tanaka, P. Yuan, N. Miolane, M. J. Schnitzer, “A geometric and dynamical theory of latent computations in biological neural networks,” (2026), [bioRxiv:10.64898/2026.07.10.737763](https://doi.org/10.64898/2026.07.10.737763).
2. **F. Dinc***, C. Feng*, M. Blanco-Pozo, M. Papillon, I. D. Landau, R. Shi, M. Schnitzer, P. Yuan, N. Miolane, “Low-dimensional Neural Codes Suppress Neuronal Noise and Extend the Working Memory Duration,” (2026), [bioRxiv:10.64898/2026.06.08.731010](https://doi.org/10.64898/2026.06.08.731010)
3. W. T. Redman*, **F. Dinc***, X. Lin, M. G. Chan, A. S. Alexander, “Predictive pursuit emerges in high-dimensional recurrent neural networks,” (2026), [bioRxiv:10.64898/2026.04.23.720457](https://doi.org/10.64898/2026.04.23.720457).
4. L. Wang, X. Jiang, X. Sun, G. M. Chattree, A. Cetin, X. Cai, E. Paul, R. Chrapkiewicz, O. Hernandez, Y. Ke, T. Yoda, **F. Dinc**, B. Kurtkaya, Y. Zhang, Z. Zhang, M. J. Schnitzer, “Multi-modal alignments of in vivo imaging and spatial biology datasets at cellular resolution,” (2026), [bioRxiv:10.64898/2026.04.28.719500](https://doi.org/10.64898/2026.04.28.719500).
5. U. Haputhanthri, L. Storan, Y. Jiang, T. Raheja, A. Shai, O. Akengin, N. Miolane, M. J. Schnitzer†, **F. Dinc†**, H. Tanaka†, “Understanding and controlling the geometry of memory organization in RNNs,” (2025), [arXiv:2502.07256](https://arxiv.org/abs/2502.07256).
6. **F. Dinc***, H. Inan*, O. Hernandez, C. Schmuckermair, O. Hazon, T. Tasci, B. O. Ahanonu, Y. Zhang, J. Lecoq, S. Haziza, M. J. Wagner, M. A. Erdogan, M. J. Schnitzer, “Fast, scalable, and statistically robust cell extraction from large-scale neural calcium imaging datasets,” (2024), [bioRxiv:10.1101/2021.03.24.436279](https://doi.org/10.1101/2021.03.24.436279).

Under review

7. S. Pan, H. Cao, Y. Zhu, **F. Dinc**, S. Huang, Z. Chen, J. Zhao, Q. Zhang, T. Xie, L. Chang, C. Song, P. Yuan, Z. Zhang, “Distinct spiking sequences mediate global brain state transitions,” under review.
8. F. Acosta, A. Bertics, **F. Dinc**[†], N. Miolane, “The Timescale Matching Hypothesis in Task-Trained Recurrent Neural Networks,” under review.
9. **F. Dinc**^{*}, E. de Ponnat^{*}, H. Weyer, Y. Guerra, N. Miolane, “Synaptic Strength Controls Trainability and Structural Stability in Rank-Deficient RNNs,” under review.
10. B. Kurtkaya, M. Harmanli, P. Yuan, Y. Yemez, **F. Dinc**[†], N. Miolane[†], “RNNs with Equivalent Attractor Landscapes Can Implement Distinct Neural Algorithms,” under review.

