Andrew H. Fagg

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Education

- Ph.D. in Computer Science from the University of Southern California (1996)
- M.S. in Computer Science from the University of Southern California (1991)
- B.S. in Applied Mathematics, Computer Science Track (with honors) from Carnegie Mellon University (1989)

Professional Positions

2026 - current	**Associate Director**, Data Institute for Societal Challenges, University of Oklahoma
2024 - 2026	**Senior Faculty Fellow**, Data Institute for Societal Challenges, University of Oklahoma
2021 - 2024	**Associate Director**, Data Institute for Societal Challenges, University of Oklahoma
2017 - current	**Brian E. and Sandra O'Brien Presidential Professor**, University of Oklahoma
2008 - current	**Member,** Institute for Biomedical Engineering, Science and Technology, University of Oklahoma
2004 - current	**Associate Professor,** School of Computer Science, University of Oklahoma
1998 - 2004	**Research Scientist,** Department of Computer Science, University of Massachusetts, Amherst
1996 - 1998	**Senior Postdoctoral Research Associate,** Autonomous Learning Laboratory

In my position with the Data Institute for Societal Challenges, I work at a range of levels to facilitate the adoption of data analysis tools in research across the University of Oklahoma campuses. My activities (paused 2025-2026 while on sabbatical) include:

- Facilitating discussions aimed at forming new research collaborations in a range of domains.
- Mentoring researchers as they begin to adopt new data analysis (especially, machine learning) tools in their research processes.
- Leading and facilitating cross-disciplinary research proposals.
- Aiding/mentoring research teams in the use of machine learning and supercomputer tools. This includes training research groups, including students, in the use of these tools.

Scholarship Summary

- Funding: personal total is $5,594,499; award total is $34,660,040
- Publications: 35 journal articles; 56 refereed conference articles; 9 book chapters
- Google Scholar Statistics: H-index: 34, i10-index: 72, citations: 5353
- Research areas: machine learning, robotics, computational neuroscience, biological motor control, modeling and analysis of weather data

Funding: External

- Neeman, H. J., Fagg, A. H., McGovern, A., Davila, J., Rodrigues, N., Wimberly, M., Hassell, J., and others *OneOklahoma Cyberinfrastructure Initiative Artificial Intelligence Consultants (OneOCII-AIC): Developing a pipeline of AI consultants and workforce training program.*, National Science Foundation, Office of Advanced Cyberinfrastructure (OAC), 10/1/2025 - 9/30/2028, Award #2538234, $1,800,000, Personal credit: $180,000
- Snook, N., McGovern, A., Fagg, A. H., Xue, M. *CAIG: Investigating Tornadogenesis via Explainable Deep Learning*, National Science Foundation, Collaborations in Artificial Intelligence and Geosciences (CAIG), 8/01/2024 - 7/31/2027, Award #2425732, $886,172, Personal credit: $177,234
- Neeman, H., Ebert, D., Fagg, A. H., McGovern, A. *CC* Compute: OneOklahoma Cyberinfrastructure Initiative Research Accelerator for Machine Learning (OneOCII-RAML)*, National Science Foundation OAC (award #2201561), 6/1/2022 - 5/31/2025, $400,000, Personal credit: $40,000
- Madhoun, M., Fagg, A. H., Ali, I. A., *Utilizing Artificial Intelligence in Aiding Colonoscopy Bowel Preparation*, Department of Veterans Affairs, Pilot Award. $50,000, Personal credit: $13,075
- Prosser, L., Smith, B., Kolobe, T. H.-A. *Progressive Locomotor Learning in Infants at Risk for Cerebral Palsy*, 2020-2025, National Institute of Child Health and Human Development (Award #1R01HD098364-01A1). OU-Norman PI: Fagg, A. H., $807,249, Personal credit: $315,623.50
- McGovern, A., Tissot P., Thorncroft, C., He, R., and Ebert-Uphoff, I. *AI Institute: Artificial Intelligence for Environmental Sciences*, 2020-2025, National Science Foundation (Award #2019758). Total budget: $20,000,000. Senior personnel. Personal credit: $2,000,000
- Fagg, A. H. (subcontract from OU-HSC) *Project Phoenix: Pilot Intervention for Smokers Who Are Not Ready to Quit Smoking*, Personal credit: $15,509
- Fagg, A. H. *Machine Learning Methods for Predicting ESP Failures.* 8/1/18 – 12/15/18; Baker-Hughes/General Electric. $40,000
- Fagg, A. H. (OU PI), *Work Performance in Men with Transfemoral Amputation.* 6/1/17 – 6/1/18; National Institutes of Health (subcontract from C. Dionne at the OU Health Sciences Center), Personal credit: $7,500
- Fagg, A. H., Miller, D. P., Ding, L. and Kolobe, T. *NRI-Small: Robot Assistants for Promoting Crawling and Walking in Children at Risk of Cerebral Palsy,* 10/1/12 – 9/30/17; NSF National Robotics Initiative, Award Number 1208639; Total Award Amount: $1,135,000, Personal credit: $385,900
- Oweiss, K., Fagg, A. H., Hatsopolous, N. G. and Slutzky, M. W. *Reliable Central-Nervous-System Interfaces (RCI)*, 12/12/11–6/11/13, Defense Advanced Research Projects Agency (Michigan State University subcontract); Personal credit: $208,029

- Rennaker, R. and Fagg, A. H. *Ensemble Coding in Olfactory Cortex,* 5/1/10 – 4/31/12; National Institutes of Health ARRA Supplement (University of Texas Dallas Subcontract); Personal credit: $138,977

- Miller, L. E., Hatsopolous, N. G., Fagg, A. H. and Solla, A. *Development of a Bidirectional Brain Machine Interface,* 5/1/10 – 4/31/14; National Institutes of Health Bioengineering Research Partnership. Personal credit: $841,797

- Kolobe, T., Fagg, A. H., Miller, D. A., Pidcoe, P., and Stoner, J. A. *Prone locomotion in infants with or at risk for disabilities*, National Institute on Disability and Rehabilitation Research; OU total: $69,870, Personal credit: $34,935

- Fagg, A. H., *Development of a Bidirectional Brain Machine Interface,* Budget Period: 5/1/05 – 4/31/09; Sponsor: NIH (Northwestern University Subcontract); Personal credit: $580,494.00

- Fagg, A. H., McGovern, A., Fierro, R., Hougen, D. F., and Lane, T., *REU Site: Integrated Machine Learning Systems,* Budget Period: 1/01/08 – 12/31/10; Sponsor: NSF; Award Number: 0755462; Award amount: $310,952; Personal credit: $90,176

- McGovern, A. and Fagg, A. H., *REU Supplement: Integrated Machine Learning Systems,* Budget Period: 5/01/08 – 9/01/08; Sponsor: Oklahoma EPSCoR; Award amount: $5,000; Personal credit: $2,500

- Fagg, A. H., Hougen, D. F., Droegemeier, K. K., Lane, T., and McGovern, A., *REU Site: Embedded Machine Learning Systems,* Budget Period: 2/15/05 – 1/31/08; Sponsor: NSF; Total Award Number: 0453545; Award Amount: $299,997.00; Personal credit: $74,999

- Brown, A. and Fagg, A. H., *PulsePool Art Installation,* Budget Period: 9/06 – 5/07; Sponsors: Turbulence, Boston Museum of Science, and Rhizome.org, Total Award Amount: $4,000; Personal credit: $2,000

- Fagg, A. H., *Learning Grasp Affordances for Control of Humanoid Robot Grasping and Manipulation,* Budget Period: 10/7 – 12/7; Sponsor: NASA/EPSCoR; Personal credit: $1,500;

- Brown, A. and Fagg, A. H. *Bion* (Tilles Center Installation); Period: 1/30/06 – 4/30/06; Sponsored in part by Elliott Stroka, Director of the Institute of Arts and Culture, Hillwood Art Museum at Long Island University. This sponsorship covered the transportation and installation costs of Bion.

- Brown, A. and Fagg, A. H. *Bion* (Living Arts of Tulsa Installation); 9/7/06 – 9/28/06; Sponsored in part by the Andy Warhol Foundation for the Visual Arts. This sponsorship covered the transportation and installation costs of Bion.

