Curriculum Vita

CHARLES W. ANDERSON

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EDUCATION

1986	Ph.D.	**University of Massachusetts**, Amherst, Computer and Information Science *Learning and Problem Solving with Connectionist Systems,* Advisor: A. Barto
1982	M.S.	**University of Massachusetts**, Amherst, Computer and Information Science *Feature Generation and Selection by a Layered Network of Reinforcement Learning Elements: Some Initial Experiments*
1978	B.S.	**University of Nebraska**, Lincoln, Computer Science (Electrical Engineering Minor) *Clustering Methods and their Application to Multispectral Satellite Data*

EMPLOYMENT

2007–present	**Professor**, Department of Computer Science, Colorado State University
2015–present	**Faculty**, Graduate Degree Program in Ecology, Colorado State University
2011–present	**Faculty**, Systems Engineering Distance Program, Colorado State University
2010–present	**Faculty**, School of Biomedical Engineering, Colorado State University
1993–present	**Faculty**, Molecular, Cellular and Integrative Neurosiences Program, Colorado State University
1997–2007	**Associate Professor**, Computer Science Department, Colorado State University
2002	**Consultant**, Advanced Energy, Fort Collins, CO Applied research in fault and event detection, diagnosis, and prediction
1999–2001	**Consultant**, Visible Productions, Fort Collins, CO Applied research in machine learning for image segmentation and three-dimensional model construction
1991–1997	**Assistant Professor**, Computer Science Department, Colorado State University
1986–1990	**Senior Member of Technical Staff**, GTE Labs, Waltham, MA Research in machine learning, primarily in neural networks. Design and evaluation of novel methods for learning new features in multilayered neural networks. Studied applications in real-time signal processing and control, including quality-control of a fluorescent-lamp manufacturing process.
1979–1986	**Research Assistant**, University of Massachusetts Design and analysis of neural network learning algorithms. Development of simulation software, including graphical display of data and animation.
1984–1986	**Computer Graphics Consultant**, University of Massachusetts Design and implementation of graphics software for two and three-dimensional plots and animation of polymer reaction models.
1983	**Instructor**, Granby Library, Granby, MA Taught programming class for junior high and high school students.
1979	**Teaching Assistant**, University of Massachusetts Taught and graded for a Pascal programming course.
1977–1979	**Systems Analyst**, AGNET, University of Nebraska Worked with agricultural specialists in the development and maintenance of software used throughout the agricultural community for information retrieval, accounting, and the simulation of irrigation, home heat loss, animal nutrition and growth models.

RESEARCH INTERESTS

General machine learning and deep neural network learning algorithms with applications to image and signal processing and automatic control problems. Current research topics include deep reinforcement learning for optimum decision making and control, recognition of EEG patterns for brain-computer interfaces, and models of the atmosphere and climate change, and novel algorithms for parallel implementations of neural networks.

TEACHING INTERESTS

Artificial intelligence, deep learning, reinforcement learning, pattern recognition, other topics in computer science.

SABBATICAL LEAVES

2016, 6-12 **University of Rhode Island, Kingston, RI**. Conducted research in brain-computer interfaces with Dr. Walter Besio. Funding provided by National Science Foundation Award to Besio.

2007, 4–12 **Hamilton Institute, National University of Ireland, Maynooth, Ireland**. Conducted research in brain-computer interfaces and reinforcement learning in collaboration with Dr. Barak Pearlmutter and Dr. Tomas Ward. Funding provided by the US National Science Foundation for support of two graduate students Dr. Keith Bush and Dr. James Knight) who accompanied me, and by an E.T.S. Walton award from the Science Foundation of Ireland that culminated with my invited lecture *Translating Thoughts into Actions by Finding Patterns in Brainwaves*, at the Royal Irish Academy, Dublin, Ireland, December 4, 2007.

2007, 1–3 **IDIAP, Martigny, Switzerland**. Conducted research in brain-computer interfaces in collaboration with Dr. Jose del R. Millan. Partially funded by the US National Science Foundation for support of two graduate students (see above).

1999, 6–12 **University of Sydney, Sydney, Australia**. Conducted research in brain-computer interfaces in collaboration with Dr. Marwan Jabri.

PATENTS

1. Young, P.M., Anderson, C.W., Hittle, D.C., Kretchmar, R.M, *Control System and Technique Employing Reinforcement Learning Having Stability and Learning Phases*, Patent No. US 6,665,651. Date of Patent: Dec. 16, 2003.

2. Hittle, D., Anderson, C., Young, P.M., Delnero, C., and Anderson, M.L., *Combined proportional plus integral (PI) and neural network (NN) controller*, Patent No. US 7,117,045. Date of Patent: Oct. 3, 2006.

REFEREED JOURNAL PUBLICATIONS

Google Scholar: 14,402 citations, h-index 46, i10-index 102

1. A. Vibho, C. Rogat, E. Karavas, R. Mohammed, P. Ogadi, M. White, T. Salois, C. Anderson, M. W. Prairie, S. H. Frisbie, S. K. Gallant. (2024) Development of an affordable light emitting diode spectrophotometer paired with a Python program for calibration and linearity testing and the measurement of uranium(VI). *PLoS ONE*, vol. 19, no. 9, e0308516, Sept. 17, 2024.

2. Burzynska, A., Colmenares, A.M., Thomas, M., Anderson, C., Arciniegas, D., Calhoun, V., Choi, I.-Y., Kramer, A., Li, K., Lee, J., and Lee, P. (2024) Testing the Structural Disconnection Hypothesis: Myelin Content Correlates with Memory in Healthy Aging. *Neurobiology of Aging*, NBA-24-153R1, 2024.

