# CURRICULUM VITAE – MAITHILEE KUNDA

Assistant Professor of Computer Science, Vanderbilt University

## I. EDUCATION

**Georgia Institute of Technology**, Atlanta, GA, USA. Ph.D., Computer Science, 2013.

**Massachusetts Institute of Technology**, Cambridge, MA, USA. B.S., Mathematics with Computer Science, 2006.

## II. PROFESSIONAL POSITIONS

**Assistant Professor of Computer Science.** Department of Computer Science (previously Department of Electrical Engineering and Computer Science), Vanderbilt, 2016 – present.

**Research Scientist.** School of Interactive Computing, Georgia Tech, 2013 – 2015.

**Research Assistant.** School of Interactive Computing, Georgia Tech, 2006 – 2013.

**Consultant and Research Scientist.** Aerotonomy, Inc. (part-time), 2004 – 2011.

**Research Fellow.** Environmental Sciences Division, Oak Ridge National Lab, 2004 – 2006.

**Research Assistant.** Computer Science and Artificial Intelligence Laboratory, MIT, 2004 – 2006.

## III. AWARDS AND RECOGNITION

**Research featured on CBS 60 Minutes.** Technology demo with correspondent Anderson Cooper featured as part of segment on, "Recruiting for talent on the autism spectrum." October 4, 2020, re-aired on July 18, 2021.

**Patrick Henry Winston Award for Best Student Paper on Cognitive Systems,** led by PhD student Yuan Yang, Eighth Annual Conference on Advances in Cognitive Systems, 2020.

**Conference Keynote Speaker.** 17th Annual International Conference on Computational Modeling (ICCM), Montreal, Canada, 2019.

**Finalist for NSF 2026 Idea Machine, as part of Vanderbilt team led by Keivan Stassun.** Idea/video on *Harnessing the Human Diversity of Mind* selected as 1 of top 33 finalists in national competition, 2019.

**Vanderbilt Provost Research Studio Award.** Vanderbilt University, Office of the Provost, 2017.

**Notable Alumna Award.** Girls Preparatory School, Chattanooga, TN, 2017.

**MIT Tech Review 35 Innovators Under 35.** MIT Technology Review, 2016. Recognized in the category of "visionary" for research at the intersection of AI, visual thinking, and autism.

**IJCAI Outstanding Reviewer Award.** International Joint Conference on Artificial Intelligence (IJCAI), 2016. Awarded to ~10% of program committee members.

**Rising Stars in EECS.** MIT/Berkeley EECS Departments, 2014. Awarded annually to "approximately 40 outstanding EECS graduate and postdoctoral women."

**GVU Foley Scholar.** GVU Center, Georgia Tech, 2010. "Foley Scholar awards are determined from a pool of applicants on a merit basis for overall brilliance and potential impact."

**Google Anita Borg Memorial Scholar.** Google, 2010. "Scholarships will be awarded based on the strength of each candidate's academic background and demonstrated leadership."

**Graduate Research Fellowship Program (GRFP).** National Science Foundation, 2009 – 2011.

**Research Excellence Commendation.** School of Interactive Computing, Georgia Tech, 2008.

**National Defense Science & Engineering Graduate (NDSEG) Fellowship.** DoD, 2006 – 2009.

**Higher Education Research Experience (HERE) Fellowship.** Oak Ridge National Lab, 2006.

**Undergraduate Research Opportunity Program (UROP) Scholarship.** MIT, 2005.

**Global Change Education Program (GCEP) Fellowship.** Department of Energy, 2004 – 2006.

**Research Experience for Undergraduates (REU) Program.** National Science Foundation, 2003.

## IV. TEACHING

**Instructor**, Department of Electrical Engineering and Computer Science, Vanderbilt University.
- *Advanced Artificial Intelligence*, grad (Spring 2020, Spring 2021).
- *Artificial Intelligence*, undergrad/grad (Fall 2019, Fall 2020, Fall 2021, Spring 2022).
- *Computation and Cognition*, grad (Spring 2016, Fall 2017).
- *Imagery-based Artificial Intelligence*, grad (Fall 2016, Fall 2018).
- *Machine Learning / Projects in AI*, undergrad/grad (Spring 2017, Spring 2018, Spring 2019).

**Instructor**, School of Interactive Computing, Georgia Tech.
- *Introduction to Cognitive Science,* graduate (Summer 2013, Summer 2015).
- *Introduction to Cognitive Science,* undergraduate (Summer 2013, Summer 2015, Fall 2013).
- *Computing and Society*, undergrad (Spring 2015).

**Assistant Instructor**, School of Interactive Computing, Georgia Tech.
- *Behavioral Imaging*, undergrad/grad (Spring 2014).
- *Computational Creativity/Knowledge-Based Modeling & Design,* undergrad/grad (Spring 2013).

**Guest lectures**
- *Child-Computer Interaction*. University of Washington. February 11, 2021.
- *Artificial Intelligence*. Franklin & Marshall College. September 21, 2020.
- *Neurodiversity-Inspired Science and Engineering*. Vanderbilt University. September 9, 2020. September 23, 2020. March 10, 2021. August 31, 2022.
- *The Visual System*. Vanderbilt. April 10, 2017. April 19, 2019.
- *Artificial Intelligence*. Georgia Tech. April 13, 2015.

## V. PUBLICATIONS

### JOURNAL PAPERS

[J11]   Yang, Y., McGreggor, K., & Kunda, M. (accepted). Visual-imagery-based analogical construction in a geometric matrix reasoning task. *Advances in Cognitive Systems*.

[J10]   Rashedi, R., Bonnet, K., Schulte, R., Schlundt, D., Swanson, A., Kinsman, A., Bardett, N., Warren, Z., Juarez, P., Biswas, G., & Kunda, M. (2021). Opportunities and challenges in developing technology-based social skills interventions for adolescents with autism spectrum disorder: A qualitative analysis of parent perspectives. *Journal of Autism and Developmental Disorders*.

[J9]   Kunda, M. (2020). AI, visual imagery, and a case study on the challenges posed by human intelligence tests. *Proceedings of the National Academy of Sciences*, 117 (47), 29390-29397.

[J8]   Kunda, M. (2018). Visual mental imagery: A view from artificial intelligence. *Cortex*, 105, 155-172.

[J7]   Brown, E., Park, S., Warford, N., Seiffert, A., Kawamura, K., Lappin, J., and Kunda, M. (2018). An architecture for spatiotemporal template-based search. *Advances in Cognitive Systems*, 6, 101-118.

[J6]   Kunda, M., Soulières, I., Rozga, A., & Goel, A. K. (2016). Error patterns on the Raven's Standard Progressive Matrices Test. *Intelligence*, 59, 181-198.

[J5]    Kunda, M., and Ting, J. (2016). Looking around the mind's eye: Attention-based access to visual search templates in working memory. *Advances in Cognitive Systems*, 4, 113–129.

[J4]    McGreggor, K., Kunda, M., & Goel, A. K. (2014). Fractals and Ravens. *Artificial Intelligence*, 215, 1-23.

[J3]    Kunda, M., McGreggor, K., & Goel, A. K. (2013). A computational model for solving problems from the Raven's Progressive Matrices intelligence test using iconic visual representations. *Cognitive Systems Research*, 22-23, 47-66.

[J2]    Kunda, M., & Goel, A. K. (2011). Thinking in Pictures as a cognitive account of autism. *Journal of Autism and Developmental Disorders*, 41 (9), 1157-1177.

