Polyphony J. Bruna

PHD STUDENT · COGNITIVE AND INFORMATION SCIENCES

University of California, Merced

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Education

Research Interests: Computational Models, Neural Networks, Complex Systems, Representation, Philosophy

University of California, Merced   *Merced, CA*
PHD COGNITIVE AND INFORMATION SCIENCES   *Expected 2027*
- Advisors: Christopher T. Kello and Michael J. Spivey
- Other commitee members: Jeff Yoshimi

University of California, Los Angeles   *Los Angeles, CA*
GRADUATE FELLOW, INSTITUTE FOR PURE AND APPLIED MATHEMATICS   *Fall 2024*
- Program: Mathematics of Intelligences

Vassar College   *Poughkeepsie, NY*
BA COGNITIVE SCIENCE AND PHILOSOPHY   *2018 - 2022*
- Minor in Japanese
- Overall GPA: 3.99/4.00
- Honors: *Phi Beta Kappa, Sigma Xi, Psi Chi, cum laude generali et cum laude in materia subiecta*
- Thesis advisors: Jan Andrews and Josh de Leeuw
    Title: "Leveraging Surprise in a Recurrent Neural Network to (de)Construct Morphological Complexity in Japanese"

Professional Experience

2021-2022	**Dept. Intern**, Cognitive Science, Vassar College
2021	**Project Leader**, Undergrad Research Summer Institute, Vassar College
2019, 2020	**Research Fellow**, Undergrad Research Summer Institute, Vassar College
2018-2021	**Research Assistant**, Cognitive Science, Vassar College

Publications

* Denotes co-principal authorship

UNDER REVIEW

Bruna, P. & Kello, C. (2024). *Least Effort and Alignment in Task-Oriented Communication.* PsyArXiv.
    https://doi.org/10.31234/osf.io/ftz98

PUBLISHED

de Leeuw, J. R., Andrews, J., Barney, L., Bigler, M., **Bruna, P.**, Chen, Y., Cherry, R., Dowie, D. R., Forbes, E., Haffey, B., Hu, X., Jaklitsch, M., Leopold, N., Lewis, C., MacDonald, D., McShaffrey, C., Nakayama, K., Olstad, W., Peng, R., … Zhang, L. (2021). Words May Jump-Start Meaning More Than Vision: A Non-Replication of Early ERP Effects in Boutonnet and Lupyan (2015). *Collabra: Psychology, 7*(1). https://doi.org/10.1525/collabra.29763

PROCEEDINGS

Kello, C. & **Bruna, P.** (2024). Emergent Mental Lexicon Functions in ChatGPT. *Proceedings of the Annual Meeting of the Cognitive Science Society, 46.* https://escholarship.org/uc/item/5m9098b5

*Rane, S., ***Bruna, P.**, Sucholutsky, I., Kello, C., & Griffiths, T. (2023). Concept alignment. *1st NeurIPS Workshop on AI meets Moral Philosophy and Moral Psychology (MP2).* https://arxiv.org/abs/2401.08672

Non-Academic Articles

2019   **Vassar College Journal of Philosophy,** Taking Back Philosophy, Book Review,

Presentations
* Presenting author(s); + Mentored undergraduate

Contributed Talks

***Bruna, P.**, Ryskin, R., & Spivey, M. J. 2023. *Semantics and Syntax Co-emerge in Adaptive Reservoir Network Dynamics*. Diverse Intelligences Summit, University of St. Andrews, Scotland.

***Bruna, P.** 2020. *Hearing That It Is Silent: How to Hallucinate a Non-Perception*. 10th Annual Mid-Hudson Valley Undergraduate Philosophy Conference, Marist College, Poughkeepsie, NY. (Canceled due to COVID-19)

Contributed Posters

*Kello, C. & ***Bruna, P.** 2024. *Emergent Mental Lexicon Functions in ChatGPT*. 46th Annual Conference of the Cognitive Science Society, Rotterdam, Netherlands.

*Rane, S. & ***Bruna, P.** 2023. *Concept alignment*. 1st NeurIPS Workshop on AI meets Moral Philosophy and Moral Psychology (MP2), New Orleans, LA, United States.