Selected peer-reviewed publications

11. **F. Dinc**^{*}, E. Cirakman^{*}, B. Kurtkaya^{*}, Y. Jiang, M. Yuksekgonul, M. J. Schnitzer, H. Tanaka, “A ghost mechanism: An analytical model of abrupt learning in recurrent networks,” *Physical Review X* (2026), [10.1103/mjcl-lb4x](https://doi.org/10.1103/mjcl-lb4x).
12. G. Chattree, R. Chrapkiewicz, Y. Zhang, J. Li, **F. Dinc**, M. J. Schnitzer, “Amantadine modulates action-specific neural ensembles in hypokinetic and hyperkinetic conditions,” to appear in *Movement Disorders* (2026).
13. Y. Jiang, K. Sheng, Y. Gao, K. Buchanan, Y. Shikano, T. H. Kim, Y. Zhao, S. J. Woo, **F. Dinc**[†], S. Linderman, M. J. Schnitzer, “Extracting task-relevant preserved dynamics from contrastive aligned neural recordings (CANDY),” *NeurIPS 2025*, Spotlight presentation, [Openreview](#).
14. B. Kurtkaya^{*}, **F. Dinc**^{*}, M. Yuksekgonul, M. Blanco-Pozo, E. Cirakman, M. J. Schnitzer, Y. Yemez, H. Tanaka, P. Yuan, N. Miolane, “Dynamical phases of short-term memory mechanisms in RNNs,” *ICML 2025*, [Openreview](#).
15. Y. Jiang, H. O. Akengin, J. Zhou, M. A. Aslihak, Y. Li, R. Chrapkiewicz, O. Hernandez, S. Ebrahimi, O. Jaidar, Y. Zhang, H. Inan, C. Miranda, **F. Dinc**[†], M. Blanco-Pozo[†], M. J. Schnitzer[†], “ActSort: An active-learning accelerated cell sorting algorithm for large-scale calcium imaging datasets,” *NeurIPS 2024*, [Openreview](#).
16. C. Chen, J. K. Niehaus, **F. Dinc**, K. L. Huang, A. L. Barnette, A. Tassou, S. A. Shuster, L. Wang, A. Lemire, V. Menon, K. Ritola, A. W. Hantman, H. Zeng, M. J. Schnitzer, G. Scherrer, “Neural circuit basis of placebo pain relief,” *Nature* (2024), [10.1038/s41586-024-07816-z](https://doi.org/10.1038/s41586-024-07816-z)
17. F. Acosta, **F. Dinc**[†], W. T. Redman, M. Madhav, D. Klindt, N. Miolane “Global Distortions from Local Rewards: Neural Coding Strategies in Path-Integrating Neural Systems,” *NeurIPS 2024*, [Openreview](#)
18. **F. Dinc**^{*}, A. Shai^{*}, M. J. Schnitzer, H. Tanaka, “CORNN: Convex optimization of recurrent neural networks for rapid inference of neural dynamics,” *NeurIPS 2023*, [Openreview](#)

Additional peer-reviewed publications

19. M. Papillon, S. Sanborn, J. Mathe, L. Cornelis, A. Bertics, D. Buracas, H. J. Lillemark, C. Shewmake, **F. Dinc**, X. Pennec, N. Miolane, “Beyond Euclid: an illustrated guide to modern machine learning with geometric, topological, and algebraic structures,” *MLST* (2025), [10.1088/2632-2153/adf375](https://doi.org/10.1088/2632-2153/adf375).
20. J. Zhong, Rituraj, **F. Dinc**, S. Fan, “Detecting the relative phase between different frequency components of a photon using a three-level Λ atom coupled to a waveguide,” *Physical Review A* (2023), [10.1103/PhysRevA.107.L051702](https://doi.org/10.1103/PhysRevA.107.L051702)
21. E. Oncu, H. U. Ozdemir, . . . , T. Tugcu, **F. Dinc**[†], “Analytical Investigation of Long-time Diffusion Dynamics in a Synaptic Channel with Glial Cells,” *IEEE: Communications Letters* (2021), [10.1109/LCOMM.2021.3105613](https://doi.org/10.1109/LCOMM.2021.3105613)

