WAI KEEN VONG

E-mail: waikeen.vong@nyu.edu
Website: https://www.waikeenvong.com
Github: https://www.github.com/wkvong

EMPLOYMENT

- Research Scientist, *Human and Machine Learning Lab*, New York University, September 2022–present.
  - Advisor: Dr. Brenden Lake
- Postdoctoral Researcher, *Human and Machine Learning Lab*, New York University, 2019–August 2022.
  - Advisor: Dr. Brenden Lake
- Postdoctoral Researcher, *Cognitive and Data Science Lab*, Rutgers Unviersity–Newark, 2016–2019.
  - Advisor: Dr. Patrick Shafto

EDUCATION

- Ph.D., *Psychology*, *University of Adelaide*, 2013–2018.
  - Thesis: From simple to complex categories: How structure and label information guides the acquisition of category knowledge
  - Advisors: Dr. Danielle Navarro, Dr. Andrew Perfors and Dr. Andrew Hendrickson
- Bachelor of Psychology (First Class Honours), *University of Adelaide*, 2008–2012.
  - Thesis: Category learning in a dynamic environment
  - Advisors: Dr. Danielle Navarro and Dr. Andrew Perfors
- Bachelor of Mathematical and Computer Sciences (Pure Mathematics and Computer Science), *University of Adelaide*, 2009–2011.

PUBLICATIONS

- **Vong, W. K.**, Wang, W., Orhan, A. E., & Lake, B. M. (under review). Grounded Language Acquisition from the Eyes and Ears of a Single Child.
- Wang, W., **Vong, W. K.**, Kim, N., & Lake, B. M. (2023). Finding Structure in One Child's Linguistic Experience. *Cognitive Science*.
- Ji, A., Kojima, N., Rush, N., Suhr, A., **Vong, W.K.**, Hawkins, R.D., and Artzi, Y. (2022). Abstract visual reasoning with tangram shapes. *Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP)*. **Best Long Paper Award**.
- **Vong, W. K.** and Lake, B. M. (2022). Few-shot image classification by generating natural language rules. *First Workshop on Learning from Natural Language Supervision, ACL 2022*.
- Radulescu, A., **Vong, W. K.**, and Gureckis, T. M. (2022). Name that state: How language affects human reinforcement learning. *Proceedings of the 44th Annual Conference of the Cognitive Science Society*.
- Tartaglini, A. R., **Vong, W. K.**, and Lake, B. M. (2022). A developmentally-inspired examination of shape versus texture bias in machines. *Proceedings of the 44th Annual Conference of the Cognitive Science Society*.
- **Vong, W. K.** and Lake, B. M. (2022). Cross-situational word learning with multimodal neural networks. *Cognitive Science*.

- Bass, I., Bonawitz, E., Hawthorne, D., **Vong, W. K.**, Goodman, N. D., and Gweon, H. (2022). The effects of information utility and teachers' knowledge on evaluations of under-informative pedagogy across development. *Cognition*.
- Yang, S. C. H., **Vong, W. K.**, Sojitra, R. B., Folke, T., and Shafto, P. (2021). Mitigating belief projection in explainable artificial intelligence via Bayesian Teaching. *Scientific Reports*.
- Johnson, A., **Vong, W. K.**, Lake, B. M. and Gureckis, T. M. (2021). Fast and flexible: Human program induction in abstract reasoning tasks. *Proceedings of the 43rd Annual Conference of the Cognitive Science Society.*
- Tartaglini, A. R., **Vong, W. K.**, and Lake, B. M. (2021). Modeling artificial category learning from pixels: Revisiting Shepard, Hovland, and Jenkins (1961) with deep neural networks. *Proceedings of the 43rd Annual Conference of the Cognitive Science Society.*
- **Vong, W. K.**, Hendrickson, A. T., Perfors, A. F. & Navarro, D. J. (2019). Do additional features help or harm during category learning? The curse of dimensionality in human learners. *Cognitive Science*.
- Yang, S.C-H.*, **Vong, W.K.***, Yu, Y., & Shafto, P. (2019). A unifying computational framework for teaching and active learning. *Topics in Cognitive Science*. (* indicates equal contribution)
- **Vong, W. K.***, Sojitra, R.*, Reyes, A., Yang, S. C-H & Shafto, P. (2018). Bayesian teaching of image categories. *Proceedings of the 40th Annual Conference of the Cognitive Science Society*. (* indicates equal contribution)
- Yang, S.C-H., Yu, Y., Givchi, A., Wang, P., **Vong, W.K.**, & Shafto, P. (2018). Optimal Cooperative Inference. *Proceedings of the 21st International Conference on Artificial Intelligence and Statistics (AISTATS)*.
- **Vong, W. K.**, Hendrickson, A. T., Perfors, A. F. & Navarro, D. J. (2016). Do additional features help or harm during category learning? An exploration of the curse of dimensionality in human learners. *Proceedings of the 38th Annual Conference of the Cognitive Science Society*. **Marr Prize for Best Student Paper.**
- **Vong, W. K.**, Navarro, D. J. & Perfors, A. F. (2016). The helpfulness of category labels in semi-supervised learning depends on category structure, *Psychonomic Bulletin & Review, 23*, 230-238.
- **Vong, W. K.**, Perfors, A. F. & Navarro, D. J. (2014). The relevance of labels in semi-supervised learning depends on category structure. *Proceedings of the 36th Annual Conference of the Cognitive Science Society*.
- Navarro, D. J., Perfors, A. F. & **Vong, W. K.** (2013). Learning time-varying categories. *Memory & Cognition, 41*, 917-927.
- **Vong, W. K.**, Hendrickson, A. T., Perfors, A. F. & Navarro, D. J. (2013). The role of sampling assumptions in generalization with multiple categories. *Proceedings of the 35th Annual Conference of the Cognitive Science Society*.