- Grupen, R. A., Mahadevan, S. R., and Fagg, A. H., *Instructing Robotic Assistants to Acquire Autonomous Behavior,* 8/1/02-12/31/04; Sponsor: DARPA (NASA/Johnson Space Center Subcontractor); Total: $1,305,000; Personal credit: $435,000

- Neeman, H. J., Roe, B. J., Wu, D. and Severini, H., *CI-TEAM Demonstration Project: Cyberinfrastructure Education for Bioinformatics and Beyond*, National Science Foundation, 12/1/06 - 11/30/08, Personal credit: $0

Funding: Internal

- Landers, T., Enrico, E., Brown, A. and Fagg, A. H. *Center for Symbiotic Media Research*, Office of the Vice President for Research, and Colleges of Fine Arts and Engineering, 7/1/08–6/30/09, $55,000; Personal credit: $27,500

- Brown, A. and Fagg, A. H. *Presidential Dream Course: Smart Art Spaces*, Office of the Provost, 1/1/09–5/15/09, $20,000; Personal credit: $10,000
- Hougen, D. F. , Cheng, Q., McGovern, A., Dong, Y. and Fagg, A. H. *Computer Science Graduate Fellowship Program*, Graduate College and College of Engineering, University of Oklahoma, 08/06 – 05/15. This fellowship program supports computer science graduate students who are working toward their PhD and has been critical to our recruitment and maintenance of quality students. I have two students funded under this program (Di Wang and Thomas Palmer).
- Brown, A. and Fagg, A. H. *Bion* (original development of piece); 12/22/5 – 12/31/6; Sponsor: Offices of the President, Vice President for Research (the Research Council); Colleges of Fine Art and Engineering; and Schools of Art and Computer Science; Total: $30,000; Personal credit: $15,000

Teaching Experience

- **Advanced Machine Learning** (CS 5043): 2018-
  Graduate course that I developed. First introduction to Deep Learning, and includes use of a supercomputer and GPUs.
- **Machine Learning Practice** (CS/DSA 5970): 2019-
  Graduate course that I developed for both in-person and on-line, asynchronous delivery. Covers conventional machine learning methods (not deep learning), and includes discussions of choosing and evaluating models for given problems.
- **Introduction to Operating Systems** (CS 3113): 2018–2020.
  First undergraduate course in OS.
- **Embedded Real-Time Systems** (AME 3623): 2005–2021
  I developed this required undergraduate course for the OU aerospace program. Students learn the fundamentals of building circuits involving microprocessors, sensors and actuators; and programming of real-time systems.
- **Programming Structures and Abstractions** (CS 2334): 2009–2010, 2015–2017
  Second programming class in the CS sequence. Focus is on object-oriented design and programming. My projects have involved working with Oklahoma Mesonet and infant kinematics data.
- **Advanced Mobile Manipulation** (CS 5970): 2012–2014
  Hands-on robotics course that focuses on sensing, planning and control for combined mobile and manipulation systems.
- **Introduction to Computer Programming** (CS 1323): 2014
  First programming class in the CS sequence. Focus is on procedural programming.
- **Freshman Engineering Experience: Computing in the Physical World** (ENGR 1411): 2011–2012
  My version of this course exposed engineering students to the fundamentals of computational thinking using small embedded boards.
- **Empirical Methods for Computer Science** (CS 5453): 2006, 2008, 2010
  I developed this course for graduate students working in empirical areas of CS. We focus on experiment design and evaluation, as well as statistical methods (including sample-based methods).
- **Embedded Systems** (CS 4163/5163): 2007–2009
  I developed this cross-listed undergraduate/graduate course. Fundamentals of designing and implementing systems involving sensors, microprocessors and actuators.

- **Freshman Engineering Orientation** (ENGR 1420): 2007
  My version of this course exposed engineering students to the fundamentals of computational thinking using a range of physical computing and interactive computing exercises.
- **Seminar on Sm[Art] Spaces** (CS 5973): 2007
  I developed this course with Adam Brown. We focused on embedded systems for interactive digital art.
- **Seminar on Neuro/Cognitive Robotics** (CS 5973): 2006
  Seminar that explored the intersection of neuroscience, cognitive psychology and robotics.
- **Graduate/Undergraduate Embedded Systems** (UMass CS 503/591c): 2003
- **Undergraduate Operating Systems** (UMass CS 377): 2002–2003
- **Graduate Computational Psychology Seminar**, co-instructor (UMass Psych 891E): 2003
- **Wearable Computing Seminar** (UMass CS 691w): 2001–2002
- **Computational Neuroscience Seminar** (UMass CS/NSB 691c): 1999–2000 (co-instructor 1999)

Publications

Journal Articles

1. Fagg, A. H., Diges, M., Zdrale Rajala, A., Habibi, G., Suminski, A. J., Populin, L. (in revision) *Deep Recurrent Q-Learning Captures the Behavioral Dynamics Observed in Deterministic and Stochastic Task Switching*
   - Preprint on BioRxiv DOI:`10.64898/2026.03.10.710844`
   - Published data repository DOI: `10.5281/zenodo.18926284`
   - In progress code repository DOI: `10.5281/zenodo.18932109`.
   - Code repository: `https://github.com/Symbiotic-Computing-Laboratory/cognitive_flexibility_public`
2. Ghazi, M. A., Shotande, M. O., Torbati, R. J., Skorup, J., O'Leary, S. O., Alcott, M., Smith, B. A., Prosser, L. A., Kolobe, T. H.-A., Fagg, A. H. (in preparation). *Robotic Rehabilitation Device for Promoting Prone Locomotion Skills in Infants with Cerebral Palsy.*
3. Shotande, M. O., Skorup, J., O'Leary, S. O., Alcott, M., Smith, B. A., Prosser, L. A., Ghazi, M., Kolobe, T. H.-A., Fagg, A. H. (in revision). *A Graphical User Interface for Individualized Locomotor Training of Infants With or at High Risk of Cerebral Palsy Using a Robotic Assistive Device*
4. Pierce, S. R., Ghazi, M. A., Prosser, L. A., Kolobe, T. H.-A., Fagg, A. H., Skorup, J. C., Ruwaih, N. I., Jawad, A. F., and Smith, B. A. (2026), *The Spontaneous Leg Movements of Infants Differentiate Later Risk for Cerebral Palsy Status*, Pediatric Neurology, DOI: `doi.org/10.1016/j.pediatrneurol.2026.04.003`
5. White, M. C., Tissot, P. E., Woodall, J., Duff, C., Marrero-Colominas, H., Lagerquist, R., King, S. A., Fagg, A. H., Sterba-Boatwright, B., Shotande, M. O., and Stewart, J. Q. (2026), *Machine Learning Uncertainty Quantification for Extreme Cold Water Events*, Journal of Artificial Intelligence for the Earth Systems, **5(3)**, American Meteorological Society, DOI: `10.1175/AIES-D-25-0058.1`

6. Harris, J., Byrum, J. N., McKinney, C. B., Fairchild, V., Wu, D., Fagg, A. H., Rodgers, K. (2025) *Building a neural network model to define DNA sequence specificity in V(D)J recombination,* Nucleic Acids Research, **53(12)**:gkaf551. DOI: doi.org/10.1093/nar/gkaf551

7. McGovern, A., Ebert-Uphoff, I., Barnes, E. A., Bostrom, A., Cains, M. G., Davis, P., Demuth, J. L. Diochnos, D. I. Fagg, A. H. Tissot, P., Williams, J. K., Wirz, C. D. (2024) *AI2ES: The NSF AI Institute for Research on Trustworthy AI for Weather, Climate, and Coastal Oceanography.* AI Magazine. DOI: 10.1002/aaai.12160

8. Prosser, L. A., Skorup, J., Pierce, S. R., Jawad, A. F., Fagg, A. H., Kolobe, T. H.-A., Smith, B. A. (2023). *Locomotor Learning in Infants at High Risk for Cerebral Palsy: A Study Protocol* , Frontiers in Pediatrics, **11**, DOI: 10.3389/fped.2023.891633

9. Veirs, K. P., Fagg, A. H., Rippetoe, J., Baldwin, J. D., Haleem, A. M., Jeffries, L. M., Randall, K., Sisson, S. B., and Dionne, C. P. (2023). *Effects of First Effects of Dancer-Specific Biomechanics on Adolescent Ballet Dancers' Posture En Pointe and Factors Related to Pointe Readiness: A Cross-Sectional Study* Journal of Medical Problems of Performing Artists, **38(8)**:155–163, Sept, DOI: 10.21091/mppa.2023.3019

10. Shotande, M. O., Veirs, K. P., Day, J. D., Ertl, W. J., Dionne, C. P. and Fagg, A. H. (2022). *Comparing Temporospatial Performance During Brisk and Self-Paced Walking by Men With Osteomyoplastic Transfemoral Amputation and Controls Using Pressure and Muscle Activation Peak Times*, Frontiers in Rehabilitation Sciences, **3**, DOI: 10.3389/fresc.2022.848657, May

11. Veirs, K. P., Fagg, A. H., Haleem, A. M., Jeffries, L. M., Randall, K., Sisson, S. B. and Dionne, C. P. (2022). *Application of Biomechanical Foot Models to Evaluate Dance Movements Using Three Dimensional Motion Capture: A Review of the Literature* Journal of Dance Medicine and Science, DOI: 10.12678/1089-313X.061522a, **26(2)**:69–86, June