22. **F. Dinc**, L. E. Hayward and A. M. Branczyk “Multi-dimensional super- and subradiance in waveguide quantum electrodynamics,” *Phys. Rev. Research* (2020), [10.1103/PhysRevResearch.2.043149](#)
23. **F. Dinc**, “Diagrammatic approach for analytical non-Markovian time evolution: Fermi’s two-atom problem and causality in waveguide quantum electrodynamics,” *Phys. Rev. A* (2020), [10.1103/PhysRevA.102.013727](#)
24. **F. Dinc** and A. M. Branczyk , “Non-Markovian super-superradiance in a linear chain of up to 100 qubits,” *Phys. Rev. Research* (2019), [10.1103/PhysRevResearch.1.032042](#)
25. **F. Dinc**, I. Ercan and A. M. Branczyk, “Exact Markovian and non-Markovian time dynamics in waveguide QED: collective interactions, bound states in continuum, superradiance and subradiance,” *Quantum* (2019), [10.22331/q-2019-12-09-213](#)
26. **F. Dinc**, “Analytical estimation for the impulse response of an n-dimensional diffusion channel with an absorbing receiver,” *Journal of Physics A: Mathematical and Theoretical* (2019), [10.1088/1751-8121/ab0584](#)
27. **F. Dinc***, L. Thiele*, B. C. Akdeniz, “The Effective Geometry Monte Carlo Algorithm: Applications to Molecular Communication,” *Physics Letters A* (2019), [j.physleta.2019.05.029](#)
28. **F. Dinc**, B. C. Akdeniz, A. E. Pusane and T. Tugcu, “A General Analytic Approximation to Impulse Response of 3-D Microfluidic Channels in Molecular Communication,” *IEEE: Transactions on Nanobioscience* (2019), [10.1109/TNB.2019.2905417](#)
29. **F. Dinc**, B. C. Akdeniz, A. E. Pusane and T. Tugcu, “Impulse Response of the Channel with a Spherical Absorbing Receiver and a Spherical Reflecting Boundary,” *IEEE: Transactions on Molecular, Biological, and Multi-Scale Communications* (2019), [10.1109/TMBMC.2019.2907914](#)
30. **F. Dinc***, M. Medvidovic*, L. Thiele*, “Effective Geometry Monte Carlo: A Fast and Reliable Simulation Framework for Molecular Communication,” *IEEE: Access* (2019), [10.1109/ACCESS.2019.2902316](#)
31. **F. Dinc**, B. C. Akdeniz, E. Erol, D. Gokay, E. Tekgul, A. E. Pusane and T. Tugcu, “Analytical derivation of the impulse response for the bounded 2-D diffusion channel,” *Physics Letters A* (2019), [10.1016/j.physleta.2019.02.025](#)
32. **F. Dinc** and I. Ercan, “Quantum Mechanical Treatment of Two-Level Atoms Coupled to Continuum with an Ultraviolet Cutoff,” *Journal of Physics A: Theoretical and Mathematical* (2018), [10.1088/1751-8121](#)
33. **F. Dinc** and I. Ercan, “Single Photon Two-Level Atom Interactions in 1-D Dielectric Waveguide: Quantum Mechanical Formalism and Applications,” *Optical and Quantum Electronics* (2018), [10.1007/s11082-018-1658-y](#)
34. **F. Dinc**, O. Ertop, G. Sonmez, P. Zhao, A. N. Raegen, J. A. Forrest, S. Mutlu, “Increased Yield of MoS₂ Monolayer Exfoliation Through the Bimetallic Corrosion of Aluminum,” *Applied Physics Letters* (2018), [10.1063/1.5050027](#)

Presentations

Research Talks and Seminars

1. “A geometric and dynamical theory of latent computations in biological neural networks,” selected speaker, Computational Neuroscience Next Generation Symposium, Center for Theoretical and Computational Neuroscience, Washington University in St. Louis 2026
2. “An introduction to latent computation in biological and artificial neural networks,” invited seminar, Bilimler Köyü, Turkey 2026

3. “Latent computations in biological neural networks,” invited seminar, Tureci Group, Princeton University 2026
4. “Parameter identifiability in network models of neural dynamics”, invited speaker, UC Santa Barbara Real AI Seminars 2026
5. “A geometric and dynamical theory of latent computations in biological neural networks”, invited speaker, Kavli Neuroscience Symposium 2026
6. “A ghost mechanism for abrupt learning in recurrent neural networks,” contributed talk, Les Houches Summer School 2026
7. “From Neural Computation to the Physics of Intelligent Systems,” invited talk, Engineering Faculty, Sabanci University 2025
8. “Neural circuit basis of placebo pain relief,” invited seminar, Istanbul University Neuroscience Seminars 2025
9. “Uncovering Latent Mechanisms of Short-Term Memory in Recurrent Neural Networks,” invited seminar, SIAM Conference on Applied Algebraic Geometry 2025
10. “A brief introduction to training methods for recurrent neural networks,” contributed seminar, Aspen Center for Physics 2025
11. “Reverse engineering computations in biological neural networks,” contributed talk, Aspen Center for Physics 2024
12. “Fast, scalable and statistically robust cell extraction from large-scale neural calcium imaging datasets,” invited seminar, MathWorks 2024
13. “The neural circuitry of short-term memory,” invited seminar, Yuan Group, Fudan University 2023
14. “How does the brain predict the future? Large-scale neural calcium imaging, two-photon optogenetics, and deep neural network studies of future prediction across 11 neocortical areas in behaving mice,” research presentation, Simons Foundation Virtual Visit 2023
15. “Convex modeling studies of neural network dynamics: Applications to working memory and beyond,” research presentation, Stanford University Department of Defense Visit 2023
16. “Introduction to machine learning and computational neuroscience,” invited seminar, Cog-IST, 2022
17. “Uncovering the neural circuitry in the brain using recurrent neural networks,” invited seminar, KUIS AI Seminar, Koç University, Istanbul, Turkey 2021
18. “A brief history of recurrent neural network-inspired neuroscience research,” contributed seminar, Stanford Computational Neuroscience Journal Club 2021
19. “A biological foray into reservoir models,” invited seminar, Tureci Group, Princeton University 2021
20. “An introduction to neuroscience from the eyes of a physicist,” invited seminar, Bilkent University Scientific Communication Society, Ankara, Turkey 2021

