Joey Velez-Ginorio

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https://www.seas.upenn.edu/~joeyv/

Research interests

Programming languages · Neural networks · Cognitive science

Education

2021 – **University of Pennsylvania** — PhD / MSE, Computer and Information Science
2019 – 2021 **Massachusetts Institute of Technology** — MS, Brain and Cognitive Sciences
2018 – 2019 **University of Oxford** — MSc, Mathematics and Foundations of Computer Science
2012 – 2018 **University of Central Florida** — BS, Computer Engineering

Research Experience

2021 – **University of Pennsylvania** — Graduate Researcher, Programming Languages Group
2022 – **University of Pennsylvania** — Graduate Researcher, Neuroscience and Deep Learning Lab
2019 – 2021 **Harvard University** — Graduate Researcher, Programming Languages Group
2018 – 2019 **University of Oxford** — Graduate Researcher, Systems Verification Group
2017 – 2018 **Yale University** — Undergraduate Researcher, Computation and Development Lab
2016 – 2018 **MIT** — Undergraduate Researcher, Computational Cognitive Science Group
2015 – 2016 **University of Central Florida** — Undergraduate Researcher, Machine Learning Lab

Awards

2021 – 2023 Ford Foundation Predoctoral Fellowship (Honorable Mention)
2020 MIT Presidential Fellowship
2018 NSF Graduate Research Fellowship
2018 Oxford-Frost Fellowship
2017 Barry M. Goldwater Scholarship

Theses

2021 **Compositional desires as compositional programs**
Joey Velez-Ginorio
Massachusetts Institute of Technology

2019 **Learning in System F**
Joey Velez-Ginorio
University of Oxford

Publications

2024 **REUs are necessary for an equitable research community**
Joey Velez-Ginorio, Joshua Sunshine (Equal contribution)
Communications of the ACM, Volume 67, Issue 8 (2024)

2024 **Effects and coeffects in call-by-push-value**
Cassia T., Emmanuel S. A., Shubh A., Joey Velez-Ginorio, Stephanie W.
Proceedings of the ACM on Programming Languages, OOPSLA (2024)

2023 **When naïve pedagogy breaks down: Adults rationally decide how to teach, but misrepresent learners' beliefs**
Rosie Aboody, Joey Velez-Ginorio, Laurie Santos, Julian Jara-Ettinger
Cognitive Science

2021 **Towards neural functional program evaluation**
Torsten Scholak, Jonathan Pilault , Joey Velez-Ginorio
AIPLANS Workshop, 35th Annual Conference on Neural Information Processing Systems

2018 **When teaching breaks down: teachers rationally select what information to share, but misrepresent learners' hypothesis spaces**
Rosie Aboody, Joey Velez-Ginorio, Laurie Santos, Julian Jara-Ettinger
Proceedings of the 40th Annual Conference of the Cognitive Science Society

2017 **Interpreting actions by attributing compositional desires**
Joey Velez-Ginorio, Max Siegel, Joshua B. Tenenbaum, Julian Jara-Ettinger
Proceedings of the 39th Annual Conference of the Cognitive Science Society

2016 **Temporal order-based first-take-all hashing for fast attention-deficit-hyperactive-disorder detection**
Hao Hu, Joey Velez-Ginorio, Guo-Jun Qi
Proceedings of the 22nd SIGKDD Conference on Knowledge Discovery and Data Mining

Talks

2024 **When does X implement Y?**
Assessing Representation — Santa Fe Institute

2024 **Compiling to transformers**
NJPLS — New York University

2023 **When do neurons* represent True?**
Kording lab meeting — University of Pennsylvania
Metauni festival — Online

2022 **Compilers as linking hypotheses**
PLClub meeting — University of Pennsylvania
Kording lab meeting — University of Pennsylvania

2021 **A neural compiler**
Midlands Graduate School in Foundations of Computing – Online

2020 **Finding programs in the brain**
Fiete Lab meeting — Massachusetts Institute of Technology

2019 **Compiler synthesis**
MFoCS Seminar — University of Oxford

2018 **Interpreting actions by attributing compositional desires**
Computation and Development Lab meeting — Yale University

2017 **Interpreting actions by attributing compositional desires**
Proceedings of the 39th Annual Conference of the Cognitive Science Society

Posters

2021 **Towards neural functional program evaluation**
Torsten Scholak, Jonathan Pilault, Joey Velez-Ginorio
AIPLANS Workshop, 35th Annual Conference on Neural Information Processing Systems