12. Chandrashekhar, R., Wang, H., Rippetoe, J., James, S., Fagg, A. H. and Kolobe, T. H.-A. (2022) *The Impact of Cognition on Motor Learning and Skill Acquisition using a Robot Intervention in Infants with Cerebral Palsy*, Frontiers in Robotics and AI, **9**, DOI: 10.3389/frobt.2022.805258, February

13. Dionne, C. P., Regens, J. L., Day, J. D., Fagg, A. H., Bryant, D. J., Veirs, K. P. and Ertl, W. J. (2022) *Technical Report: Gait Performance at 2 Speeds and Carrying Capacity by Men with an Osteomyoplastic Transfemoral Limb and Comparable Controls*, Journal of Prosthetics and Orthotics, **34(2)**:e109–e113, JPO14-59R1, DOI: 10.1097/JPO.0000000000000352

14. Veirs, K. P., Baldwin, J. D., Fagg, A. H., Haleem, A. M., Jeffries, L., Randall, K., Sisson, S., and Dionne, C. P. (2021) *Survey of Ballet Dance Instructors and Female Dancers Concerning Perception of Dance-Related Pain and Injury,* Orthopaedic Physical Therapy Practice

15. Veirs, K. P., Baldwin, J. D., Rippetoe, J., Fagg, A., Haleem, A., Jeffries, L., Randall, K., Sisson, S. and Dionne, C. P. (2020). *Multi-Segment Assessment of Ankle and Foot Kinematics during Relevé Barefoot and En Pointe.* Orthopaedic Physical Therapy Practice, **32(3)**:167–175

16. Kolobe, T. H.-A., Fagg, A. H. (2019). *Robot Reinforcement and Error-Based Movement Learning in Infants with and without Cerebral Palsy.* Physical Therapy **99(6)**:677–688, DOI: 10.1093/ptj/pzz043

17. Vaidya, M., Balasubramanian, K., Southerland, J., Badreldin, I., Eleryan, A., Shattuck, K., Gururangan, S. Slutzky, M. W., Osborne, L., Fagg, A. H., Oweiss, K. and Hatsopoulos, N. G. (2017) *Emergent Coordination Underlying Learning to Reach-to-Grasp with a Brain-Machine Interface,* Journal of Neurophysiology, electronically published, PMID:29357477, DOI: 10.1152/jn.00982.2016

18. Balasubramanian, K., Vaidya, M., Southerland, J., Badreldin, I., Eleryan, A., Takahashi, K., Qian, K., Slutzky, M. W., Fagg, A. H., Oweiss, K. and Hatsopoulos, N. G. (2017) *Changes in Cortical Network Connectivity with Long-term Brain-Machine Interface Exposure after Chronic Amputation,* Nature Communications, **8 (1796)**, DOI: 10.1038/s41467-017-01909-2

19. Xiao, R., Qi, X., Patino, A., Fagg, A. H., Kolobe, T. H.-A., Miller, D. P. and Ding, L. (2016) *Characterization of Infant Mu Rhythm Immediately before Crawling: A High-Resolution EEG Study*, NeuroImage, **146**:47–57, PMID: 27847348, DOI: 10.1016/j.neuroimage.2016.11.007

20. Eleryan, A., Vaidya, M., Southerland, J., Badreldin, I., Balasubramanian, K., Fagg, A. H., Hatsopoulos, N. G. and Oweiss, K. (2014) *Tracking Single Units in Chronic, Large scale, Neural Recordings for Brain Machine Interface Applications,* Frontiers in Neuroengineering, **7(23)**, PMCID: PMC4086297

21. Shah, A., Barto, A. G., Fagg, A. H. (2013) *A Dual Process Account of Coarticulation in Motor Skill Acquisition*, Journal of Motor Behavior, **45(6):**531–549 DOI: 10.1080/00222895.2013.837423, PMID: 24116847

22. Willett, F. R., Suminski, A. J., Fagg, A. H. and Hatsopoulos, N. G. (2013) *Improving Brain-Machine Interface Performance by Decoding Intended Future Movements,* Journal of Neural Engineering, **10(2)**:206011, April. PMCID: PMC4019387

23. Suminski, A. J., Tkach, D. C., Fagg, A. H., and Hatsopoulos, N. G. (2010) *Incorporating Feedback from Multiple Sensory Modalities Enhances Brain-Machine Interface Control,*Journal of Neuroscience, **30(50):**16777-16787, December, PMCID: PMC3046069

24. Platt, R., Fagg, A. H., and Grupen, R. A. (2010) *Null Space Grasp Control: Theory and Experiments*, IEEE Transactions on Robotics, **26(2)**:282–295, April

25. Fagg, A. H., Ojakangas, G., Miller, L., Hatsopoulos, N. (2009) *Kinetic Trajectory Decoding Using Motor Cortical Ensembles* , IEEE Transactions on Neural Systems and Rehabilitation Engineering, **17(5)**:487–496, PMID:19666343, DOI: 10.1109/TNSRE.2009.2029313

26. Ou, S., Fagg, A. H., Shenoy, P., Chen, L. (2009) *Application of Reinforcement Learning in Multisensor Fusion Problems with Conflicting Control Objectives,* Intelligent Automation and Soft Computing, **15(2):**277–289

27. Fagg, A. H., Hatsopoulos, N. G., de Lafuente, V., Moxon, K. A., Nemati, S., Rebesco, J. M., Romo, R., Solla, S. A., Reimer, J., Tkach, D., Pohlmeyer, E. A., and Miller L. E. (2007) *Biomimetic brain machine interfaces for the control of movement,* Journal of Neuroscience, **27(44)**:11842–11846, PMID: 17978021

28. Morales, A., Sanz, P. J., del Pobil, A. P., and Fagg, A. H. (2006) *Vision-based three-finger grasp synthesis constrained by hand geometry* Robotics and Autonomous Systems, **54(6)**:419–512

29. Brock, O., Fagg, A. H., Grupen, R. A., Karuppiah, D., Platt, R., Rosenstein, M., (2005), *A Framework For Humanoid Control and Intelligence,* International Journal of Humanoid Robotics, **2(3):**301–336

30. Morales, A., Chinellato, E., Fagg, A. H., del Pobil, A. P. (2004) *Using Experience for Assessing Grasp Reliability,* International Journal of Humanoid Robotics, **1(4)**:671-691

31. Shah, A., Fagg, A. H., Barto, A. G. (2004) *Cortical Involvement in the Recruitment of Wrist Muscles,* Journal of Neurophysiology, **91:**2445 - 2456. PMID: 14749314

32. Fagg, A. H., Shah, A., Barto, A. G. (2002) *A Computational Model of Muscle Recruitment for Wrist Movements*, Journal of Neurophysiology, **88(6):**3348-3358, PMID: 12466451

33. Marcos, L., Oliveira, A. F., Grupen, R. A., Wheeler, D. S., and Fagg, A. H. (2000), *Tracing Patterns and Attention: Humanoid Robot Cognition* IEEE Intelligent Systems **15 (4):70–75**, July/August

34. Barto, A. G., Fagg, A. H., Sitkoff, N., Houk, J. C. (1999) *A Cerebellar Model of Timing and Prediction in the Control of Reaching*, Neural Computation **11**:565–594, PMID: 10085421

35. Fagg, A. H., Arbib, M. A. (1998) *Modeling Parietal-Premotor Interactions in Primate Control of Grasping*, Neural Networks **11(7/8)**:1277–1303

36. Grafton, S. T., Fagg, A. H., Arbib, M. A. (1998) *Dorsal Premotor Cortex and Conditional Movement Selection: A PET Functional Mapping Study*, Journal of Neurophysiology, **79(2)**:1092–1097

37. Grafton, S. T., Fagg, A. H., Arbib, M. A., Woods, R. (1996) *Functional Anatomy of Pointing and Grasping in Humans*, Cerebral Cortex, **6(2)**:226–237

38. Arbib, M. A., Bischoff, A., Fagg, A. H., Grafton, S. T. (1995) *Synthetic PET: Analyzing Large-Scale Properties of Neural Networks*, Human Brain Mapping, **2**:225–233

39. Montgomery, J. F., Fagg, A. H., Bekey, G. A. (1995) *The USC AFV-I: A Behavior-Based Entry in the 1994 International Aerial Robotics Competition,* IEEE Expert: Intelligent Systems and Their Applications, **10 (2)**:16–22, April

40. Fagg, A. H., Arbib, M. A. (1992) *A Model of Primate Visual/Motor Conditional Learning,* Journal of Adaptive Behavior, Summer, **1(1)**:3–37

Software

1. Fagg, A. H., Sewell, L., Shafaei, S., and Wilson Reyes, M. (2026). Zero2Neuro: a No-Code Toolbox for Constructing, Training, and Evaluating Deep Neural Network Models (v0.11.4).