[J1]    Neidhoefer, J., Gibson, C., Kunda, M., and Johnson, E. (2007). Determinism and autonomy in the National Airspace System (NAS). *Journal of Aerospace Computing, Information, and Communication*, 4 (11), 1037-1045.

## CONFERENCE AND WORKSHOP FULL PAPERS (PEER-REVIEWED)

[C44]    Michelson, J., Sanyal, D., Ainooson, J., Yang, Y., & Kunda, M. (2022). Experimental design and facets of evidence for computational theory of mind. *8th International Workshop on Artificial Intelligence and Cognition (AIC).* Örebro, Sweden. **Oral presentation.**

[C43]    Yang, Y., Sanyal, D., Michelson, J., Ainooson, J., & Kunda, M. (2022). A conceptual chronicle of solving Raven's Progressive Matrices computationally. *8th International Workshop on Artificial Intelligence and Cognition (AIC).* Örebro, Sweden. **Oral presentation.**

[C42]    Yang, Y., Sanyal, D., Michelson, J., Ainooson, J., & Kunda, M. (2022). "An end-to-end imagery-based modeling of solving geometric analogy problems." *Proceedings of the 44th Annual Meeting of the Cognitive Science Society.*

[C41]    Yang, Y., Sanyal, D., Michelson, J., Ainooson, J., & Kunda, M. (2021). "Automatic item generation of figural analogy problems: A review and outlook." *Ninth Annual Conference on Advances in Cognitive Systems (ACS).*

[C40]    Michelson, J., Sanyal, D., Ainooson, J., Yang, Y., & Kunda, M. (2021). "Social cognition paradigms ex machinas." *Proceedings of the AAAI Fall Symposium on Computational Theory of Mind for Human-Machine Teams*. **Oral presentation.**

[C39]    *Dunn, A., *Qiao, A., *Johnson, M., & Kunda, M. (2021). "Measuring more to learn more from the block design test: A literature review." *Proceedings of the 43rd Annual Meeting of the Cognitive Science Society.* p. 611-617. **\*Co-first authors. 22% oral acceptance rate.**

[C38]    Chen Z., Li S., Rashedi R., Zi X., Elrod-Erickson M, Hollis B., Maliakal A., Shen X., Zhao S., & Kunda M. (2020). Creating and characterizing datasets for social visual question answering. *IEEE Joint International Conference on Development and Learning and Epigenetic Robotics (ICDL/EPIROB).*

[C37]    Yang, Y., McGreggor, K., and Kunda, M. (2020). Not quite any way you slice it: How different analogical constructions affect Raven's Matrices performance. *Eighth Annual Conference on Advances in Cognitive Systems (ACS).* **Best Student Paper Award + selected for oral presentation.**

[C36]    Ainooson, J., Michelson, J., Sanyal, D., Palmer, J. H., and Kunda, M. (2020). Strategies for visuospatial reasoning: Experiments in sufficiency and diversity. *Proceedings of the Eighth Annual Conference on Advances in Cognitive Systems (ACS).*

[C35]    Hua, T., and Kunda, M. (2020). Modeling Gestalt visual reasoning on Raven's Matrices using generative image inpainting techniques. *Eighth Annual Conference on Advances in Cognitive Systems (ACS).*

[C34]    Michelson, J., Sanyal, D., Ainooson, J., and Kunda, M. (2020). A measure of visuospatial reasoning skills: Painting the big picture. *Eighth Annual Conference on Advances in Cognitive Systems (ACS).*

[C33]    Cha, S., Ainooson, J., Chong, E., Soulières, I., Rehg, J., and Kunda, M. (2020). Enhancing cognitive assessment through multimodal sensing: A case study using the block design test. *42nd Annual Meeting of the Cognitive Science Society.* p. 2546- 2552.

[C32]   Zi, X., Li, S., Rashedi, R., Rushdy, M., Lane, B., Mishra, S., Biswas, G., Swanson, A., Kinsman, A., Bardett, N., Warren, Z., Juarez, P., and Kunda, M. (2020).  Science learning and social reasoning in adolescents on the autism spectrum: An educational technology usability study. *42nd Annual Meeting of the Cognitive Science Society.*

[C31]   Rashedi, R., Bonnet, K., Shulte, R., Schlundt, D., Swanson, A., Kinsman, A., Bardett, N., Warren, Z., Juarez, P., Biswas, G., & Kunda, M.  (2020).  Opportunities and challenges in developing technology-based social skills interventions for youth with autism spectrum disorder: A qualitative analysis of parent perspectives. *International Conference on Learning Sciences.*  p. 673-676.

[C30]   Kunda, M. (2019). Nonverbal task learning. *Seventh Annual Conference on Advances in Cognitive Systems*, Cambridge, MA.

[C29]   Scheer, B., Renteria, F. C., and Kunda, M. (2019).  Technology-based cognitive enrichment for animals in zoos: A case study and lessons learned. *41st Annual Meeting of the Cognitive Science Society*, Montreal, Canada.

[C28]   Kunda, M. (2019). AI and cognitive testing: A new conceptual framework and roadmap. *41st Annual Meeting of the Cognitive Science Society*, Montreal, Canada.  p. 2065-2070.

[C27]   Brown, E., Park, S., Warford, N., Seiffert, A., Kawamura, K., Lappin, J., and Kunda, M. (2018).  SpatioTemporal Template-based Search: An architecture to model human search for spatiotemporal targets. *Sixth Annual Conference on Advances in Cognitive Systems*, Menlo Park, CA.  **Selected for oral presentation.**

[C26]   Wang, X., Wang, X., and Kunda, M. (2018).  Ordering of training inputs for a neural network learner. *Sixth Annual Conference on Advances in Cognitive Systems*, Menlo Park, CA.

[C25]   Eliott, F., Stassun, K., and Kunda, M. (2018).  IACI: A human-inspired computational architecture to help us understand visual data exploration. *Sixth Annual Conference on Advances in Cognitive Systems*, Menlo Park, CA.

[C24]   Eilbert, J., Peters, Z., Eliott, F., Stassun, K., and Kunda, M. (2018).  Shapes in scatterplots: Comparing human visual impressions and computational metrics. *40th Annual Meeting of the Cognitive Science Society*, Madison, WI.  p. 330-335.  **31% oral acceptance rate.**

[C23]   Warford, N., and Kunda, M. (2018).  Measuring individual differences in visual and verbal thinking styles. *40th Annual Meeting of the CogSci Society*, Madison, WI. 2666-2671.

[C22]   Palmer, J. H., and Kunda, M. (2018).  Thinking in PolAR pictures: Using rotation-friendly mental images to solve Leiter-R Form Completion. *AAAI National Conference*. 612-619.  **25% acceptance rate + selected for oral presentation.**

[C21]   Wang, X., Eliott, F., Ainooson, J., Palmer, J., and Kunda, M. (2017).  An object is worth six thousand pictures: The egocentric, manual, multi-image (EMMI) dataset.  In *International Conference on Computer Vision Workshop on Egocentric Perception, Interaction, and Computing (EPIC@ICCV)*, Venice, Italy.

[C20]   Ainooson, J., and Kunda, M. (2017). A computational model for reasoning about the Paper Folding task using visual mental images. *39th Annual Meeting of the Cognitive Science Society*, London, UK.  p. 1519-1524.

[C19]   Eliott, F. M., Stassun, K., and Kunda, M. (2017). Visual data exploration: How expert astronomers use flipbook-style visual approaches to understand new data. *39th Annual Meeting of the Cognitive Science Society*, London, UK.  p. 2754-2759.