*+Leshock, E., *+Pena, Y., **Bruna, P.**, & Andrews, J. 2021. *Learned Categorical Perception with Artificially Generated Faces*. 36th Annual URSI Symposium, Vassar College, Poughkeepsie, NY.

*Bigler, M. & ***Bruna, P.** 2020. *Probing the Methodology and Interpretation of Learned Categorical Perception Research*. 35th Annual URSI Symposium, Vassar College, Poughkeepsie, NY.

***Bruna, P.** & *Marks, P. 2019. *Psychophysical Adaptive Procedure: Developing a New, Generalizable Method*. 34th Annual URSI Symposium, Vassar College, Poughkeepsie, NY.

Invited Talks

Fall 2024 (forthcoming). *Least Effort and Alignment in Task-Oriented Communication*. Dept. of Cognitive Science, Vassar College, Poughkeepsie, NY.

Awards, Fellowships, & Grants
* Awarded but declined

Year	Award	Amount
2024	**Humane Studies Fellowship**, *Institute for Humane Studies*	*$ 5,000*
2023	**DISI Alumni Award**, *Diverse Intelligences Summer Institute*	*$ 750*
	Cognitive and Information Sciences Fall Fellowship, *University of California, Merced*	*$ 22,500*
2022	**Chancellor's Recruitment Fellowship**, *University of California, Merced*	*$ 45,000*
	*Foreign Language and Area Studies (FLAS) Fellowship, *U.S. Department of Education*	*$ 22,500*
	Adolph Sutro Fellowship, *Vassar College*	*$ 10,000*
	The Jamie Nisse Greenberg Philosophy Prize, *Vassar College*	*$ 900*
	Best Technical Write-Up, *Mid-Hudson IEEE Undergraduate Capstone Project Awards*	
	Critical Language Scholarship for advanced Japanese, alternate, *U.S. Department of State; American Councils for International Education*	
2021	**Frances Lehman Loeb 1928 Scholarship**, *Vassar College*	*$ 44,000*
	Research Award, *Vassar College*	*$ 4,000*
2020	**Frances Lehman Loeb 1928 Scholarship**, *Vassar College*	*$ 44,000*
	Undergraduate Research Summer Institute Fellowship, *Vassar College*	*$ 5,000*

2019	**Frances Lehman Loeb 1928 Scholarship**, *Vassar College*	*$ 42,500*
	Undergraduate Research Summer Institute Fellowship, *Vassar College*	*$ 5,000*
2018	**1956 Memorial Scholarship**, *Vassar College*	*$ 42,000*

Teaching Experience

Spr. 2024	**Contemporary Moral Problems,** Teaching Assistant, *Dept. of Philosophy, University of California, Merced*
Spr. 2022	**Introduction to Cognitive Science,** Teaching Assistant, *Dept. of Cognitive Science, Vassar College*
Fall 2021	**Introduction to Cognitive Science,** Teaching Assistant, *Dept. of Cognitive Science, Vassar College*

Outreach & Professional Development

WORKSHOPS & TRAINING

2023	**Sante Fe Institute,** Complexity-GAINs International Summer School on Intelligence and Representation, *Isaac Newton Institute for Mathematical Sciences, University of Cambridge*
	Diverse Intelligences Summer Institute (DISI), *University of St. Andrews*
2022	**Phi Beta Kappa,** Key Connections, *Webinar*
2020	**Center for Philosophy of Science,** Pittsburgh Summer Program in Philosophy of Science and Specialized Sciences, *University of Pittsburgh; Carnegie Mellon University*

SERVICE POSITIONS

2023-2024	**Graduate Student Chair,** Dept. of Cognitive and Information Sciences, *University of California, Merced*
	Mentor, Learning Aligned Employment Program (LAEP), *University of California, Merced*
2021	**Mentor,** Undergraduate Research Summer Institute, *Vassar College*
2018-2019	**Editor,** Vassar College Journal of Philosophy, *Vassar College*

PEER REVIEW

Journal of Experimental Psychology: General

PROFESSIONAL MEMBERSHIPS

Phi Beta Kappa
Sigma Xi, The Scientific Research Honor Society
Psi Chi, International Honor Society in Psychology

SKILLS

Languages: English (native), Japanese (intermediate)
Programming: Python, R, JavaScript, HPC parallel computing
Technical: Neural networks, Information theory, Bayesian statistics, Data visualization