   - Zenodo: `https://doi.org/10.5281/zenodo.20331885`
   - GitHub: `https://github.com/Symbiotic-Computing-Laboratory/zero2neuro`

2. Fagg, A. H., Sewell, L., and Wilson Reyes, M. (2026). Keras 3 Tools: a Toolkit for Constructing Deep Neural Network Models (v0.1.2).

   - Zenodo: `https://zenodo.org/records/21346654`
   - GitHub: `https://github.com/Symbiotic-Computing-Laboratory/keras3_tools`

Art Exhibitions

1. Brown, A., Fagg, A. H. (2017), *Bion,* **Consciencia Cibêrnética [?],** in São Paulo, Brazil, invited exhibition, June 8 – August 6

2. Brown, A., Fagg, A. H. (2010), *Bion,* **Emoção Art.ficial 5.0: Autonomia Cibernética,** in São Paulo, Brazil, invited exhibition, July 1 – September 15

3. Brown, A., Fagg, A. H. (2010), *Bion,* **Kresege Art Museum,** Michigan State University, September 15 – October 10

4. Brown, A., Fagg, A. H. (2007–2010), *Bion,* **Stephenson Research and Technology Center, University of Oklahoma,** Norman, OK, May 1, 2007 – January 15, 2010

5. Brown, A., Fagg, A. H. (2007), *Bion,* **Singularity in the Communal Tide, Pierro Gallery,** South Orange, NJ, May 13–July 15

6. Archinal, A., Bleckley, S., Courtney, C., Cunningham, P., Gay J., Goddard, B., Gomez, J., Hunt, T. Renyer, J., Roman, M., Brown, A., Fagg, A. H. (2007), *PulsePool,* **Boston Cyber-Arts Festival, Boston Museum of Science**, Boston, MA, April 21–29; co-supervisor of this student project

7. Brown, A., Fagg, A. H. (2006), *Bion,* **Bridge Art Fair,** Curated by: Rupert Ravens Contemporary, Miami, Florida, December

8. Brown, A., Fagg, A. H. (2006–2007), *Bion,* **Engaging Technology: A History & Future of Intermedia,** Ball State University, November 16 – March 11

9. Brown, A., Fagg, A. H. (2006), *Bion,* **Newark Between Us,** Newark, NJ, October 22–December 17

10. Brown, A., Fagg, A. H. (2006), *Bion,* **Living Arts of Tulsa,** Tulsa, OK, September 7–28

11. Brown, A., Fagg, A. H. (2006), *Bion,* **33rd International Conference and Exhibition on Computer Graphics and Interactive Techniques,** Boston, MA, July 30–August 3

12. Brown, A., Fagg, A. H. (2006), *Bion,* **iDEAs Exhibition at the International Digital Media and Arts Association Conference,** Miami University, Oxford, OH, April 6–8

13. Brown, A., Fagg, A. H. (2006), *Bion,* **Archival to Contemporary: Six Decades of the Sculptors Guild,** Hillwood Art Museum, Long Island University, Brookville, NY, January 30–May 15

Refereed Conference and Workshop Publications

1. Nkurumeh, KC., Farrand, J., Shou, G., Yuan, H., Kolobe, T. H.-A., Fagg, A. H., Ding, L. (2025) *Transient Brain-wide Co-activation Patterns in Infant Electroencephalography and Their Age-related Changes*, Proceedings of the 12th Annual International Conference on Neural Engineering (NER 2025), paper #1112

2. Ghazi, M. A., Prosser, L., Kolobe, T. H.-A., Fagg, A. H., Skorup, J. Pierce, S., Ruwaih, N., Smith, B. (2014) *Measuring Spontaneous Leg Movement of Infants At-Risk for Cerebral Palsy: Preliminary Findings,* Archives of Physical Medicine and Rehabilitation, Volume 105(4):e13–e14, DOI: `10.1016/j.apmr.2024.02.036`

3. Ghazi, M. A., Ding, L., Fagg, A. H., Kolobe, T. H.-A., Miller, D. P. (2017), *Vision-Based Motion Capture System for Tracking Crawling Motions of Infants.*, Proceedings of the 2017 IEEE International Conference on Mechatronics and Automation, Electronically Published

4. Patino, A., Fagg, A. H., Kolobe, T. H.-A., Miller, D. P. and Ding, L. (2017) *Dynamic Spatio-Spectral Patterns of Rhythmic EEG in Infants,* Proceedings of the 8th International IEEE/EMBS Conference on Neural Engineering (NER), Electronically Published

5. Xiao, R., Qi, X., Fagg, A. H., Kolobe, T. H.-A., Miller, D. P. and Ding, L. (2015) *Spectra of Infant EEG within the First Year of Life: A Pilot Study*, Proceedings of the 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS15), Electronically Published (ThFPoT14.7)

6. Ghazi, M., Nash, M., Fagg, A. H., Ding, L., Kolobe, T. H.-A. and Miller, D. P. (2015) *Novel Assistive Device for Teaching Crawling Skills to Infants*, Proceedings of the 10th Conference on Field and Service Robotics, Electronically Published (paper #58).

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7. Willett, F., Suminski, A. J., Fagg, A. H. and Hatsopoulos, N. G. (2014), *Differences in Motor Cortical Representations of Movement Variables between Action Observation and Action Execution and Implications for Brain-Machine Interfaces*, Proceedings of the 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), WC11.29

8. Suminski, A. J., Fagg, A. H., Willett, F., Bodenhamer, M. and Hatsopoulos, N. G. (2013) *Online Adaptive Decoding of Intended Movements with a Hybrid Kinetic and Kinematic Brain Machine Interface,* Proceedings of the 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), pp. 1583–1586

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20. Wang, D., Watson, B. T., Fagg, A. H. (2007) *A Switching Control Approach to Haptic Exploration for Quality Grasps,* Proceedings of the Robotics: Science & Systems 2007 Workshop on Sensing and Adapting to the Real World, Electronically Published

21. Nemati, S., Yeary, M., Yu, T.-Y., Wang, Y., Zhai, Y. and Fagg, A. H., (2007) *Spectral Signature Classification Using A Support Vector Classifier*, Proceedings of the IEEE Instrumentation and Measurement Technology Conference, Warsaw, May

22. Brown, A., Fagg, A. H. (2006), *Is it alive? Sensor Networks and Art,* (artist sketch) Proceedings of the 33rd International Conference and Exhibition on Computer Graphics and Interactive Techniques

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24. de Granville, C., Southerland, J., Fagg, A. H. (2006), *Learning Grasp Affordances Through Human Demonstration,* Proceedings of the International Conference on Development and Learning (ICDL'06), Electronically Published

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Book Chapters

1. de Granville, C., Wang, D., Southerland, J., Platt, Jr. R., and Fagg, A. H. (2009), *Grasping Affordances: Learning to Connect Vision to Hand Action*, "The Path to Autonomous Robots; Essays in Honor of George A. Bekey" (Gaurav S. Sukhatme, Ed.), Springer, pp. 59–80

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A Computational Model of The Cortical Mechanisms Involved in Primate Grasping, Ph.D. Dissertation, Computer Science Department, University of Southern California, 1996

Abstracts and Non-Refereed Conference Papers

1. Martz, R., Fagg, A. H., Berrington, A., McGovern, A., Potvin, C. K., Xue, M. Snook, N. A. (2026) *Mechanistic Machine Learning for Scientific Discovery in Tornadogenesis*, American Meteorological Society Madison Summit

2. Berrington, A., Snook, N. A., Xue, M., Potvin, C. K., McGovern, A., Martz, R., Fagg, A. H., (2026) *Impacts of Boundary Layer Turbulence on Supercell Morphology and Embedded Tornadoes within Tornado-Resolving CM1 Simulations*, American Meteorological Society Madison Summit

3. Berrington, A., N. A. Snook, M. Xue, A. McGovern, A. H. Fagg, C. K. Potvin, and R. Martz (2026). Development of a Large Library of High-Resolution Supercell Simulations for Explainable Deep Learning of Tornadogenesis. Roger M. Wakimoto Symposium, 8, Houston, TX, 26 Jan

4. Sewell, L., Wilson Reyes, M. E., Fagg, A. H. (2026) *Zero2Neuro: A Zero-Code Solution for Deep Neural Networks*, National Conference on Undergraduate Research (NCUR), Richmond, VA

5. Fagg, A. H., Tasnim, F., Kolobe, T. H.-A., James, S., Shotande, M. O., Skorup, J. C., Alcott, M., O'Leary, S., Smith, B. A., Prosser, L. A. (2026) *Non-Linear Models for Predicting Prone Training Outcomes of Infants at Risk for Cerebral Palsy*, Accepted to the American Academy for Cerebral Palsy and Developmental Medicine (AACPDM)

6. Kolobe, T. H.-A., Prosser, L. A., Smith, B. A., James, S., Skorup, J. C., Alcott, M., O'Leary, S., Ghazi, M., Wells, V., Pierce, S., Ruwaih, N., Paremski, A., Jawad, A. F., DeMauro, S., Fagg, A. H. (2026) *Determinants of Prone Locomotor Skill Acquisition in Infants at High Risk for Cerebral Palsy*, Accepted to the American Academy for Cerebral Palsy and Developmental Medicine (AACPDM)