[C18]   Kunda, M. (2017). Understanding the role of visual mental imagery in intelligence: The Retinotopic Reasoning (R2) cognitive architecture. *Proceedings of the AAAI Fall Symposium Series (AAAI-FSS): A Standard Model of the Mind*, Washington, DC.  AAAI Technical Report FS-17-05.  p. 401-407.

[C17]   Kunda, M., El-Banani, M., and Rehg, J. (2016). A computational exploration of problem-solving strategies and gaze behaviors on the Block Design task. *38th Annual Meeting of the Cognitive Science Society*, Philadelphia, PA, 235-240.

[C16]   Kunda, M. (2015). Computational mental imagery, and visual mechanisms for maintaining a goal-subgoal hierarchy. *3rd Annual Conference on Advances in Cognitive Systems*, Atlanta, GA.  **Selected for oral presentation.**

[C15]   Kunda, M., and Ting, J. (2015). Looking around the mind's eye: How internal deployments of attention can affect visual search performance. *3rd Annual Conference on Advances in Cognitive Systems*, Atlanta, GA. **Selected for oral presentation.**

[C14]   Goel, A. K., Kunda, M., Joyner, D. A., & Vattam, S. (2013).  Learning about representational modality: Design and programming projects for knowledge-based AI.  *Fourth AAAI Symposium on Educational Advances in Artificial Intelligence (EAAI)*, Bellevue, WA.  p. 1586-1591.  **Selected for oral presentation.**

[C13]   Kunda, M., Soulières, I., Rozga, A., & Goel, A. (2013). Methods for classifying errors on the Raven's Standard Progressive Matrices test. *35th Annual Conference of the Cognitive Science Society*, Berlin, Germany, 2796-2801.

[C12]   Kunda, M., McGreggor, K., & Goel, A. K. (2012). Reasoning on the Raven's Advanced Progressive Matrices test with iconic visual representations. *34th Annual Conference of the Cognitive Science Society*, Sapporo, Japan, 1828-1833.

[C11]   Kunda, M., McGreggor, K., & Goel, A. K. (2011). Two visual strategies for solving the Raven's Progressive Matrices intelligence test. *AAAI National Conference*, San Francisco, CA.  **25% acceptance rate and selected for oral presentation.**

[C10]   McGreggor, K., Kunda, M., and Goel, A. K. (2011). Fractal analogies: Preliminary results from the Raven's test of intelligence. *2nd International Conference on Computational Creativity*, Mexico City, Mexico.  p. 69-71.

[C9]   Kunda, M., McGreggor, K., & Goel, A. K. (2010). Taking a look (literally!) at the Raven's intelligence test: Two visual solution strategies. *32nd Annual Conference of the Cognitive Science Society*, Portland, OR, 1691-1696.

[C8]   McGreggor, K., Kunda, M., and Goel, A. K. (2010). A fractal approach towards visual analogy. *1st International Conference on Computational Creativity*, Lisbon, Portugal.

[C7]   McGreggor, K., Kunda, M., and Goel, A. K. (2010). A fractal analogy approach to Raven's test of intelligence. *AAAI Workshop on Visual Representations and Reasoning*, Atlanta, GA.  p. 69-75.

[C6]   Kunda, M., McGreggor, K., and Goel, A. K. (2009). Addressing the Raven's Progressive Matrices test of general intelligence. *AAAI Fall Symposium on Multi Representational Architectures for Human Level Intelligence*, Arlington, VA.  AAAI FS-09-05  p. 22-27.

[C5]   Kunda, M., and Goel, A. K. (2008). How Thinking in Pictures can explain many characteristic behaviors of autism. *7th IEEE International Conference on Development and Learning*, Monterey, CA, 304-309.

[C4]   Kunda, M., and Goel, A. K. (2008). What can pictorial representations reveal about the cognitive characteristics of autism? *International Conf. on the Theory and Application of Diagrams (DIAGRAMS)*, Herrsching, Germany. *LNCS*, 5223, 103-117.  **26% accepted for long presentation.**

[C3]   Kunda, M., and Goel, A. K. (2008). Thinking in Pictures: A fresh look at cognition in autism. *30th Annual Conference of the Cognitive Science Society*, Washington, DC, 321-326.  **32% oral acceptance rate.**

[C2]   Neidhoefer, J., Gibson, C., Kunda, M., and Johnson, E. (2007). Determinism in autonomy for applications in the National Airspace System (NAS). *Proceedings of the American Institute for Aeronautics and Astronautics (AIAA) Infotech@Aerospace Conference*, Rohnert Park, CA.   **Selected for oral presentation.**

[C1]   Marquez, J., Cummings, M., Roy, N., Kunda, M., and Newman, D. (2005). Collaborative human-computer decision support for planetary surface traversal. *Proceedings of the American Institute for Aeronautics and Astronautics (AIAA) Infotech@Aerospace Conference.*  Arlington, VA.

## PREPRINTS, SHORT PAPERS, AND ABSTRACTS

[A25]  Kunda, M. (2022). The AI triplet: Computational, conceptual, and mathematical knowledge in AI education. Preprint, arXiv:2110.09290.

[A24]  Mary Lou Maher, Brian Magerko, Dan Venura, Douglas Fisher, Rogelio E. Cardona-Rivera, Nancy Fulda, John Gero, Minwoo Lee, David Wilson, James C. Kaufman, Maithilee Kunda, Michael Muller, Rachel K.E. Bellamy, Maya Ackerman, Evangelia Chrysikou. (2022). A Research Plan for Integrating Generative and Cognitive AI for Human Centered, Explainable Co-Creative AI. Short paper. *Working Notes of the Workshop on Generative AI and HCI at ACM CHI.*

[A23]  Flores, I., Fallon, C., and Kunda, M. (2021). Visuospatial skills and the workforce. *International Conference on the Theory and Application of Diagrams*. Extended abstract.

[A22]  Flores, I., Fallon, C., and Kunda, M. (2021). Visuospatial skills and the workforce. *Annual Conference of the Cognitive Science Society.* Abstract.

[A21]  Yang, Y., Li, K., Eliott, F., and Kunda, M. (2021). Do time constraints re-prioritize attention to shapes during visual photo inspection? *Annual Conference of the Cognitive Science Society.* Abstract.

[A20]  Cummings, P., Fauchet, P., Goldfarb, M., Jones, M., Kunda, M., Perlin, J., Sarkar, N., Stassun, K., Warren, Z., & Zelik, K. (2020). Engineering for inclusion: empowering individuals with physical and neurological differences through engineering invention, research, and development. *Engineering*, 7 (2), 141-143. Short paper.

[A19]  Hua, T., and Kunda, M. (2020). Modeling Gestalt visual reasoning on Raven's Progressive Matrices using generative image inpainting techniques. *42nd Annual Meeting of the Cognitive Science Society.* Abstract.

[A18]  Kunda, M., and Rabkina, I. (2020). Creative captioning: An AI grand challenge based on the Dixit board game. Preprint, arXiv:2010.00048.

[A17]  Michelson, J., Palmer, J. H., Dasari, A., & Kunda, M. (2020). Learning spatially structured image transformations using neural networks. Preprint, arXiv:1912.01553.

[A16]  Sanyal, D., Michelson, J., Seiffert, A., and Kunda, M. (2020). Part of your world: Trends in the visual complexity of digital media. *42nd Annual Meeting of the Cognitive Science Society.* Abstract.