2018 **When teaching breaks down: Teachers rationally select what information to share, but misrepresent learners' hypothesis spaces**
Rosie Aboody, Joey Velez-Ginorio, Laurie Santos, Julian Jara-Ettinger
Proceedings of the 40th Annual Conference of the Cognitive Science Society

2018 **Interpreting actions by attributing compositional desires**
Joey Velez-Ginorio, Max Siegel, Joshua B. Tenenbaum, Julian Jara-Ettinger
Showcase of Undergraduate Research Excellence — University of Central Florida
(Recipient of Presentation Award)

2017 **Interpreting actions by attributing compositional desires**
Joey Velez-Ginorio, Max Siegel, Joshua B. Tenenbaum, Julian Jara-Ettinger
Center for Brains, Minds, and Machines Summer Showcase — MIT

2017 **Interpreting actions by attributing compositional desires**
Joey Velez-Ginorio, Max Siegel, Joshua B. Tenenbaum, Julian Jara-Ettinger
Proceedings of the 40th Annual Conference of the Cognitive Science Society

2017 **Good teachers with poor assumptions: teachers rationally select what information to share, but misrepresent learners' hypothesis spaces**
Rosie Aboody, Joey Velez-Ginorio, Laurie Santos, Julian Jara-Ettinger
Proceedings of the 43rd Annual Meeting of the Society for Philosophy and Psychology

2016 **The language of mental states**
Joey Velez-Ginorio, Max Siegel, Joshua B. Tenenbaum, Julian Jara-Ettinger
Annual Biomedical Research Conference for Minoritized Scientists
(Recipient of Presentation Award)

2016 **The language of mental states**
Joey Velez-Ginorio, Max Siegel, Joshua B. Tenenbaum, Julian Jara-Ettinger
Society for Advancement of Chicanos/Hispanics & Native Americans in Science
(Recipient of Presentation Award)

2016 **The language of mental states**
Joey Velez-Ginorio, Max Siegel, Joshua B. Tenenbaum, Julian Jara-Ettinger
Center for Brains, Minds, and Machines Summer Showcase — MIT

2016 **Temporal Order-based First-Take-All Hashing for Fast Attention-Deficit-Hyperactive-Disorder Detection**
Hao Hu, Joey Velez-Ginorio, Guo-Jun Qi
Proceedings of the 22nd ACM SIGKDD Conference on Knowledge Discovery and Data Mining

2016 **Joint graphical lasso and deep learning for dynamic brain connectome prediction**
Joey Velez-Ginorio, Hao Hu, Guo-Jun Qi
Florida Undergraduate Research Conference — University of Tampa

2016 **Joint graphical lasso and deep learning for dynamic brain connectome prediction**
Joey Velez-Ginorio, Hao Hu, Guo-Jun Qi
Showcase of Undergraduate Research Excellence — University of Central Florida
(Recipient of Presentation Award)

2015 **Joint graphical lasso and deep learning for dynamic brain connectome prediction**
Joey Velez-Ginorio, Hao Hu, Guo-Jun Qi
Society for Advancement of Chicanos/Hispanics & Native Americans in Science

Teaching

2021 **Teaching Assistant** — CIS 5000: Software Foundations, University of Pennsylvania
2017 – 2018 **Lecturer** — Quantitative Methods Workshop, Massachusetts Institute of Technology
2017 **Lecturer** — Neuroengineering and A.I. Workshop, University of Central Florida
2016 **Lecturer** — ACMSIG A.I. Workshop, University of Central Florida

Academic Service

2021 **Organizer** — Seminar on Foundations of Programming Languages, University of Pennsylvania

2021 **Reviewer** — AIPLANS, 35th Annual Conference on Neural Information Processing Systems
2020 **Reviewer** — 9th ACM SIGPLAN International Conference on Certified Programs and Proofs
2020 **Organizer** — Seminar on Foundations of Brain and Cognitive Sciences, MIT

Diversity, Equity, and Inclusion

2023 – **Director** — NSF REU Site: Research Exp. for Undergrad. in Programming Languages
2021 – **Member** — Doctoral Diversity Advisory Board, University of Pennsylvania (School of Engineering)
2019 – 2020 **Vice Chair** — Graduate Student Council Committee on Diversity, Equity, and Inclusion, MIT
2019 **Member** — School of Science Graduate Advisory Council, MIT
2019 **Consultant** — Impact Labs, Oxford U.K.
2017 – 2018 **Vice President** — Society for Advancement of Hispanics and Native Americans in Science, UCF
2016 – 2017 **President** — Society for Advancement of Hispanics and Native Americans in Science, UCF
2016 – 2018 **Ambassador** — Academic Advancement Programs, UCF
2016 **Mentor** — Elevation Fellows Mentorship Program, UCF