7. Skorup, J. C., Kolobe, T. H.-A., James, S., Fagg, A. H. (2026) *Longitudinal development and acquisition of prone mobility in infants with and without risk for Cerebral Palsy* , Accepted to the American Academy for Cerebral Palsy and Developmental Medicine (AACPDM)

8. Smith B. A., Durazo-Arvizu, R., Skorup J. C., Ghazi, M. A., Kolobe T. H.-A., Fagg, A. H., Pierce, S. R., Ruwaih, N. I., Prosser, L. A. (2026) *Wearable sensor leg movement data from infants at risk for cerebral palsy predicts later diagnosis*, Accepted to the American Academy for Cerebral Palsy and Developmental Medicine (AACPDM)

9. Fagg, A. H., Kolobe, T. H.-A., Tasnim, F. (2026) *Measuring Infant Crawling Skill from Kinematic Data via Machine-Learned Models* , American Physical Therapy Association Combined Sections Meeting (APTA CSM) **Selected for Platform Presentation**

10. Alcott, M., Kolobe, T. H.-A., Prosser, L. A., Smith, B. A., Skorup, J. C., O'Leary, S., Ghazi, M., Paremski, A., Ruwaih, N., DeMauro, S., and Fagg, A. H. (2026) *Identifying Characteristics of Prone Locomotor Learning in Infants at High Risk for Cerebral Palsy*, American Physical Therapy Association Combined Sections Meeting (APTA CSM)

11. O'Leary, S., Kolobe, T. H.-A., Prosser, L. A., Smith, B. A., Alcott, M., Skorup, J. C., Ruwaih, N., Paremski, A., Jawad, A., Ghazi, M., and Fagg, A. H. (2026) *Relationship of Movement Error and Skill Acquisition in Infants at High Risk for Cerebral Palsy*, American Physical Therapy Association Combined Sections Meeting (APTA CSM) **Selected for Platform Presentation**

12. White, M. C., Tissot, P. E., Woodall, J. T., Duff, C., Marrero-Colominas, H. M., King, S. A., Fagg, A. H., Sterba-Boatwright, B., Shotande, M. O., and Stewart, J. Q. (2026), *Machine Learning Uncertainty Quantification for Cold-Stunning Events*, American Meteorological Society 106th Annual Meeting, Houston, TX, January 25 – 29, **Honorable Mention for Best AI Student Oral Presentation**

13. Sasser, M. X., Wilson Reyes, M., Kadiyala, V., Kurbanovas, A., Sulia, K. J., Thorncroft, C., Fagg, A. H. (2025), *Estimating Statewide Atmospheric Visibility From Camera Images* , American Meteorological Society 105th Annual Meeting, New Orleans, LA, January 12 – 16

14. Harris, J., Fagg, A. H., Wu, D., Rodgers, K. (2024) *Building a neural network model to define DNA sequence specificity in V(D)J recombination,* The Journal of Immunology, **212(1; Supplement)**:0658_7482. DOI: `10.4049/jimmunol.212.supp.0658.7482`

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16. Wilson Reyes, M., Kurbanovas, A., Fagg, A. H., Thorncroft, C. D., Sulia, K. J., Brotzge, J. A. (2024), *Generalized Visibility Estimation from Camera Images Using Deep Learning* , American Meteorological Society 104th Annual Meeting, Baltimore, MD, January 28 – February 1

17. Marrero-Colominas, H. M., Shotande, M., Fagg, A. H., White, M., Tissot, P., McGovern, A. (2024), *Estimating Uncertainty of Water Temperature Predictions for Cold-Stunning Events in the Laguna Madre* , American Meteorological Society 104th Annual Meeting, Baltimore, MD, January 28 – February 1

18. McGovern, A., Gagne, D. J., Ebert-Uphoff, I., Bostrom, A., Wirz, C. D., Chase R., Fagg, A. H., and Barnes, E. A. (2023) *Creating Personalized Learning Journeys for All Levels of Learning in AI with Applications to Weather and Climate.*, American Meteorological Society 103rd Annual Meeting, Denver, CO, January 8–12

19. Wilson Reyes, M., Kurbanovas, A., Fagg, A. H., Thorncroft, C. D., Sulia, K. J., Brotzge, J. A. (2023), *Comparative Visibility Estimation from New York State Mesonet Camera Images Using Deep Learning* , American Meteorological Society 103rd Annual Meeting, Denver, CO, January 8–12

20. Ferrera, V., Rothenberger, J. C., Wilson Reyes, M., Sutter, C., Fagg, A. H., and Diochnos, D. I. (2023) *Classifying Road Surface Conditions with Self-Trained Artificial Intelligence* , American Meteorological Society 103rd Annual Meeting, Denver, CO, January 8–12

21. Brewer, A., Kolobe, T. H.-A., Jeffries, L. and Fagg, A. H. (2023) *Dosing Effect of a Device Assisted Task-Specific Training Protocol*, American Physical Therapy Association Combined Sections Meeting, February, Abstrct #37949

22. Shotande, M. O., Skorup, J., Walters, S., Alcott M., Smith, B. A., Prosser, L. A., Kolobe, T. H.-A., and Fagg, A. H. (2023) *Graphical User Interfaces for Individualized Locomotor Training for Infants with or at High Risk of Cerebral Palsy Using a Robotic Assistive Device* American Academy for Cerebral Palsy and Developmental Medicine (AACPDM), poster presentation

23. Muller, Z. and Fagg, A. H. (2022) *A Generalized Bridge for Robot Operating System Messaging with a MBED Microcontroller.* Code release: github

24. Shotande, M. O., Veirs, K. P., Day, J. D., Ertl, W. J. J., Fagg A. H., Dionne, C. P. (2022) *Gait Performance of Men with Osteomyoplastic Transfemoral Amputation and Controls using Novel Peak Analysis*, College of Allied Health Research Day, March

25. Huffman, N., Fagg A. H., Kolobe, T. H.-A. (2022) *Automatically Identifying Developmental Micro-Milestones from Infant Motion Data*, College of Allied Health Research Day, March

26. Wagner, C., Fagg, A. H., Ghazi, M., Kolobe, T. H.-A. (2022) *Comparing Strategies Used by Infants with and without Cerebral Palsy during Motor Learning*, College of Allied Health Research Day, March

27. Rippetoe, J., Chandrashekhar, R. Wang, H., James, S. A., Fagg, A. H., Kolobe, T. H.-A. (2022) *How Cognition Impacts Motor Learning and Skill Acquisition Using a Robot Intervention for Cerebral Palsy*, College of Allied Health Research Day, March

28. Ghazi, M., Kolobe, T. H.-A., Fagg, A. H., Miller, D. P. (2022) *MoViT: Monocular Vision-Based Tracking*, College of Allied Health Research Day, March

29. Kolobe, T. H.-A., Ding, L., Fagg, A. H., Miller, D. P. (2019) *The Utility of EEG as a Measure of Motor Development and Intervention Outcomes*, World Congress for Physical Therapy, May

30. Kolobe, T. H.-A., Patino, A. Ding, L., Fagg, A. H., Miller, D. P. (2018) *Electroencephalography and Infant motor proficiency during development of Prone Locomotion*, Appears in the American Physical Therapy Association Combined Sections Meeting, New Orleans, LA, February 21-24, #2803944

31. Twum-Ampofo, N., Porter, A., Johnson, L., Fagg, A. H., Kolobe, T. H.-A. (2018) *Movement Proficiency and Center of Pressure in Infants with and without CP during Development of Prone Progression*, Appears in the American Physical Therapy Association Combined Sections Meeting, New Orleans, LA, February 21-24, #2803881

32. Kolobe T. H.-A. and Fagg, A. H. (2017) *Robotic Reinforcement and Error-based Movement Learning during Skill Acquisition in Infants with and without risk for Cerebral Palsy*, Developmental Medicine and Child Neurology, 59:76. DOI:10.1111/dmcn.116_13511

33. Twum-Ampofo, N. S., Kolobe, T. H.-A., Porter, A., Rauh-Johnson, L. and Fagg, A. H. (2017) *Postural Control And Movement Proficiency In Infants With And Without Cerebral Palsy Using The Self Initiated Prone Progression Crawler-2*, Appears in the American Physical Therapy Association Combined Sections Meeting, 29(1), San Antonio, TX, February 15-18, DOI: 10.1097/PEP.0000000000000035

34. Miller D., Fagg, A. H., Ding, L., Kolobe, H.-A. and Ghazi, M. (2015) *Robotic Crawling Assistance for Infants with Cerebral Palsy,* Proceedings of the AAAI Workshop on Assistive Technologies Emerging from Artificial Intelligence Applied to Smart Environments, January

35. Kolobe T. H.-A., Fagg, A. H., Pidcoe, P., Williams, P. (2015) *Effectiveness of Reward- and Error-Based Movement Learning in Enhancing Self-Initiated Prone Locomotion in Infants with or at Risk for Cerebral Palsy.* Proceedings of the The World Confederation of Physical Therapy Congress. Abstract A-613-0000-03707. Singapore. May. **Selected as a State of the Art Presentation and awarded the Outstanding Platform Presentation Award.**

36. Kolobe T. H.-A., Fagg, A. H., Pidcoe, P., Brown, D., Bulanda, M. and Rauh, L. (2015) *Development of prone locomotion in infants with or at risk for cerebral palsy.* Appears in the Combined Section Meeting Conference of the American Physical Therapy Association, Indianapolis, February.