[A15]  Ainooson, J., Michelson, J., Sanyal, D., Palmer, J. H., and Kunda, M. (2020). Modeling visuospatial reasoning across 17 different tests on the Leiter scale of nonverbal intelligence. *42nd Annual Meeting of the Cognitive Science Society.* Abstract.

[A14]  Rashedi, R. and Kunda, M. (2019). Reasoning together: Promoting mutual understanding in technology design for individuals with autism. *45th Annual Conference of the Association for Moral Education*, Seattle, WA. Abstract. **Selected for oral presentation.**

[A13]  Rashedi, R. and Kunda, M. (2019). Visual supports and theory of mind reasoning: Autism spectrum disorders. *Institute of Education Sciences Principal Investigators Meeting*, Washington, DC. Abstract.

[A12]  Wang, X., Ma, T., Molla, A., Cha, S., Ainooson, J., Wang, X., and Kunda, M. (2018). An object is more than a single image: The Toybox dataset of visual object transformations. *Vision Meets Cognition Workshop at the 2018 Conference on Computer Vision and Pattern Recognition (CVPR)*, Salt Lake City, Utah. Short paper.

[A11]  Kunda, M. (2018). Visual thinking and AI. *Autism, Innovation & the Workforce: Envisioning the Future of Human-Technology Partnerships, NSF Convergence Conference*, Nashville, TN. Abstract.

[A10]  Kunda, M. (2018). Learning visuospatial reasoning skills from experience. Global Convergence NSF Science of Learning Meeting, Washington, DC. Abstract.

[A9]  Brown, E. L., II, Seiffert, A. E., Warford, N., Park, S., & Kunda, M. (2017). Computational cognitive systems to model information salience. *American Indian Science and Engineering Society National Conference (AISES)*, Denver, CO. Abstract. **Selected for oral presentation.**

[A8]  Kunda, M. (2016). Visual imagination: A view from artificial intelligence. *Eye's Mind Conference: Visual*

*Imagination, Neuroscience and the Humanities*, Norwich, UK.  Abstract.  **Selected for oral presentation.**

[A7]   Thinking in Pictures: Computational visual cognition.  *Sci Foo Camp, Google.*  Jun. 27, 2015, Mountain View, CA.  Abstract.  **Selected for lightning talk.**

[A6]   Kunda, M. (2014).  Computational models of gaze in neuropsychological assessments.  *Joint Meeting for NSF Expeditions on Computational Behavioral Science and Socially Assistive Robotics*, Atlanta, GA.  Abstract.

[A5]   Kunda, M., Soulières, I., Mottron, L., and Goel, A. K. (2011). Comparing patterns of errors on the Raven's Progressive Matrices test: Strategy differences among typically developing individuals, individuals with autism, and computational models. *International Meeting for Autism Research (IMFAR)*, San Diego, CA. Abstract.

[A4]   Kunda, M., McGreggor, K., and Goel, A. K. (2010). Can the Raven's Progressive Matrices intelligence test be solved by thinking in pictures? *International Meeting for Autism Research (IMFAR)*, Philadelphia, PA. Abstract.  **20% accepted for oral presentation.**

[A3]   Kunda, M., and Goel, A. (2009). Evidence for Thinking in Pictures as a cognitive account of autism. *International Meeting for Autism Research (IMFAR)*, Chicago, IL.  Abstract.

[A2]   Kunda, M., Marland, G., Canella, L., Schlamadinger, B., and Bird, N. (2005). Impact of albedo change on carbon sequestration strategies. *Third USDA Symposium on Greenhouse Gases & Carbon Sequestration in Agriculture and Forestry*, Baltimore, MD.  Abstract.  **Selected for oral presentation.**

[A1]   Kunda, M., Bird, N., Canella, L., Marland, G., and Schlamadinger, B. (2005). Carbon management, earth surface albedo, and biomass fuels. *14th European Biomass Conference and Exhibition: Biomass for Energy, Industry, and Climate Protection*, Paris, France.  Abstract.

# VI. INVITED TALKS

[T35]   Visual thinking in autism: A view from AI.  *Brigham Young University Computer Science Distinguished Speakers Series*.  Upcoming, February 2023.  Provo, Utah.

[T34]   A computational view of visual imagery in humans and in AI systems.  *Workshop on Creativity in Mathematics and Artificial Intelligence*.  Upcoming, January 2023.  Maastricht, Netherlands.

[T33]   Untangling ambiguous mappings between cognition, brain, and behavior.  *MATRIX Research Institute: Mathematics of The Interactions Between Brain Structure and Brain Functions.*  Upcoming, November 2022. Creswick, Australia.

[T32]   Studying infant-like distributions of visual object experience using the Toybox dataset.  *Dagstuhl Seminar 22422: Developmental Machine Learning: From Human Learning to Machines and Back.*  Upcoming, October 2022.  Wadern, Germany.

[T31]   AI, visual imagery, and the many unsolved challenges of human intelligence tests.  *First Graduate Conference of the Italian Association for Cognitive Science.*  September 13, 2021.  **Keynote talk.**

[T30]   Individual differences in visuospatial reasoning in neurodiverse and neurotypical populations.  *Dagstuhl Seminar 21192: Approaches and Applications of Inductive Programming.*  May 10, 2021.

[T29]   Why intelligence tests are (still!) a very hard problem for AI.  *NYU Concepts and Categories seminar series.* Friday April 16, 2021.

[T28]   Why intelligence tests are still a very hard problem for AI.  *Interdisciplinary College (IK).*  March 13, 2021.

[T27]   Autism, AI, and visuospatial thinking: Understanding cognitive strengths through computational modeling and behavior analytics.  *Workshop on Artificial and Human Intelligence at the European Conference on Artificial Intelligence (ECAI).*  September 8, 2020.

[T26]   Autism- inspired AI for visuospatial and social reasoning.  *Summer AI Talk Series, Indiana University.*  June 23, 2020.

[T25]   Autism-inspired AI for visuospatial and social reasoning. *Bridging AI and Cognitive Science, Workshop at the International Conference on Learning Representations (ICLR).* April 26, 2020.

[T24]   Imagery-based AI. *17th Annual International Conference on Cognitive Modeling (ICCM).* July 21, 2019, Montreal, Canada. **Keynote talk.**

[T23]   Imagery-based AI. *National Academy of Sciences Colloquium on "The Brain Produces Mind by Modeling."* May 2, 2019, Irvine, CA.

[T22]   Image and thought: Computational investigations into imagery-based visuospatial reasoning, learning, and attention. *Navy Center for Applied Research in Artificial Intelligence Symposium Series, Naval Research Laboratory.* April 30, 2019, Washington, DC.

[T21]   Visual mental imagery: A view from AI. *UT Austin.* Nov. 8, 2018, Austin, TX.

[T20]   Thinking in Pictures: AI approaches for learning, using, and flexibly re-using visuospatial knowledge. *Cognitive Science Colloquium Series, Indiana University.* Nov. 5, 2018, Bloomington, IN.

[T19]   Imagery-based AI. *Cognitive Science Speaker Series, Northwestern University.* Jun. 18, 2018, Evanston, IL.

[T18]   Imagery-based AI. *University of Huddersfield.* May 15, 2018, Huddersfield, UK.

[T17]   Imagery-based AI. *Workshop: NSF Science of Learning Collaborative Network on Mapping, Measuring, & Modeling Perceptual Expertise.* Feb. 1, 2018, Nashville, TN.

