Tyler Giallanza
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Education

2020-Present	Ph.D., Psychology and Neuroscience Princeton University Advisor: Jonathan Cohen
2019-2020	Visiting Student, Computer Science University of Oxford
2017-2020	B.S., Computer Science Southern Methodist University

Research Positions

2019-2020	Summer Undergraduate Research Assistant Neuroscience of Cognitive Control Lab, Princeton University Advisor: Jonathan Cohen
2017-2019	Undergraduate Research Assistant Darwin Deason Institute for Cybersecurity, Southern Methodist University Advisors: Eric Larson & Mitchell Thornton
2017-2019	Undergraduate Research Assistant Intelligent Data Analysis Laboratory, Southern Methodist University Advisor: Michael Hahsler

Fellowships, Awards, and Honors

2021	NSF Graduate Research Fellow, *National Science Foundation*
2020	E. H. Flath Award (valedictorian equivalent), *Lyle School of Engineering, Southern Methodist University*
2019	Goldwater Scholar, *Barry Goldwater Scholarship Foundation*
2019	Research Experience for Undergraduates (REU) Recipient, *National Science Foundation*
2019	Leadership Alliance Scholar, *Leadership Alliance*
2017-2020	President's Scholar (full academic scholarship), *Southern Methodist University*
2017-2020	National Merit Scholar, *National Merit Scholarship Corporation*
2017	AXA Achievement Scholar, *AXA*

Peer-Reviewed Publications

† Indicates Trainee
* Indicates Equal Contribution

5. Iordan, M. C., **Giallanza, T.**, Ellis, C. T., Beckage, N., Cohen, J. D. (2022). Context matters: recovering human semantic structure from machine learning analysis of large-scale text corpora. *Cognitive Science, 46*(2), e13085.

4. Sawant, A.†, & **Giallanza, T.** (2022). ZQBA: A Zero-Query, Boosted Ambush adversarial attack on image retrieval. *International Journal on Cybernetics & Informatics (IJCI)*, *11*(11), 53.

3. Haque, A.†, Reddi, V.†, & **Giallanza, T.** (2021). Deep learning for suicide and depression identification with unsupervised label correction. In *Artificial Neural Networks and Machine Learning–ICANN 2021: 30th International Conference on Artificial Neural Networks, Bratislava, Slovakia, September 14–17, 2021, Proceedings, Part V 30* (pp. 436-447). Springer International Publishing.

2. **Giallanza, T.**, Siems, T., Gabrielsen, E., Johnson, I., Larson, E., & Thornton, M. (2019). Keyboard snooping from mobile phone arrays with mixed convolutional and recurrent neural networks. *Proceedings of the ACM on Interactive, Mobile, Wearable, and Ubiquitous Technologies*. 3(2), 45.

1. **Giallanza, T.**, Gabrielsen, E., Taylor, M., Larson, E., & Thornton, M. (2019). Task Value Calculus: multi-objective trade off analysis using Multiple-Valued Decision Diagrams. Proceedings of the *2019 IEEE 49th International Symposium on Multiple-Valued Logic*. 126-131.

Open-Source Code Packages

3. **Giallanza, T.,** & Hahsler, M. (2020). ArulesCWAR: Classification Based on Weighted Association Rules. *The Comprehensive R Archive Network (CRAN)*.

2. Hahsler, M., **Giallanza, T.,** & Chelluboina, S. (2019). ArulesViz: visualizing association rules and Frequent itemsets. *The Comprehensive R Archive Network (CRAN)*.

1. Johnson, I., **Giallanza, T.,** & Hahsler, M. (2019). ArulesCBA: Classification Based on Association Rules in R. *The Comprehensive R Archive Network (CRAN)*.

Manuscripts Under Review or in Revision

4. **Giallanza, T.**, Campbell, D., & Cohen, J. D. (2023). Towards the emergence of intelligent control: Episodic Generalization and Optimization. *PsyArXiv*.

3. Campbell, D.*, Kumar, S.*, **Giallanza, T.**, Cohen, J. D., & Griffiths, T. L. (2023). Relational constraints on neural networks reproduce human biases towards abstract geometric regularity. *ArXiv*.

2. **Giallanza, T.**, Campbell, D., Rogers, T. T., & Cohen, J. D. (2023). An integrated model of semantics and control. *PsyArXiv*. (In revision, Psychological Review)

1. Henselman-Petrusek, G., **Giallanza, T.**, Musslick, S., & Cohen, J. D. (2020). Multitasking networks use multiaffine representations to direct flow of feature data.