37. Cox P. J., Kolobe T. H.-A., Fagg A. H. and Schmiedeberg T. (2015) *Prone Locomotion in Infants With Down syndrome using the SIPPC: A Pilot Study.* Appears in the Combined Section Meeting Conference of the American Physical Therapy Association, Indianapolis, February.

38. Kolobe, T. H.-A. and Fagg, A. H. (2014) *The effect of sensor robotic technology on the development of prone mobility in infants with or at risk for cerebral palsy.* Journal of Developmental Medicine & Child Neurology (Special Issue: Abstracts of the American Academy for Cerebral Palsy and Developmental Medicine 68th Annual Meeting), **56(5):99**

39. Kolobe T. H.-A., Fagg A. H. and Ng, Y (2014). *Comparison of the effect of robotic reinforced movement learning technology on the development of prone locomotion in infants with and without risk for cerebral palsy,.* Appears in the Annual Meeting of the Child Neurology Society, Columbus OH, October.

40. Kolobe, T. H.-A., Fagg, A. H, Pidcoe, P. and Miller D. (2014) *The effect of robotic reinforced movement learning technology on the development of prone mobility in infants at low and high risk for cerebral palsy.* Appears in the Annual Meeting for the Society of Neuroscience, Washington DC, November.

41. Suminski, A. J., Fagg, A. H., Willett, F., Bodenhamer, M. and Hatsopoulos, N. G. (2013), *Hybrid Online Adaptive Decoding of Intended Movements using a Feedback Error Learning Approach*, Proceedings of the Society for Neuroscience Annual Meeting, 835.13/PP22

42. Kolobe, T. H. A., Fagg A. H., Pidcoe P., Miller D. and Southerland J. (2013) *Kinetic-Kinematic Patterns in Acquisition of Prone-Locomotion in Infants with/out Cerebral Palsy,* Proceedings of the Fourth International Conference on Cerebral Palsy, Pisa, Italy, October 10–13, OP72

43. Badreldin, I., Balasubramanian, K., Vaidya, M., Southerland, J., Fagg, A. H., Hatsopoulos, N. G. and Oweiss, K. (2013) *Evaluation of Single Unit Error Contribution to Neural State Space Dynamics in Linear BMI Decoders,* Proceedings of Computational and Systems Neuroscience (Cosyne), II-31

44. Bodenhamer, M., Willett, F. R., Suminski, A. J., Hatsopoulos, N. G. and Fagg, A. H. (2012), *A Feedback Error Learning Approach to Online-Adaptive Decoding for Dynamic Prosthetic Arm Control,* Proceedings of Computational and Systems Neuroscience (Cosyne), I-38

45. Willett, F. R., Fagg, A. H., Suminski, A. J. and Hatsopoulos, N. G. (2012), *Improving neural control of a simulated arm by decoding intended future movement,* Proceedings of Computational and Systems Neuroscience (Cosyne), III-39

46. Catalino, T., Kolobe, T., McEwen, I., and Fagg, A. H. (2012). *Development of Prone Locomotion in Infants Using an Assistive Device*, Proceedings of the Combined Sections Meeting Conference of the American Association of Physical Therapy

47. Sloan, A. M, Dodd, O. T., Houck, K., Palmer, T. J., Fagg, A. H. and Rennaker, R. L. (2011), *Multi-Unit Responses in Behaving Rat Auditory Cortex Predict Frequency Discrimination Behavior*, Society for Neuroscience Annual Meeting, 173.24, November

48. Goossaert, E. and Fagg, A. H. (2009), *A Corrective Movement Approach to Online Adaptive Decoders* (poster), Proceedings of the Spring Meeting on the Neural Control of Movement, electronically published

49. Hatsopoulos, N. G., Suminski, A., Tkach, D. and Fagg, A. H. (2009) *Augmenting Brain-Machine Interfaces with Proprioceptive Feedback* (poster), Proceedings of the Spring Meeting on the Neural Control of Movement, electronically published

50. Tingle, D.T., Fagg, A.H., Rennaker, R.L. and Zee, M.C. (2008) *Decoding Odor from the Piriform Cortex Using a Free-Paced Classifier,* Society for Neuroscience Annual Meeting, student poster session

51. Nemati, S. Fagg, A. H., Hatsopoulos, N., Miller, L. (2007) *A Comparison of Linear and Kalman Filter Models for Arm Motion Prediction,* Proceedings of the Spring Meeting on the Neural Control of Movement, Electronically Published

52. Brown, A., Fagg, A. H. (2006), *The Bion Sensor Network,* Invited talk at Upgrade! International, November 30 – December 3

53. Shah, A., Barto, A. G., Fagg, A. H. (2006) *Biologically-Based Functional Mechanisms of Coarticulation,* Proceedings of the Spring Meeting on the Neural Control of Movement, Electronically Published

54. Goldberg, D., Fagg, A. H., Hatsopoulos, N., Ojakangas, G., Miller, L. (2006) *A Kernel-Based Approach to Predicting Arm Motion from MI Activity,* Proceedings of the Spring Meeting on the Neural Control of Movement, Electronically Published

55. Fagg, A. H., Grupen, R. A., Rosenstein, M., and Sweeney, J. (2005), *Intent Recognition as a Basis for Imitation Learning in Humanoid Robots*, New England Manipulation Symposium, Electronically Published

56. Fagg, A. H., Rosenstein, M. T., Platt, Jr., R., Grupen, R. A. (2004), *Extracting User Intent in Mixed Initiative Teleoperator Control,* Proceedings of the American Institute of Aeronautics and Astronautics Intelligent Systems Technical Conference, 2004-6309

57. Ou, S., Karuppiah, D. R., Fagg, A. H. and Riseman, E. (2004), *An Augmented Virtual Reality Interface for Assistive Monitoring of Smart Spaces,* Proceedings of the IEEE International Conference on Pervasive Computing and Communications, p. 33.

58. Fagg, A. H., Ou, S., Hedges, T. R., Brewer, M., Piantedosi M., Amstutz P., Hanson, A., Zhu, Z., Grupen, R., and Riseman, E. (2002), *Human-Robot Interaction Through a Distributed Virtual Environment*, Proceedings of the Workshop on Intelligent Virtual Environments and Human Augmentation (WIHAVE), Chapel Hill, NC, October 17–19.

59. Shah, A., Fagg, A. H., and Barto, A. G. (2002) *A Model of Wrist Movement Representation in Primary Motor Cortex,* Proceedings of the Spring Meeting on the Neural Control of Movement, Naples, FL, Electronically Published

60. Shah, A., Fagg, A. H., and Barto, A. G. (2001), *A Computational Model of Muscle Recruitment for Wrist Movements,* Proceedings of the Spring Meeting on the Neural Control of Movement, Sevilla, Spain, Electronically Published

61. Fagg, A. H., Alamed, B., and Warwick, J. (2001), *A Mobile Interactive Tour Guide: An Experiment in Wearable Computing*, Five College Multimedia Fair, February 28

62. Fagg, A. H., Shah, A., Barto, A. G. (2000) *A Model of Wrist Movement Representation in Muscle and Primary Motor Cortex* presented at the *USC Symposium on Computational and Cognitive Neuroscience*, Aug. 11-12, Los Angeles, CA

63. Fagg, A. H., Zelevinsky, L., Barto, A. G., Houk, J. C. (1998) *A Pulse-Step Model of Control for Arm Reaching Movements,* Proceedings of the Spring Meeting on the Neural Control of Movement

64. Fagg, A. H., Sitkoff, N., Barto, A. G., Houk, J. C. (1997) *A Computational Model of Cerebellar Learning for Limb Control,* Proceedings of the Spring Meeting on the Neural Control of Movement

65. Lewis, M. A., Fagg, A. H., Bekey, G. A. (1994) *Evolution of Complex Behaviors in Robotic Systems* SPIE's Robotics and Machine Perception Newsletter, March, **3(1)**, pp. 1–6

66. Fagg, A. H. (1993) *Reinforcement Learning for Robotic Reaching and Grasping,* Proceedings of the 1993 USC Workshop on Neural Architectures and Distributed AI: from Schema Assemblages to Neural Networks, Oct. 19-20, Los Angeles, California