[T16]   Understanding strategy differences on cognitive tests. *Vanderbilt Surprising Connections in Autism & Innovation, NSF Convergence Conference.* Nov. 17, 2017, Nashville, TN.

[T15]   Looking and thinking: What wearable cameras can reveal about visual mental imagery. *Workshop on Egocentric Vision: From Science to Real-World Applications.* Jun. 5, 2017, Bloomington, Indiana.

[T14]   Visual thinking in autism and in artificial intelligence systems. *NeuroQAM Seminar, University of Quebec at Montreal.* Apr. 6, 2017, Montreal, Canada.

[T13]   Visual thinking in autism and in AI systems. *Symposium on Surprising Connections: Math, Physics, Computer Science, and Autism.* Feb. 7, 2017, Nashville, TN.

[T12]   Mental imagery: A view from artificial intelligence. *Cognitive & Cognitive Neuroscience Seminar, Vanderbilt University.* Jan. 18, 2017, Nashville, TN.

[T11]   Visual thinking: A view from AI. *Biomedical Engineering Seminar, Vanderbilt.* Nov. 2, 2016, Nashville, TN.

[T10]   Mental imagery: A view from artificial intelligence. *Psychology and Human Development Seminar, Vanderbilt University.* Oct. 28, 2016, Nashville, TN.

[T9]   Visual thinking in the data-to-action pipeline. *GVU Brownbag Seminar, Georgia Tech.* Sep. 10, 2015, Atlanta, GA.

[T8]   Visual thinking in the data-to-action pipeline. *EECS Seminar, Vanderbilt University.* Mar. 12, 2015, Nashville, TN.

[T7]   Computational mechanisms for visual thinking. *Attention and Working Memory Lab, Georgia Tech.* Apr. 21, 2015, Atlanta, GA.

[T6]   Visual problem solving in autism, psychometrics, and AI. *Mathematics and Computer Science Seminar, Emory University.* May 2, 2013, Atlanta, GA.

[T5]   The case of the Raven's Progressive Matrices intelligence test. *GTNeuro Club, Georgia Tech.* Mar. 28, 2013, Atlanta, GA.

[T4]   Identifying the visual cognitive phenotype in autism. *Atlanta Autism Consortium Research Special Interest Group.* Mar. 14, 2013, Atlanta, GA.

[T3]   Can the Raven's Progressive Matrices test be solved visually? *Laboratoire de Neurosciences Cognitives des Troubles Envahissants du Developpement, University of Montreal.* Sep. 15, 2010, Montreal, Canada.

[T2]   Can the Raven's Progressive Matrices test be solved by thinking in pictures? *Yale Early Social Cognition Lab, Yale University.* Sep. 13, 2010, New Haven, CT.

[T1]     Visual thinking in autism: Design of behavioral experiments using the dual-task paradigm. *Atlanta Autism Consortium.*  Sep. 25, 2009, Atlanta, GA.

# VII. RESEARCH STUDENTS

**Postdoctoral Fellows**

1. Effat Farhana, 2021-present.
2. Caoimhe Harrington-Stack, 2021-present.
3. Israel Flores, 2020-2021.
4. Roxanne Rashedi, 2018-2020.
5. Xiaohan Wang
6. Fernanda Eliott, 2016-2020.

**Ph.D. Students**

1. Deepayan Sanyal, 2018-present.
2. Ryan Yang, 2018-present.
3. Joel Michelson, 2017-present.
4. James Ainooson, 2016-present.
5. Tengyu Ma, 2018-2020.

**M.S. Thesis/Capstone Students**

1. Shiyao Li,  2019-2020.
2. Xiaotian Wang, 2017-2018.

**Graduate or Post-Baccalaureate Students**

1. Raymond Yates, 2021-present.
2. Yiyuan Yang, 2020-present.
3. Kenneth Li, 2020-2021.
4. Victor Lin, 2020-2021.
5. Simeng Zhao, 2020.
6. Chris Ketchum, 2019.
7. Zhanwen Chen, 2018-2020.

**Selected Undergraduate Students**

1. Janet Liu, 2022.
1. James Foglio, 2022.
2. Yejin Jeong, 2021-2022.
3. Dylan Kistler, 2021-2022.
4. Aviv Roskes, 2021-present.
5. Sarah Myers, 2021-present.
6. Rana Khan, 2021.
7. Teddy Solomon, 2021.
8. Chris Petrella, 2021.
9. Xinyu Shen, 2020-2022.
10. Alice Qiao, 2020-2021.
11. Maya Johnson, 2020-2021.
12. Avery Dunn, 2020-2021.
13. Angela Maliakal, 2020.
14. Morgan Elrod-Erickson, 2019-2022.
15. Carson Fallon, 2019-present.
16. Bryan Hollis, 2019-2021.
17. Tianyu Hua, 2019-2020.
18. Sean Cha, 2018 – 2019.
19. Xiaoman Zi, 2018-2020.
20. Edwin Santiago, 2018.
21. Aneesha Dasari, 2017 – 2018.
22. Joe Eilbert, 2017 – 2018.
23. Ben Scheer, 2016 – 2019.
24. Noel Warford, 2016 – 2018.
25. Josh Palmer, 2016 – 2018.
26. Soobeen Park, 2017, 2020.
27. Ellis Brown, 2017.
28. Max DeGroot, 2017.
29. Zameese Peters, 2017.
30. Mike Lee, 2015.
31. Clay Washington, 2015.
32. Mohamed El Banani 2014 – 2015.
33. Yongkoo Kang 2014 – 2015.
34. Mika Munch, 2014 –2015.
35. Emeke Nkadi 2014 – 2015.
36. Richard Stauffer, 2014 – 2015.
37. Syfuddin Rashid, 2014.
38. Julia Ting, 2014.

**High School Students**

1. Binula Illukpitiya, 2017.
2. Brandt Plomaritis, 2016.
3. Tessa Haws, 2020-2021.

# VIII. FUNDING

## PENDING

[P4]  **Multi-Domain Assessment of Theory of Mind Skills for Adolescents on the Autism Spectrum**
Source: Institute of Education Sciences
Location: Vanderbilt University (lead), Vanderbilt University Medical Center (sub)
Total Award: $2,000,000.  Duration: 07/01/23 - 06/30/27
PI: Maithilee Kunda, Co-PIs: Sun-Joo Cho (VU), Zack Warren (VUMC), Pablo Juarez (VUMC)

[P3]  **Collaborative Research: Using AI and Wearable Cameras to Understand How Visual Experiences Support Spatial Learning**
Source: National Science Foundation
Location: Vanderbilt (lead), Indiana University (collab)
Total Award: $800,000 ($550,000 Vanderbilt).  Duration: 02/01/2023 - 01/31/2026
PI: Maithilee Kunda, Co-PIs: Linda Smith and David Crandall (Indiana University)

[P2]  **AI Institute: Theme 2: Advancing the Neurocognitive Foundations of AI through Human Centered Creative AI**
Source: National Science Foundation / UNC Charlotte
Location: UNC Charlotte (lead), Vanderbilt (sub)
Total Award: $19,999,607 ($2,171,154 Vanderbilt).  Duration: 6/1/2023 - 5/30/2028
PI: Mary Lou Maher (UNC Charlotte), several Co-PIs, Kunda is senior personnel.