Conference Posters

Legend: * co-first author; † co-last author; ‡ mentee-supervised work.

21. A. Bertics*, **F. Dinc***, L. Storan, N. Miolane, “A neural uncertainty principle governs identifiability in recurrent network models of neural dynamics,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR050.01/OO3, 2025.
22. F. Acosta, **F. Dinc**‡, W. T. Redman, M. S. Madhav, D. Klindt, N. Miolane, “Global distortions from local rewards: Neural coding strategies in path-integrating RNNs,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR050.09/OO11, 2025.

23. X. Sun, S. Haziza, L. Wang, X. Jiang, O. Hazon, **F. Dinc**, J. J. Li, Y. Zhang, M. J. Schnitzer, “Prefrontal cortical neural dynamics underlying memory generalization,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR091.17/II12, 2025.
24. A. Cimen, M. Yuksekgonul, A. S. Alexander[†], **F. Dinc**[†], “Neurozoo: A tool for training recurrent neural network models on behavioral tasks,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR193.10/TT2, 2025.
25. W. T. Redman*, **F. Dinc***, M. Chan, X. Lin, A. S. Alexander, “Computations Supporting Predictive Pursuit in Recurrent Neural Networks,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR193.12/TT4, 2025.
26. **F. Dinc***, C. Feng*, P. Yuan, N. Miolane, “Latent origins of information-limiting noise correlations,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR197.07/XX6, 2025.
27. L. Wang, X. Jiang, X. Sun, G. Chattree, A. Cetin, X. Cai, R. T. Chrapkiewicz, O. Hernandez, **F. Dinc**, Y. Zhang, M. J. Schnitzer, “Tru-fact: a general method for aligning in vivo recordings of neural activity with spatial biology and anatomic datasets at single cell resolution,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR251.02/VV19, 2025.
28. O. Hazon, T. Tasci, Y. Li, A. Shai, A. J. Christensen, T. H. Kim, O. Jaidar, T. Rogerson, **F. Dinc**, R. T. Chrapkiewicz, M. J. Schnitzer, “Tracker: iterative cell extraction and registration for analysis of time-lapse neural calcium imaging datasets,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR251.03/VV20, 2025.
29. Y. Jiang, K. Sheng, Y. Shikano, S. Woo, **F. Dinc**[‡], T. H. Kim, S. Linderman, M. J. Schnitzer, “Extracting task-relevant preserved dynamics from contrastive aligned neural recordings,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR253.23/YY22, 2025.
30. G. Chattree, R. T. Chrapkiewicz, Y. Zhang, J. Li, **F. Dinc**, M. J. Schnitzer, “Striatal Neural Ensemble Codes for Normal, Parkinsonian, and Dyskinetic Movements,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR268.08/E3, 2025.
31. B. Kurtkaya*, **F. Dinc***, M. Yuksekgonul, M. Blanco-Pozo, E. Cirakman, M. J. Schnitzer, Y. Yemez, H. Tanaka, P. Yuan, N. Miolane, “Dynamical phases of short-term memory mechanisms in RNNs,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR421.13/XX6, 2025.
32. H. Akengin, A. Cimen, M. Yuksekgonul, A. S. Alexander[†], **F. Dinc**[†], “Zoo of RNNs: A comprehensive analysis of recurrent neural networks trained on synthetic behavioral tasks,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR145.21/U35, 2024.
33. C. Chen, J. Niehaus, **F. Dinc**, A. Tassou, A. Shuster, L. Wang, A. Lemire, V. Menon, K. Ritola, A. W. Hantman, H. Zeng, M. J. Schnitzer, G. Scherrer, “A cingulate cortico-ponto-cerebellar circuit mediates placebo analgesia,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR166.10/F9, 2024.
34. **F. Dinc**, U. Haputhanthri, A. Shai, L. Storan, I. D. Landau, H. Tanaka, M. J. Schnitzer, “Extracting latent dynamics from large-scale neural recordings through rapid training of recurrent neural network models,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR255.06/Y32, 2024.
35. Y. Jiang, H. Akengin, J. Zhou, **F. Dinc**[‡], M. J. Schnitzer, “Active learning accelerates cell sorting for analyses of large-scale neural calcium imaging datasets,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR255.22/Z16, 2024.
36. H. Inan*, **F. Dinc***, O. Hernandez, C. Schmuckermair, S. Haziza, Y. Zhang, O. Hazon, T. Tasci, B. O. Ahanonu, J. Lecoq, M. J. Wagner, M. A. Erdogdu, M. J. Schnitzer, “Fast, scalable, and statistically robust cell extraction from large-scale neural calcium imaging datasets,” *Society for Neuroscience Annual Meeting*, poster presentation, PSTR378.08/XX6, 2023.