67. Fagg, A. H., Tillery, S. I. H., Terzuolo, C. A. (1992) *Motion Velocity Profiles Influence the Perception of Hand Trajectories in the Absence of Vision,* Proceedings of the 22nd Meeting of the Society for Neuroscience, October, p. 647.9, Anaheim, California

Workshop and Tutorial Presentations

1. Platt, Jr., R., Fagg, A. H., Grupen, R. A. (2004), *Learning Dexterous Manipulation Skills Using the Control Basis* AAAI Fall Symposium on Real-life Reinforcement-Learning, Oct. 22–24

2. del Pobil, A. P., Fagg, A. H. (2000) *Robotics and Neuroscience*, Tutorial presented at Intelligent Robots and Systems (IROS), Oct. 31, Takamatsu, Japan

3. Fagg, A. H., Barto, A. G., Houk, J. C. (1998) *Learning to Reach Using Crude Corrective Feedback* presented at the NIPS workshop on *Movement Primitives: Building Blocks for Learning Motor Control,* Dec. 4, Breckenridge, CO

4. Fagg, A. H., Zelevinsky, L., Barto, A. G., Houk, J. C. (1997) *Using Crude Corrective Movements to Learn Accurate Motor Programs for Reaching,* presented at the NIPS workshop on *Can Artificial Cerebellar Models Compete to Control Robots,* Dec. 5, Breckenridge, CO

Invited Talks

1. Fagg, A. H. (2014), *A Robotic Crawling Assistant for Children at Risk for Cerebral Palsy*, Intelligent Robots and Systems (IROS) Workshop on Assistive Robotics for Individuals with Disabilities: HRI Issues and Beyond, Chicago, September 14.

2. Fagg, A. H. (2013), *Learning Grasp-Oriented Visual Representations through Interaction* Arizona State University, February 15

3. Fagg, A. H. (2007), *A Structured Approach for Control and Learning of Humanoid Reaching and Grasping Skills* Drury University. November 16

4. Fagg, A. H., Watson, B., Wang, D., Southerland, J. (2006), *Whole-Body Contact Sensing, Presentation,* Dexterous Robotics Laboratory, NASA/Johnson Space Center, May 22

5. Fagg, A. H. (2005), *Predicting Arm Motion from Motorcortical Activity* (talk and lab session), 5th International UJI Summer School on Robotics and Neuroscience, September, 19-23, 2005, Benicassim, Spain

6. Fagg, A. H. (2001), *Wearable Computers: A Changing (Inter)Face of Computing,* talk presented at Sandia National Laboratories, Livermore, CA, August 9, 2001

Technical Reports

1. Palmer, T. J., Bodenhamer, M. and Fagg, A. H. (2014), Multiple Instance Learning via Covariant Aggregation, Artificial Intelligence and Robotics Technical Report #1139, University of Oklahoma

2. Bodenhamer, M., Palmer, T. J., Sutherland D. and Fagg, A. H. (2012), Grounding Conceptual Knowledge with Spatio-Temporal Multi-Dimensional Relational Framework Trees Artificial Intelligence and Robotics Technical Report #1138, University of Oklahoma

3. de Granville, C., Fagg, A. H. (2008), *Learning Grasp Affordances Through Human Demonstration,* Artificial Intelligence and Robotics Technical Report #1137, University of Oklahoma
4. Thibodeau, B. J., Fagg, A. H., Levine, B. N. (2004), Signal Strength Coordination for Cooperative Mapping Technical Report #04-64, Department of Computer Science, University of Massachusetts, Amherst
5. Fagg, A. H. (2000), A Model of Muscle Geometry for a Two Degree-Of-Freedom Planar Arm Technical Report #00-03, Department of Computer Science, University of Massachusetts, Amherst

Honors and Awards

- Excellence in Research Grants Award, 2026
- Brian E. and Sandra O'Brien Presidential Professor, 2017–
- Outstanding Platform Presentation Award, 2015. Kolobe T. H.-A., Fagg, A. H., Pidcoe, P., Williams, P. *Effectiveness of Reward- and Error-Based Movement Learning in Enhancing Self-Initiated Prone Locomotion in Infants with or at Risk for Cerebral Palsy.* World Confederation of Physical Therapy Congress
- Nominated for the University-level Outstanding Teacher Award for the 2002-2003 academic year (University of Massachusetts).

Academic Advisees

- Ryan Martz (PhD co-supervisor): Mechanistic Machine Learning for Scientific Discovery in Tornadogenesis
- Vishnu Kadiyala (PhD committee chair): Identifying Methane Sources from Satellite-Based Sensors.
- Mel Wilson Reyes (MS committee chair): Estimating Atmospheric Visibility Distance from Single Camera Images. Completed: August, 2023.
- Monique Shotande (PhD committee chair): Modeling Relationships Between Brain/Muscle Activity and Locomotive Behavior, completed: December, 2022.
- Len Wilson (MS committee chair): Kinematic Sensing of Infant Trunk and Limb Motion, completed: Dec 2017.
- Sean McDonough (MS committee chair): Integrated Printing of Robot Structure and Circuit, completed: May 2016.
- Michael Craig (MS committee chair): Predicting Wrist Forces and Muscle Electromyograms from Cortical Data, completed August 2013.
- Kim Houck (MS committee chair): Automatically Identifying Stimuli from Firing Patterns in the Auditory Cortex of Rat, completed July 2012.
- Joshua Southerland (MS committee chair): Activity Recognition and Crawling Assistance Using Multiple Inexpensive Inertial Measurement Units, completed May 2012
- Thomas Palmer (PhD committee chair): Learning Representations for Action, completed May 2015
- Emmanuel Goossaert (MS committee chair, CS): A Corrective Movement-Based Approach to the Online Adaptation of Neural Decoders for Prosthesis Control, completed in January 2010.

- Matthew Bodenhammer (current PhD supervisor, CS): Spatiotemporal Multidimensional Relational Framework, computed May 2014
- Charles de Granville (MS committee chair, CS): Learning Grasp Affordances, completed in June 2008.
- Di Wang (MS committee chair, CS): A 3D Feature-Based Object Recognition System for Grasping, completed in December 2007.
  (PhD committee chair, CS): Learning Visual Features for Grasp Selection and Control, completed in May 2012.
- David Goldberg (MS committee chair, CS): Predicting Arm Motion from Cortical Activity, completed in December 2007.
- Robert Platt (co-chair of PhD committee, UMass CS): Control basis approach to learning for robot reaching, grasping, and manipulation, completed 2006.
- David Wheeler (MS committee chair, UMass CS): Learning Prospective Pick and Place Behavior, completed 2002.

Undergraduate Advisees

- Farzana Tasnim (2022-) Longitudinal Analysis of Infant Crawling Data
- Eric Truong (2022 honors thesis chair): Model Hyper-Parameter Search to Estimate Scores for the Movement Observation Coding Scheme of Crawling Skill Development
- Zachary Muller (2022): A Generalized Bridge for Robot Operating System Messaging with a MBED Microcontroller
- Reza Torbati (2021 honors thesis chair): Using Infant Kinematic Data to Automatically Estimate Scores for the Movement Observation Coding Scheme of Crawling Skill Development
- Nathan Huffman (2021 honors thesis chair): Identifying Salient Learning Events During Crawling Development with Micro-Milestones
- Will Spaeth (2019 honors thesis chair): Automatically Identifying Micro-Milestones during Development of Crawling Skills in Infants
- Jeremiah Yohannan (2019 honors thesis chair): EMG and Behavior during Gait in Lower Limb Amputees
- Delano Usiukiewicz (2017 capstone project): Robot Learning through Exploration
- Marissa Beene (2016 honors thesis co-chair): Autonomous Navigation of a Known Map with a Segway RMP
- Richard Miheli (2014 capstone project): Tactile Sensing for 3D-Printed Robot Fingers
- Chase Hennion (2013 capstone project): Dynamic Modeling of Infants with Cerebral Palsy
- Jacob Young (2013 capstone project): A 3D Printed Robotic Finger Actuated with Tendons
- Sam Weinger (chair, undergraduate honors thesis committee, UMass CS): Multimodal interfaces for wearable computers.
- Kevin Kohler (chair, undergraduate honors thesis committee, UMass CS): Multimodal interfaces for wearable computers.
- Joshua Gay (chair, undergraduate honors thesis committee, UMass CS): A hybrid reinforcement and supervised learning model of audio-visual calibration.