[P1]  **Collab. Research: Objectively Measuring Individual Differences in Visual & Verbal Strategies**
Source: National Science Foundation
Location: Vanderbilt (lead), VUMC (partner)
Total Award:  $550,000 ($479,999 Vanderbilt)
Duration:  10/1/2020 – 09/30/2023
PI: Maithilee Kunda.  Co-PIs: Adriane Seiffert (VU) and Zachary Warren (VUMC).

## FUNDED

[F12]  **AI Institute: The Institute for an AI-Engaged Future of Learning**
Source: National Science Foundation / NC State University
Location: NCSU (lead), Vanderbilt (sub)
Total Award: $20M ($4,149,999 Vanderbilt).  Duration: 07/2021 – 06/2026
PI: James Lester (NCSU), several Co-PIs, Kunda is senior personnel.

[F11]  **NSF2026: EAGER: Collaborative Research: Enhancing Employment for Neurodiverse Individuals through Next-Gen, AI-Enabled Assessments of Visuospatial Cognition**
Source: National Science Foundation
Location: Vanderbilt University (lead), Vanderbilt University Medical Center (collab)
Total Award: $312,000 ($251,998 VU).  Duration: 10/01/2020 – 09/30/2022
PI: Maithilee Kunda.  Co-PI: Gautam Biswas, Keivan Stassun, Frank Tong, Timothy Vogus, Zachary Warren (VUMC).  Senior Personnel: Jesse Spencer-Smith.

[F10]  **B1: Inclusion AI for Neurodiverse Employment**
Source: National Science Foundation
Location: Vanderbilt (lead), Yale (sub), Georgia Tech (sub), Cornell (sub), VUMC (sub)
Total Award: $5,000,000.  Duration: 09/2020-08/2022
PI: Nilanjan Sarkar.  Kunda is senior personnel.

[F9]  **Convergence Accelerator Phase I (RAISE): Empowering Neurodiverse Populations for Employment through Inclusion AI and Innovation Science**
Source: National Science Foundation
Location: Vanderbilt University (lead), Yale (sub), Georgia Tech (sub), Cornell (sub), VUMC (sub)
Total Award: $1,000,000.  Duration: 09/01/2019 – 05/31/2021
PI: Nilanjan Sarkar, Co-PI: James Rehg (GT), Brian Scassellati (Yale), Susanne Bruyere (Cornell), Zachary Warren (VUMC).  Senior Personnel: Keivan Stassun, Amy Weitlauf, Maithilee Kunda, Timothy Vogus, Joshua Wade.

[F8]  **Neurodiversity Inspired Science and Engineering (NISE)**
Source: National Science Foundation
Location: Vanderbilt University
Total Award: $2,999,985.  Duration: 09/01/2019 – 08/31/2024
PI: Mark Wallace, Co-PI: Maithilee Kunda, Frank Tong, Keivan Stassun, Nilanjan Sarkar

[F7]  **Betty's Mind: A Theory of Mind and Social Reasoning Intervention for Adolescents with Autism Spectrum Disorders Based on a Learning by Teaching Approach**
Source: Institute for Education Sciences
Location: Vanderbilt University (lead), Vanderbilt University Medical Center
Total Award: $1,399,955.  Duration: July 1, 2018 – June 30, 2021
PI: Maithilee Kunda, Co-PI: Gautam Biswas, Pablo Juarez, Zachary Warren

[F6]  **CompCog: Collaborative Research: Learning Visuospatial Reasoning Skills from Experience**
Source: National Science Foundation (#1730044)
Location: Vanderbilt University (lead), Indiana University
Total Award: $299,691 ($200,000 Vanderbilt).  Duration: 08/15/2017 – 08/14/2019.
PI: Maithilee Kunda, Co-PI: Bethany Rittle-Johnson (Vanderbilt), Linda Smith (IU)

[F5]  **Convergence HTF: A Workshop Shaping Research on Human-Technology Partnerships to Enhance STEM Workforce Engagement**
Source: National Science Foundation
Location: Vanderbilt University
Total Award: $98,346.  Duration: September 1, 2017 – August 31, 2018
PI: Keivan Stassun, Co-PI: Maithilee Kunda, Zachary Warren, Frank Tong, Nilanjan Sarkar

[F4]  **New Explorations in Visual Object Recognition**
Source: Vanderbilt University Discovery Grant Program
Location: Vanderbilt University
Total Award: $50,000.  Duration: July 1, 2017 – June 30, 2019
PI: Maithilee Kunda

[F3]  **Center for the Study of Autism and Innovation**
Source: Vanderbilt University Trans-Institutional Programs
Location: Vanderbilt University
Total Award: $200,000.  Duration: July 1, 2017 – June 30, 2019
PI: Keivan Stassun, Co-PI: Zachary Warren, Julie Taylor, Sal March, Timothy Vogus, Maithilee Kunda, Frank Tong, Alan Bentley, Philippe Fauchet, Mark Wallace

**The above effort led to a $10M philanthropic donation to endow Vanderbilt's Frist Center for Autism and Innovation in 2018.**  [https://news.vanderbilt.edu/2018/11/08/vanderbilt-university-launches-the-frist-center-for-autism-and-innovation/](https://news.vanderbilt.edu/2018/11/08/vanderbilt-university-launches-the-frist-center-for-autism-and-innovation/)

[F2] **Collaborative Research: NSF INCLUDES: South East Alliance for Persons with Disabilities in STEM**
Source: National Science Foundation
Location: Auburn University (lead), Vanderbilt, Alabama State University, Tuskegee University
Total Award: $298,424 ($5,178 Vanderbilt).  Duration: October 1, 2016 – March 31, 2019
PI: Overtoun Jenda (Auburn), co-PI: Maithilee Kunda, Kelly Holley-Bockelmann (Vanderbilt); Alan Wilson, Asheber Abebe, Caroline Dunn, Daniela Marghitu (Auburn); Mohammed Qazi, Michael Curry (Tuskegee); Carl Pettis, Cleon Barnett, Michelle Foster (Alabama State)

[F1] **Comp Cog: Collaborative Research on the Development of Visual Object Recognition**
Source: National Science Foundation
Location: Indiana University (lead), Georgia Institute of Technology
Total Award: $718,740 (GT: $313,582).  Duration: August 1, 2015 – July 31, 2018
PI: Linda Smith (IU), Co-PI: Chen Yu, Jim Rehg, Maithilee Kunda, Fuxin Li

## MINI GRANTS

1. Integrative Research on Infant and Machine Learning Using the Toybox Dataset. *Rapid-Advance MicroGrant Program (RAMP).*  $5,000.  Office for Research & Innovation, Vanderbilt, 2022.

2. Understanding how people perceive and process visual information using eye tracking technologies. *Data Science Institute (DSI) Mini-Grant.*  $5,000.  Vanderbilt DSI, 2019.

3. *Provost Research Studio Award.*  $4,000.  Office of the Provost, Vanderbilt University, 2017.

# IX. OUTREACH AND BROADENING PARTICIPATION IN STEM

**Broadening participation in CS and STEM:  Talks and panels**

1. Invited speaker, Vanderbilt Minority Women in STEM student organization.  September 21, 2021. Nashville, TN.

2. Invited panelist. Accelerating convergent solutions at the technology/work interface for societal impact. *IEEE Women in Engineering International Leadership Conference.*  April 27, 2021.  Virtual.

3. Invited panelist, Women in Technology/ChIPs STEAM panel for high school students.  January 27, 2021. Virtual.

4. Invited speaker, Girls Preparatory School (high school) Science Club.  Sept. 30, 2020.  Virtual.

5. Discussant for film screening of *Temple Grandin*.  Women of VISE, Vanderbilt Institute for Surgery & Engineering.  February 27, 2020.  Nashville, TN.