37. **F. Dinc***, A. S. Shai*, L. Storan, I. Landau, S. Haziza, S. Ganguli, H. Tanaka, M. J. Schnitzer, “Fast, convex training of recurrent neural network models constrained by large-scale neural recordings,” *Society for Neuroscience Annual Meeting*, poster presentation, PST243.15/XX21, 2023.
38. **F. Dinc***, H. Inan*, C. Schmuckermair, T. Tasci, B. O. Ahanonu, O. Hernandez, J. Lecoq, O. Zohar, M. J. Wagner, M. A. Erdogdu, M. J. Schnitzer, “Fast and statistically robust cell extraction from large-scale neural calcium imaging datasets,” *Society for Neuroscience Annual Meeting*, poster presentation, 413.02/ZZ9, 2022.

Machine Learning Workshops

39. Y. Jiang, K. Sheng, Y. Gao, E. K. Buchanan, **F. Dinc†**, Y. Shikano, T. H. Kim, S. J. Woo, Y. Zhao, S. Linderman, M. J. Schnitzer, “Extracting task-relevant preserved dynamics from contrastive aligned neural recordings,” *DBM 2025 Findings Poster*, [Openreview](#).
40. B. Kurtkaya, M. Harmanli, A. Cimen, A. Alexander, N. Miolane, **F. Dinc†**, Y. Yemez†, “Learning rate collapse prevents training recurrent neural networks at scale,” *NeurReps 2025 Proceedings*, [Openreview](#).
41. N. E. Delikkaya, A. Cimen, F. Acosta, A. Myers, A. Alexander, **F. Dinc†**, N. Miolane†, “Dimensionality of population-level latent mechanisms encoding spatial representations,” *NeurReps 2025 Poster*, [Openreview](#).
42. M. Harmanli, **F. Dinc†**, P. Yuan, Y. Yemez, B. Kurtkaya, “The Cue or not the Cue? A Mechanistic Study of Memory Mechanisms in RNNs,” *NeurReps 2025 Poster*, [Openreview](#).
43. U. Haputhanthri, L. Storan, Y. Jiang, A. Shai, H. O. Akengin, M. Schnitzer†, **F. Dinc†**, H. Tanaka†, “Why do recurrent neural networks suddenly learn? Bifurcation mechanisms in neuro-inspired short-term memory tasks,” *ICML 2024 Mechanistic Interpretability Workshop Poster*, [Openreview](#).
44. H. O. Akengin, M. A. Aslihak, Y. Jiang, Y. Li, O. Hernandez, H. Inan, C. Miranda†, M. Blanco-Pozo†, **F. Dinc†**, M. J. Schnitzer†, “ActSort: An active-learning accelerated cell sorting algorithm for large-scale calcium imaging datasets,” *NeurIPS 2023 Workshop on Adaptive Experimental Design and Active Learning in the Real World Poster*, [Openreview](#).
45. U. Haputhanthri, L. Storan, A. Shai, S. Ganguli, M. Schnitzer, H. Tanaka†, **F. Dinc†**, “Enhanced cue associated memory in temporally consistent recurrent neural networks,” *NeurIPS 2023 Workshop on Associative Memory and Hopfield Networks Poster*, [Openreview](#).