Research Experiences for Undergraduates (REU) Advisees

- Luke Sewell (2025-2026): Zero2Neuro: a No-Code Toolbox for Constructing, Training, and Evaluating Deep Neural Network Models
- Hector Marrero-Colominas (2024-2025): Estimating Uncertainty of Water Temperature Predictions for Cold-Stunning Events in the Laguna Madre
- Vincent Ferrera (2023): Site-Specific Calibration of Cameras for Visibility Estimation
- Max Sasser (2023-2024): Estimating Statewide Atmospheric Visibility From Camera Images
- Charlotte Cabrera (2022-2023): Automatic Camera-Specific Calibration for Estimating Atmospheric Visibility from New York Mesonet Station Data
- Chris Cephin (2022): Predicting Atmospheric Visibility from New York Mesonet Station Data
- Kaelia Okamura (2021): Predicting Atmospheric Visibility from New York Mesonet Station Images
- Melissa Wilson (2017): Predicting Locomotion Events from Infant Kinematics
- Zachary Connor (2017): Correlated Limb Movement during Infant Crawling Skill Learning
- Daniel Brigance (2016): Measuring Infant Movement Activity Using Inertial Measurement Units.
- Leslie Barnes (2016): Assistive Robot Design for Manufacturing.
- Bonnie Pope (2014–2016): Predicting the Outcome of Robot Actions
- Manu Kumar (2013–current): Tracking 3D Orientation of an Inertial Measurement Unit in the Presence of a Varying Magnetic Field
- Elizabeth Craig (2011–2012): Design of a Dextrous Robotic Hand
- Ryan Alley (2010): Neutrally Buoyant, Interactive Art
- Cynthia Andujar (2010): Neutrally Buoyant, Interactive Art
- Dougal Southerland (2010): Scaling Up SMRF Trees with Cues
- Daniel Fennelly (2009): The Spatio-Temporal Multi-Dimensional Relational Framework (SMRF)
- Samuel Bleckley (2009): The Spatio-Temporal Multi-Dimensional Relational Framework (SMRF)
- Alex Eisner (2009): Face Recognition and Tracking for Human-Robot Interaction using PeCoFiSH
- Joshua Southerland (2009): Getting the Robot to School on Time: Mapping, Planning and Execution
- Derek Tingle (2008): Decoding Odor from Rat Olfactory Cortex.
- Samuel Bleckley (2008): Orgonome: a Synthetic Creature for Interactive Art.
- Rachel Shadoan (2008): Orgonome: Learning Interactive Behavior from Sparse Experience.
- Joshua Southerland (2008): Design of a Mobile Manipulation Robot for Human-Scaled Environments.
- Rudy Sandoval (2007): Learning Color Models to Segment and Map Robot Environments.
- Nicole Doorly (2007): A Robotic Mobile Manipulator Platform for Planning and Learning.
- Robert Lindsey (2007): A Dynamic Programming Approach to Mobile Robot Path Planning.

- Charles de Granville (2004-2006): Learning grasp affordances from demonstration. **Charles was named Outstanding Computer Science Senior by OU, and received an honorable mention for the 2007 CRA Outstanding Undergraduate Award**.
- Joshua Southerland (2004-2006): Learning pick-and-place task sequences from a human teacher.
- Brian Watson (2004-2006): Whole body contact detection with a 6-axis load cell.
- Elyse Steiner (2006): Learning pick-and-place task representations from human demonstration.
- Eric Sondhi (2002-2004): Formation of cortical representations of wrist movements in the primary motor cortex.
- Matthew Brewer (Summers 2000-2003): Localization and path planning for a mobile robot.
- Joshua Gay (2001-2004): Audio/visual calibration for the UMass Torso.
- Marwan Mattar (2004): Speech interfaces for robots.
- Reed Hedges (2001-2003): A virtual reality interface for multi-robot search-and-rescue tasks.
- Enrique Irigoyen (2003; New Mexico State University): Texture representations for subject tracking in a smart space.
- Christopher Atenasio (2002): Collision-free motion planning for a 14 degree-of-freedom, dual-arm robot.
- Peter Amstutz (2001-2002): A mobile virtual/augmented reality interface for wearable computers.
- Jonathan Flynn (2001): Multi-modal interfaces for wearable computers.
- David Whitehead (2001-2002): A neural model of visual and tactile fusion in the parietal and premotor cortices.
- Michael Piantedosi (2001-2002): audio spatialization for wearable computers.

Independent Study Advisees

- Yunjie Wen (PhD student, Industrial Systems Engineering): Scheduling Bridge Repair work following a Large-Scale Disaster (Spring 2019)
- Nana Safoah Twum-Ampofo (PhD student, Allied Health Sciences, OUHSC): Postural Sway Velocity and Sitting Acquisition Among Infants with and without the Risk for Cerebral Palsy (Spring, 2018)
- Charles de Granville (undergraduate): Using Learned Grasp Affordances as Reach Control Primitives (Fall 2006)
- Di Wang (graduate): A Hybrid Convex/Concave Grasp Controller for Haptic Exploration of Objects (Spring/Summer 2006)
- Shichao Ou (graduate): An Augmented Virtual Reality Interface for Assistive Monitoring of Smart Spaces. (Spring/Summer 2003)
- Michael Piantedosi (undergraduate): A 3D audio system for wearable computers. (Fall 2000)
- James Davis (graduate): Oscillation primitives for robot control. (Spring 2000)
- Benjamin Alamed (undergraduate): A Wearable Computer Tour Guide. (Spring 2000)

Professional Activities

2004–current

- Conference on Engineering in Medicine and Biology
- Journal/Conference paper review:
  - Journal of Autonomous Robotics
  - International Conference on Robotics and Automation
  - Neurocomputing Journal
  - Journal of Systems, Man, and Cybernetics
  - International Conference on Advanced Robotics
  - International Conference on Humanoid Robotics **(program committee member: 2006, 2008)**
  - Psychological Review (journal)
  - IEEE/RSJ International Conference on Intelligent Robots and Systems
  - Robotics Science and Systems workshop on "Robot Manipulation: Sensing and Adapting to the Real World" **(program committee member: 2007–2008)**
  - IASTED International Conference on Intelligent Systems and Control
  - Neural Computation (journal)
  - Machine Learning Journal
  - Journal of Neurophysiology
  - International Conference on Epigenetic Robotics
  - International Conference of the American Association of Artificial Intelligence
  - Journal of Artificial Intelligence Research
  - Transactions on Robotics
  - Public Library of Science
- Funding Review Panels:
  - National Science Foundation / National Robotics Initiative
  - Netherlands Organisation for Scientific Research (NWO)
- University Service
  - Faculty senate
  - Faculty senate executive committee
  - Faculty committee on academic integrity
  - Information Technology Council (2016-2025). Chair (2019-2022)
  - Graduate recruitment Committee
  - Speaker for Introduction to Engineering (ENGR 1410)
  - College of Engineering Committee on the Introduction to Engineering Curriculum
  - CS Research Committee
  - CS Computing Committee
  - Numerous laboratory tours to visiting students

- Miscellaneous:
  - Committee Chair, *Artificial Intelligence and Machine Learning at OU*, 2020, Organizing regular symposia, tutorial and grant collaboration meetings
  - Committee Chair, *Artificial Intelligence and Machine Learning at OU*, 2018-2019 (4 day event of academic talks, tutorials, workshops and competition)
  - Co-Instructor, *Drone Programming Workshop*, 2018-2019, Global Conference on Educational Robotics
  - Principal Investigator, *NRI-Small: Robot Assistants for Promoting Crawling and Walking in Children at Risk of Cerebral Palsy,* 2012–2017
  - Director, *OU/UNM REU Site on Integrated Machine Learning Systems,* 2008–2010
  - Director, *OU/UNM REU Site on Embedded Machine Learning Systems,* 2005–2008
  - Instructor for the *Interactive Art Workshop* at the Global Conference on Educational Robotics (middle and high school students), July 8–11, 2008 (co-taught with Adam Brown). This one day course focused on Finite State Machines and programming sensor network nodes for interactive art.
  - Instructor for the *K20 Research Experience for Science Teachers Institute* (middle school teachers), June 16–27, 2008 (co-taught with Amy McGovern). This nine day course focused on Finite State Machines and programming sensor network nodes for interactive art.
  - Judge, Oklahoma Botball competition, 2006 and 2008
  - External Mentor, year-long Engineering Senior Design Clinic Course at Smith College (Northampton, MA). Project: *Design of a Non-Visually Accessible Campus Mapping/Database Interface* (Course taught by Professor Susannah Howe), AY 2004–2005

Professional Organizations

- IEEE; Robotics Society; Computer Society
- Association for the Advancement of Artificial Intelligence (AAAI)

Other Organizations

Boy Scouts of America, Last Frontier Council

- Crew advisor (Crew 2019, Norman, OK), 2019–
- Scoutmaster (Troop 217, Norman, OK), 2020–
- Assistant Scoutmaster (Troop 217, Norman, OK), 2015–2020
- Den Leader (Pack 777, Norman, OK), 2011–2016
- Woodbadge Graduate (WB-2118), Course: 2011; Completed: 2013. This course focused on a wide range of leadership skills.