6. Invited panelist. Using AI to understand and support neurodiverse forms of thinking and learning. *Autism & Innovation Panel, Vanderbilt Inclusability Lunch and Learn Series, Disability Awareness Month.* October 23, 2018.  Nashville, TN.

7. Roundtable luncheon with Women of VISE, Vanderbilt Institute for Surgery and Engineering, April 4, 2018.  Nashville, TN.

8. Invited speaker, Real Talk 2.0 event.  Girls Preparatory School (high school).  April 21, 2017. Chattanooga, TN.

**Broadening participation in CS and STEM:  Other activities**

1. Interview: "Perspective matters: How diversity of background, expertise, and cognition can lead to good science."  By Bennett Lunn.  *Inside IES Research*, US Institute of Education Sciences (IES). Aug 17, 2021. https://ies.ed.gov/blogs/research/post/perspective-matters-how-diversity-of-background-expertise-and-cognition-can-lead-to-good-science

2. Hosted ~75 middle school students from Girls Preparatory School (Chattanooga, TN) at Vanderbilt for a conversation on college, computer science, and careers in STEM.  February 12, 2019.  Nashville, TN.

3. Designed and presented, "Visualizing how things move: A computational imagery approach to physical reasoning." Introductory workshop on coding and computational modeling for psychology students. *University of Quebec at Montreal.* Apr. 7, 2017. Montreal, Canada.

4. Actively recruited research students from groups underrepresented in CS and STEM. Current and past research students have included: 7 neurodiverse students (with neurodiverse conditions such as autism, dyslexia, ADHD); 19 women; 4 Black students; and 4 Latinx students.

5. Introduced numerous interdisciplinary students to CS/AI research, including: 5 from psychology; 3 from physics; 3 from creative writing; 2 from education; and 1 from neuroscience.

6. Research mentor for high school students, 2016, 2017, 2020.

7. Faculty advisor for Women in Computing ACM-W student chapter, Vanderbilt, 2016 – 2020.

**Invited talks and panels for outreach to student/professional audiences**

1. Invited speaker, Expert Jacket event, *Georgia Tech Student Alumni Association*. Jan 25 2022. Virtual.

2. Panel on interdisciplinary autism research. *Autism TN@Vandy*. April 19, 2021. Virtual.

3. Panel on how to prepare the next generation of cognitive systems researchers. *Advances in Cognitive Systems Conference*. Aug 12, 2020. Virtual.

4. Panel on professional integrity: The value of honor in engineering, business, medicine, and research professions. *Vanderbilt Honor Council*. February 19, 2020. Nashville, TN.

5. Interdisciplinary panel on artificial intelligence & historiography. *Vanderbilt Tech & Society Club.* October 10, 2019. Nashville, TN.

6. Visual thinking and AI. *Edtech: The Buzz, the Promise, the Evidence, & the Future.* Institute of Education Sciences Principal Investigators Meeting. Jan. 9, 2019, Washington, DC. **Plenary session and panel.**

7. STEM Panel on The Academic Interview: What Do Search Committees Want? *Vanderbilt Graduate School Career Development*. November 14, 2018. Nashville, TN.

8. Panel on machine learning research. *Vanderbilt Advanced Computing Center for Research and Education (ACCRE).* September 28, 2017.

9. Invited lecturer on autism and AI research. *Georgia Leadership and Education in Neurodevelopmental & Related Disabilities (GA LEND) Program.* Georgia State University, in partnership with Georgia Tech, Emory, Morehouse School of Medicine, and the CDC. May 21, 2012. May 9, 2013.

**Outreach talks and panels for the public**

1. "The inner lives of AI (and us)." Featured speaker for post-screening discussion of award-winning science fiction film *After Yang*, as part of Science of Screen series at the Belcourt Theater. March 4, 2022. Nashville, TN.

2. Interdisciplinary panel on how humans experience the world, think, & relate to technology. *Association for the Advancement of Science (AAAS) Program of Dialogue on Science, Ethics, & Religion (DoSER), Campus Event at Vanderbilt University.* March 20, 2019.

3. Roundtable panel on the Societal Implications of AI, with science fiction author Ted Chiang. *Vanderbilt University.* March 18, 2019.

4. How AI influences our understanding of human intelligence (and vice versa). *Association for the Advancement of Science (AAAS) Program of Dialogue on Science, Ethics, & Religion (DoSER), Campus Event at Texas State University.* Nov. 9, 2018, San Marcos, TX. **Keynote talk.**

5. Of minds and machines: What artificial intelligence tells us about ourselves. *American Association for the Advancement of Science (AAAS) Program of Dialogue on Science, Ethics, & Religion (DoSER) annual holiday lecture.* Dec. 4, 2017. Washington, DC. **Keynote talk.**

6. Visual thinking in autism and in AI systems. *Panel on autism, AI, and robotics: From intervention to inspiration. American Association for the Advancement of Science (AAAS) Program of Dialogue on Science, Ethics,*

*and Religion (DoSER) event at annual conference of the Religion News Association (RNA).* Sep. 7, 2017, Nashville, TN. **Plenary panel.**

7. Visual thinking: A view from artificial intelligence. *Neuro-diverse: A Symposium on Autism, Neuroscience, and Perceptual Thinking.* May 23, 2016, Nashville, TN.

8. Visual thinking and intelligence. *An Illustrated Conversation: Visual Thinking in Autism, Art, and Creativity*, *Neuro-Humanities Entanglement Conference and Neuro-Salon*. Apr. 12, 2012, Atlanta, GA.

## Other activities for outreach/service to the public

1. Presented demo of Film Detective, an educational technology game to help adolescents on the autism spectrum learn to decode social scenarios, at the US Department of Education's Education Games Expo at the Kennedy Center in Washington, DC. January 9, 2020. https://engineering.vanderbilt.edu/news/2020/film-detective-helps-kids-with-autism-interpret-actors-actions/

2. "Harnessing the human diversity of mind." Vanderbilt team selected as one of top 33 finalists (out of 800 entries) in US National Science Foundation's public *2026 Idea Machine* competition. May 31, 2019. https://nsf2026imgallery.skild.com/entries/harnessing-the-human-diversity-of-mind

3. Developed cognitive enrichment app for orangutans at Zoo Atlanta, with undergraduate students from Georgia Tech, Vanderbilt, and MIT. See [C29] above for research paper. 2014-2019. Atlanta, GA.
   - The app is used to aid the animals and also for science outreach as part of the public exhibit. Social media posts (below) from Zoo Atlanta about the app have been viewed over 25,000 times.
   - Video: Dumadi uses the musical instruments "game"—apparently his favorite part of the app: https://www.facebook.com/ZooATL/videos/401714210736740/
   - Video: Madu is surprised (and touched, according to the zookeepers who knew her) to see a video of her late orangutan friend Alan in the "Zoo-Videos-Youtube" part of the app: https://www.facebook.com/ZooATL/videos/10155754899423553/
   - "Find Your Impact: Student creates app for orangutans." *Vanderbilt Research News*. Feb. 22, 2019. https://news.vanderbilt.edu/2019/02/22/student-creates-app-for-orangutans/
   - Video: "App Inspiration leads Vanderbilt student to code for orangutans." Vanderbilt University. https://www.youtube.com/watch?v=UtLl_UbmnRU

4. Reader, College Guild program for incarcerated individuals, 2020-present.

5. Let's Get Ready academic program for low-income high school students. *SAT Verbal Preparation Course* (2003 – 2004). Tutoring in writing and AP calculus (2004).