INVITED PRESENTATIONS

- *Concepts and Categories Seminar (ConCats)*, New York University. March, 2023.
- *Cognitive Tools Lab*, University of California, San Diego. June, 2022.
- *NUMBATS Seminar*, Monash University. May, 2021.
- *Language and Cognition Lab*, Stanford University. March, 2021.
- *Center for Data Science Seminar*, New York University. October, 2019.
- *Concepts and Categories Seminar (ConCats)*, New York University. December, 2017.
- *Computation and Language Lab*, University of Rochester. August, 2016.
- *Computational Cognitive Neuroscience Lab*, Harvard University. August, 2016
- *Concepts and Categories Seminar (ConCats)*, New York University. August, 2016.

- *Cognitive and Data Science Lab*, Rutgers University - Newark. August, 2016.

CONFERENCE PRESENTATIONS

- **Vong, W. K.** and Lake, B. M. (2022). Few-shot image classification by generating natural language rules. Presented as a virtual poster at the *First Workshop on Learning from Natural Language Supervision, ACL 2022*.
- Radulescu, A., **Vong, W. K.**, and Gureckis, T. M. (2022). Name that state: How language affects human reinforcement learning. Presented as a poster at the *Proceedings of the 44th Annual Conference of the Cognitive Science Society*.
- Tartaglini, A. R., **Vong, W. K.**, and Lake, B. M. (2022). A developmentally-inspired examination of shape versus texture bias in machines. Presented as a talk at the *Proceedings of the 44th Annual Conference of the Cognitive Science Society*.
- Johnson, A., **Vong, W. K.**, Lake, B. M. and Gureckis, T. M. (2021). Fast and flexible: Human program induction in abstract reasoning tasks. Presented as a virtual poster at the *43rd Annual Conference of the Cognitive Science Society* in Vienna, Austria.
- Tartaglini, A. R., **Vong, W. K.**, and Lake, B. M. (2021). Modeling artificial category learning from pixels: Revisiting Shepard, Hovland, and Jenkins (1961) with deep neural networks. Presented as a virtual poster at the *43rd Annual Conference of the Cognitive Science Society* in Vienna, Austria.
- **Vong, W. K.**, Orhan, A. E. and Lake, B. M. (2021). Cross-situational word learning from naturalistic headcam data. Presented as a virtual short talk at the *34th Annual CUNY Conference on Human Sentence Processing*.
- Johnson, A., **Vong, W. K.**, Lake, B. M. and Gureckis, T. M. (2021). Fluid and Flexible: Investigating Human Patterns of Novel Rule Induction in Abstraction Reasoning Tasks. Presented as a virtual talk at the *AAAI Symposium on Conceptual Abstraction and Analogy in Natural and Artificial Intelligence*.
- **Vong, W. K.** and Lake, B. M. (2020). Learning word-referent mappings and concepts from raw inputs. Presented as a virtual poster at the *42nd Annual Conference of the Cognitive Science Society* in Toronto, Canada.
- **Vong, W. K.***, Sojitra, R.*, Reyes, A., Yang, S. C-H & Shafto, P. (2018). Bayesian teaching of image categories. Presented as a poster at the *40th Annual Conference of the Cognitive Science Society* in Madison, USA.
- Sojitra, R., **Vong, W.K.** & Shafto, P. (2017). The dynamics of visual experiences. Presented as a poster at the *Cognitive Computational Neuroscience Conference* in New York City, USA.
- **Vong, W. K.**, Hendrickson, A. T., Perfors, A. F. & Navarro, D. J. (2016). Do additional features help or harm during category learning? An exploration of the curse of dimensionality in human learners. Presented as a talk at the *38th Annual Conference of the Cognitive Science Society* in Philadelphia, USA.
- **Vong, W. K.**, Hendrickson, A. T., Perfors, A. F. & Navarro, D. J. (2016). Learning conceptual structure: How category labels affect learning and generalization in hierarchical and cross-cutting categories. Presented as a talk at the *Experimental Psychology Conference* in Melbourne, Australia.
- **Vong, W. K.**, Hendrickson, A. T., Perfors, A. F. & Navarro, D. J. (2016). Overcoming the curse of dimensionality: How category structure affects the learning of complex categories. Presented as a talk at the *Australian Mathematical Psychology Conference* in Hobart, Australia.
- **Vong, W. K.**, Hendrickson, A. T., Perfors, A. F. & Navarro, D. J. (2015). When more doesn't help: Learning categories with many features. Presented as a talk at the *Experimental Psychology Conference* in Sydney, Australia.