Students and Researchers Mentored

D. Demirok, Undergraduate Researcher, Bogazici University	Summer 2026
A. Y. Topal, Undergraduate Researcher, Bilkent University	Summer 2026
M. Harmanli, Undergraduate Researcher, now Master at Koc University	2025-Present
F. Acosta, PhD Student, UC Santa Barbara	2025-Present
H. Kroft, Undergraduate Researcher, UCSB	2025-Present
B. Kurtkaya, Master Student, now PhD at UC Santa Barbara	2024-Present
E. dePonnat, Graduate Researcher, now PhD at Johns Hopkins University	2025-2026
A. Cimen, Undergraduate Researcher, now PhD at UC Santa Barbara	2024-2026
N. Delikkaya, Undergraduate Researcher, Sabanci University	Summer 2025
E. Cirakman, Undergraduate Researcher, now PhD at Georgia Institute of Technology	2024-2025
Y. Jiang, PhD Student, Stanford University	2023-2025
U. Haputhanthri, Pre-doctoral Researcher, now PhD at Princeton University	2023-2024
L. Storan, PhD Student, Stanford University	2022-2024
J. Collins, PhD Student, Johns Hopkins University	Summer 2023
O. Akengin, Undergraduate Researcher, now transfer UG at Stanford University	2022-2023
A. Aslihak, Undergraduate Researcher, now PhD at UC San Diego	2020-2023

A. Toprakci, Undergraduate Researcher, now PhD at Columbia University	2020-2021
A. E. Oncu, Undergraduate Researcher, now Software Engineer	2020-2021

Teaching Experience

Stanford University, Graduate Teaching Assistant

Physics 41: Mechanics

Physics 191: Scientific Communication in Physics

EE 364A: Convex Optimization I

Bogazici University, Undergraduate Teaching Assistant

Physics 121: Introductory Mechanics and Thermodynamics

Physics 202: Physics IV

EE 201: Electrical Circuits I

SCI 101: Science I, physics for humanities and social sciences

EE 352: System Dynamics and Control

Professional Service and Leadership

Organizer, Symmetry and Geometry in Neural Representations Workshop,	NeurIPS 2026
Member, KITP Local Lunch Seminar Planning Committee	2025–Present
Founding member, Bridge to Türkiye Fund Research Scholarship Program	2024–Present
Member, Stanford MBCT Seminar Planning Committee	2023
Mentor, INCF MATLAB Community Toolbox Training Projects	2023
Founding member, Bogazici EE Summer Internship Initiative	2017–2018
Undergraduate student council member, Bogazici EE	2018
Founding member, Bogazici University IEEE Women in Engineering Affinity Group	2015–2017

Peer Review Service

Physical Review X

NeurIPS 2024, 2025, and 2026

ICML 2025 and 2026

ICLR 2025 and 2026

Transactions on Machine Learning Research

IEEE Access

Physica Scripta

Journal of Physics D: Applied Physics

Physical Review A

Optics Express

References

Primary referees

Dr. Mark Schnitzer, PhD advisor, Stanford University: mschnitz@stanford.edu

Dr. Nina Miolane, postdoctoral advisor, UC Santa Barbara: ninamiolane@ucsb.edu

Dr. Boris Shraiman, postdoctoral advisor, Kavli Institute for Theoretical Physics: shraiman@ucsb.edu

Additional referees

Dr. Andy Alexander, research collaborator, UC Santa Barbara: andyalexander@ucsb.edu

Dr. Peng Yuan, research collaborator, Fudan University: pyuan@fudan.edu.cn

Dr. Hakan Tureci, research collaborator, Princeton University: tureci@princeton.edu

Dr. Hidenori Tanaka, secondary PhD advisor, Harvard University: hidenori_tanaka@fas.harvard.edu

Dr. Jay McClelland, professional referee, Stanford University: jlmcc@stanford.edu

Dr. Stephen Boyd, teaching referee, Stanford University: boyd@stanford.edu