## Media

1. "AI and visual-spatial skills." *Apple Finch Pudding* science podcast with Jeroen Schreel and Jeroen Baert. March 30, 2022. https://www.youtube.com/watch?v=lSeLv5WSNrQ

2. "How robots can assist students with disabilities" article on AI and special education by Alina Tugend. *New York Times.* March 29, 2022. https://www.nytimes.com/2022/03/29/technology/ai-robots-students-disabilities.html

3. "Film Detective: How an AI-powered game aims to improve outcomes for students with ASD," by Bennett Lunn. *Inside IES Research*, US Institute of Education Sciences (IES). Nov 3, 2021. https://ies.ed.gov/blogs/research/post/film-detective-how-an-ai-powered-game-aims-to-improve-outcomes-for-students-with-asd

4. "Recruiting for talent on the autism spectrum." *CBS 60 Minutes* with correspondent Anderson Cooper. Original airdate: October 4, 2020. Re-aired July 18, 2021.
   - According to Nielsen ratings, this episode was watched by 10.76 million people on the original airdate, and 5.96 million people on the rerun.
   - Full episode (Vanderbilt part begins at 7:40): https://www.youtube.com/watch?v=YnAUy4BM0w8

- We also prepared an informational website for the public about the research behind the demo, including a more in-depth look at the data from our volunteers Dan Burger and Anderson Cooper: https://www.vanderbilt.edu/autismandinnovation/our-research-on-the-block-design-test-as-featured-on-cbs-60-minutes-with-anderson-cooper/

5. Leading the Vanguard interview, by Elizabeth Turner. *Vanderbilt Kennedy Center Notables*. Mar. 5, 2020. https://notables.vkcsites.org/2020/03/leading-the-vanguard-maithilee-kunda/

6. "Film Detective helps kids with autism interpret actors' actions," by Brenda Ellis. *Vanderbilt News*. Jan. 27, 2020. https://engineering.vanderbilt.edu/news/2020/film-detective-helps-kids-with-autism-interpret-actors-actions/

7. "AAAS explores what artificial intelligence teaches us about ourselves," by Michaela Jarvis. *American Association for the Advancement of Science (AAAS) News.* Dec. 5, 2017. https://www.aaas.org/news/aaas-explores-what-artificial-intelligence-teaches-us-about-ourselves

8. "Using AI to understand autism." *Top Of Mind With Julie Rose* podcast, Nov. 1, 2017. https://www.byuradio.org/89f139a2-7a93-4219-9925-b218f7e156f7

9. "Visual thinking, autism and artificial intelligence." *Assistive Technology Update* podcast with Wade Wingler, Oct. 6, 2017. https://www.eastersealstech.com/2017/10/06/atu332-visual-thinking-autism-artificial-intelligence-dr-maithilee-kunda-vanderbilt-university/

10. "AI that thinks in pictures." *The Women in Tech Show* podcast with Edaena Salinas, Nov. 8, 2016. https://thewomenintechshow.com/2016/11/08/ai-that-thinks-in-pictures-with-maithilee-kunda/

# X. PROFESSIONAL SERVICE

## Scientific Leadership

1. Helped organize *Dagstuhl Seminar 22422: Developmental Machine Learning: From Human Learning to Machines and Back.* Seminar to take place in October 2022.

2. Chair, Member Abstracts Committee, CogSci Organizing Committee, 2019.

3. Helped obtain funding for and co-organize NSF Convergence workshop on *Autism, Innovation, and the Workforce.* November 2018.

   - I also succeeded in arranging a high-profile visit from Temple Grandin to speak at the conference and at multiple events on the Vanderbilt campus, including a visit to my Imagery-Based AI class. https://www.youtube.com/watch?v=LLrU1NUv7TA
   - "Grandin rejects low expectations, insists workforce critically needs people with autism." *Vanderbilt News,* Nov. 30, 2018. https://news.vanderbilt.edu/2018/11/30/grandin-rejects-low-expectations-insists-workforce-critically-needs-people-with-autism-in-vanderbilt-lecture/

4. Co-chair, Working Group on Perceptual/Motor Functions as part of AAAI Common Model of Cognition symposium series, 2018.

5. Invited expert, *Workshop on Human-Machine Teaming*, Air Force Research Laboratory and Wright Brothers Institute, December 17-19, 2018, Dayton, OH.

6. Faculty investigator and core member of the founding team, Vanderbilt Frist Center for Autism and Innovation, 2017 – present.

7. Chair, Organizing Committee, Neuro-diverse: A Symposium on Autism, Neuroscience, and Perceptual Thinking, 2016.

8. Chair, Organizing Committee, Joint Meeting for NSF Expeditions on Computational Behavioral Science and Socially Assistive Robotics, Georgia Tech, 2014.

9. Co-chair, Organizing Committee, AAAI Workshop on Visual Representations and Reasoning, 2010.

**Institutional and Departmental Service**

1. Organized a CS departmental t-shirt contest that received 17 design submissions, was voted on by 269 students, staff, and faculty, and resulted in orders for 450 t-shirts.

2. Founder and organizer, GradCS@Vanderbilt seminar series, 2021-2022.

3. Undergraduate academic advisor, Department of Electrical Engineering and Computer Science, Vanderbilt University, 2016 – present.

4. Data Science Next Generation Committee, 2020.

5. EECS seminar series organizer, Department of Electrical Engineering and Computer Science, Vanderbilt University, 2017 – 2019.

6. Task force, trans-institutional M.S. in data science, Vanderbilt University, 2017.

7. Faculty search committee, Department of Electrical Engineering and Computer Science, Vanderbilt University, 2016-2017, 2017-2018, 2019-2020, 2020-2021, 2021-2022.

8. School Advisory Committee (SAC), School of Interactive Computing, Georgia Tech, 2014-15.

**Senior Program Committee / Meta-Review**

1. National Conference of Association for Advancement of Artificial Intelligence (AAAI), 2019.
2. Annual Meeting of the Cognitive Science Society (CogSci), 2019, 2020.

**Program Committee / Conference Review**

1. ACM Conference on Creativity and Cognition (C&C)
2. Advances in Cognitive Systems (ACS)
3. Annual Conference of the Cognitive Science Society (CogSci)
4. IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)
5. International Conference on Computational Creativity (ICCC)
6. International Conference on Machine Learning (ICML)
7. International Conference on Theory and Application of Diagrams (DIAGRAMS)
8. International Joint Conference on Artificial Intelligence (IJCAI)
9. National Conference of Association for Advancement of Artificial Intelligence (AAAI)

**Journal Review**

1. Nature Machine Intelligence
2. Cognitive Science
3. Cortex
4. Journal of Autism and Developmental Disorders
5. Psychological Review
6. Research in Developmental Disabilities
7. ASME Journal of Mechanical Design

**Proposal Review**

1. US National Science Foundation, 2015, 2016, 2020, 2021.
2. Natural Sciences and Engineering Research Council of Canada (NSERC).
3. Leverhulme Trust, United Kingdom.

**Professional Memberships**

1. Association for the Advancement of Artificial Intelligence (AAAI)
2. Association for Computing Machinery (ACM)
3. Cognitive Science Society (CogSci)
4. Computer Vision Foundation (CVF)
5. International Society for Autism Research (INSAR)