- **Vong, W. K.**, Perfors, A. F. & Navarro, D. J. (2014). The relevance of labels in semi-supervised learning depends on category structure. Presented as a talk at the *36th Annual Conference of the Cognitive Science Society* in Quebec City, Canada.
- **Vong, W. K.**, Hendrickson, A. T., Perfors, A. F. & Navarro, D. J. (2013). The role of sampling assumptions in generalization with multiple categories. Presented as a poster at the *35th Annual Conference of the Cognitive Science Society* in Berlin, Germany.

AWARDS

- Best Long Paper Award, *Empirical Methods in Natural Language Processing*, 2022.
- Marr Prize (best student paper award), *Cognitive Science Society*, 2016.
- Student Travel Grant, *Cognitive Science Society*, 2016.
- Higher Degree Research Assistance Scheme, *School of Psychology, University of Adelaide*, 2014/2016.
- Australian Postgraduate Award, *University of Adelaide*, 2013–2016.
- Dean's Certificate of Merit, *University of Adelaide*, 2010.
- Summer Research Scholarship, *University of Adelaide*, 2009/2010.

RESEARCH EXPERIENCE

- Participated in the *Summer School in Probabilistic Programming and Machine Learning*, Portland, USA, 2016.
- Participated in the *Bayesian Modeling for Cognitive Science Workshop*, University of Amsterdam, Netherlands, 2013.
- Research Assistant, *Dunn Lab, University of Adelaide*, 2013–2014.
- Research Assistant, *The Australian Centre for Visual Technologies, University of Adelaide*, 2011–2012.
- Research Assistant, *Computational Cognitive Science Lab, University of Adelaide*, 2009–2012.

TEACHING EXPERIENCE

- Teaching Assistant, *Doing Research in Psychology*, School of Psychology, University of Adelaide, 2016.
- Teaching Assistant, *Computational Cognitive Science*, School of Computer Science, University of Adelaide, 2014.

ADVISING EXPERIENCE

- Alexa Tartaglini (NYU Undergraduate student, 2019 – present)
- Wentao Wang (NYU Master's student, 2021 – present)
- Daniel Tang (NYU Master's student, 2021)
- Valerie Huang (NYU Master's student, 2021)

SERVICE

- Co-organizer, CogSci workshop on "How does the mind discover useful abstractions?", July 2023.
- Organizer, NYU Concepts and Categories (ConCats) seminar, Fall 2020–Spring 2021.
- Member of the *Cognitive Science Society*.

- Ad-hoc reviewer for *Cognitive Science, Cognition, Psychological Review, Annual Conference of the Cognitive Science Society, American Journal of Psychology, Psychological Research, Bridging AI and Cognitive Science Workshop (ICLR 2020)*.

SKILLS

- Programming: Python, PyTorch, R, WebPPL, Javascript, HTML/CSS.
- Software: LaTeX, Emacs, git, Bash, Unix.