Invited Talks

2019	Context-Specific Embedding Spaces Recover Similarity	
	Princeton Neuroscience Institute and Intel Labs, Princeton NJ	
2019	Firebase as a Mobile and Web Backend	
	HackSMU 2019, Southern Methodist University, Dallas TX	
2017	Scheduling Algorithms for Course-Conflict Reduction at Large Schools	
	Board of Directors Meeting, Cherry Creek School District, Denver CO	

Conference Presentations

Talks

5. Campbell, D. I., **Giallanza, T.**, & Cohen, J. D. (2023). Unraveling geometric reasoning: a neural network model of regularity biases.
   4th International Symposium on the Mathematics of Neuroscience, Rhodes, GR.

4. **Giallanza, T.**, Campbell, D. I., & Cohen, J. D. (2023). Adapting to a changing environment with controlled retrieval of episodic memories.
   4th International Symposium on the Mathematics of Neuroscience, Rhodes, GR.
   * Selected for Best Student Presentation award *

3. Iordan, M. I., **Giallanza, T.**, Ellis, C. T., Beckage, N., & Cohen, J. D. (2020). Context matters: recovering human semantic structure from machine-learning analysis of text.
   CogSci 2020 Neural Network Models of Cognition Affinity Group, Virtual.

2. Iordan, M. I., **Giallanza, T.**, Ellis, C. T., Beckage, N., & Cohen, J. D. (2019). Uncovering the neural underpinnings of semantic similarity judgments.
   Society for Neuroscience Annual Conference, Chicago, IL.

1. **Giallanza, T.**, Iordan, M. I., Ellis, C. T., Beckage, N., & Cohen, J. D. (2019). Context Matters: Recovering Human Semantic Structure from Machine Learning Analysis of Large-Scale Text Corpora.
   Society for Neuroscience Annual Conference, Chicago, IL.
   * Selected for Oral Presentation — top ~12% of submissions *

Posters

5. Henselman-Petrusek G, **Giallanza T**, Musslick S, Cohen JD (2021). Regression, encoding, control: an integrated approach to shared representations with distributed coding.
   CogSci 2021, Virtual.

4. Iordan MI, **Giallanza T**, Ellis CT, Beckage N, Cohen JD (2021). Context matters: recovering human semantic structure from machine learning analysis of large-scale text corpora.
   VSS 2021, Virtual.

3. Henselman-Petrusek G, **Giallanza T**, Musslick S, Cohen JD (2020). Multitasking networks use multiaffine representations to direct flow of feature data.
   DeepMath 2020, Virtual.

2. **Giallanza T**, Iordan MI, Ellis CT, Beckage N, Cohen JD (2019). Context matters: recovering human semantic structure from machine learning analysis of large-scale text corpora.
Council on Undergraduate Research, Washington DC, USA.

1. **Giallanza T**, Iordan MI, Cohen JD (2019). Context-specific embedding spaces recover similarity.
Leadership Alliance national Symposium, Hartford CT, USA.

Teaching

Summer 2023	Deep Learning for Neuroscientists Princeton University, Princeton, NJ *Creator/Instructor*: Designed syllabus for machine learning/advanced python course for Princeton summer students & PNI summer interns.
Spring 2022	The Computational Basis of Natural Intelligence (Course Instructor: Jonathan Cohen) Princeton University, Princeton, NJ *Course Designer/Assistant Instructor*: Helped design syllabus for the course, advised students on the final project, and graded student papers.
Summer 2021	Deep Learning for Neuroscientists Princeton University, Princeton, NJ *Creator/Instructor*: Designed syllabus for machine learning/advanced python course for Princeton summer students & PNI summer interns.
Spring 2019	Computer Security (Course Instructor: Michael Lefebre) Southern Methodist University, Dallas, TX *Guest Lecturer*: Produced and provided lecture on time-delay based methods for authentication of messages over a TCP/IP link.
August 2018 – August 2020	CyberPatriot Cybersecurity Competition Virtual, USA *Team Mentor*: Provide mentoring and instruction to teams of high-school students competing in the competition. Mentored a total of 8 teams.
Summer 2016 – Winter 2018	Colorado Mathematics and Computer Science Camp Denver, CO *Creator/Head Instructor*: Co-created the largest mathematics and computer science camp in the Denver Tech Center area, serving over 60 middle-school and high-school students total. Created the curriculum, delivered lectures, and interacted with students.

Mentoring

Undergraduates

2021 - 2022	Mindy Yu, Princeton University Stimulus Onset Asynchrony Effects in the Stroop Task
2021 - 2022	Fawaz Ahmad, Princeton University Conflict Monitoring and Episodic Memory in Sequential Decision Making

2020 – 2021   Omina Elshiekh, City University of New York
               Computational Models of Cognitive Control

2020 – 2021   Karl Poling, Princeton University
               Semantic Similarity and Feature-Specific Attention