3. Burzynska, A., Anderson, C., Arciniegas, D., Calhoun, V., Choi, I.-Y., Colmenares, A.M., Kramer, A., Li, D., Lee, J., Lee, P., and Thomas, M., (2024) Correlates of axonal content in healthy adult span: Age, sex, myelin, and metabolic health. *Cerebral Circulation-Cognition and Behavior*, vol. 6, pp. 100203, 2024.

4. Haynes, K., Stock, J., Dostalek, J., Grasso, L., and Anderson, C. (2024) Exploring the Use of Machine Learning to Improve Vertical Profiles of Temperature and Moisture. *Artificial Intelligence for the Earth Systems*, 3, e220090. 2024.

5. Burzynska, A., Anderson, C., Arciniegas, D., Calhoun, V., Choi, I-Y., Colmenares, A., Hiner, G., Kramer, A., Li, K., Lee, K., Lee, P., Oh, S.-H., Umland, S., Thomas, M. (2023) Metabolic syndrome and Adiposity: Risk Factors for Decreased Myelin in Cognitively Healthy Adults. *Cerebral Circulation – Cognition and Behavior*, vol. 5, 100180, 2023.

6. Elliott, D. and Anderson, C. (2023) The Wisdom of the Crowd: Reliable Deep Reinforcement Learning Through Ensembles of Q-Functions. *IEEE Transactions on Neural Networks and Learning Systems*, vol. 34, no. 1, pp. 43–51. January, 2023.

7. Rader, J., Barnes, E., Ebert-Uphoff, I. and Anderson, C. (2022) Detection of forced change within combined climate fields using explainable neural networks. *Journal of Advances in Modeling Earth Systems*, vol. 14, no. 7, 2022.

8. J. Huggins, D. Krusienski, M. Vansteensel, D. Valeriani, A. Thelen, S. Stavisky, J. Norton, A. Nijholt, G. Müller-Putz, N. Kosmyna, L. Korczowski, C. Kapeller, C. Herff, S. Halder, C. Guger, M. Grosse-Wentrup, R. Gaunt, A. Nicole Dusang, P. Clisson, R. Chavarriaga, C. Anderson, B. Allison, T. Aksenova, E. Aarnoutse. (2022) Workshops of the eighth international brain–computer interface meeting: BCIs: the next frontier. *Brain-Computer Interfaces*, vol. 9, no. 2, pp. 69-101. 2022.

9. Alzahrani, S. I., and Anderson, C. W. (2021) A Comparison of Conventional and Tri-Polar EEG Electrodes for Decoding Real and Imaginary Finger Movements from One Hand. *International Journal of Neural Systems*, vol. 31, no. 9, 2150036.

10. Barto, A. G., Sutton, R. S., and Anderson, C. W. (2021) Looking Back on the Actor-Critic Architecture. *IEEE Transactions on Systems, Man, and Cybernetics*, vol. 51, no. 1, January 2021.

11. Shirazi, H., Bezawada, B., Ray, I., and Anderson, C. (2021) Directed Adversarial Sampling Attacks on Phishing Detection. In *Journal of Computer Security*, vol. 29, no. 1, pp. 1–23, 2021.

12. Saripalli, V. R., Pati, D., Potter, M., Avinash, G., Anderson, C. W. (2020) AI-Assisted Annotator Using Reinforcement Learning. *SN Computer Science*, I(6).

13. Elliott, D.L., Santosh, K.C. and Anderson, C. (2020) Gradient boosting in crowd ensembles for Q-learning using weight sharing. *International Journal of Machine Learning and Cybernetics*, vol. 11, pp. 2275—2287.

14. Barnes, E.A., Toms, B., Hurrell, J.W., Ebert-Upoff, I., Anderson, C., and Anderson, D. (2020) Indicator patterns of forced change learned by an artificial neural network. *Journal of Advances in Modeling Earth Systems*, 12, e2020MS002195.

15. Emmons, M. R., Maciejewski, A. A., Anderson, C. W., Chong, E. K. P. (2020) Classifying environmental features from local observations of emergent swarm behavior. *IEEE/CAA Journal of Automatica Sinica*, vol. 7, no. 3, pp. 674–682.

16. Barnes, E.A., Hurrell, J.W., Ebert-Uphoff, I., Anderson, C., and Anderson, D. (2019) Viewing Forced Climate Patterns Through an AI Lens. *Geophysical Research Letters*, 46, 13,389–13,398. November, 2019.

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18. Alotaibi, S. and Anderson, C. (2017) Word Clustering as a Feature for Arabic Sentiment Classification. *International Journal of Education and Management Engineering*, vol. 1, pp. 1–13, 2017.

19. Alotaibi, S. and Anderson, C. (2016) Extending the Knowledge of the Arabic Sentiment Classification Using a Foreign External Lexical Source. *International Journal on Natural Language Computing (IJNLC)*, 5(3), June 2016.

20. Ericson, K. Pallickara, S., and Anderson, C. (2014) Failure-Resilient Real-Time Processing of Health Streams. *Concurrency and Computation: Practice and Experience*.

21. Huggins JE, Guger C, Allison B, Anderson CW, Batista A, Brouwer A-M, Brunner C, Chavarriaga R, Fried-Oken M, Gunduz A, Gupta D, Kübler A, Leeb R, Lotte F, Miller LE, Müller-Putz G, Rutkowski T, Tangermann M, Thompson DE. (2014) "Workshops of the Fifth International Brain-Computer Interface Meeting: Defining the Future," Brain-Computer Interface Journal, 1(1):27-49, 2014.

22. Donohoo, B., Ohlsen, C., Pasricha S., Xiang, Y., and Anderson, C. (2014) Context-Aware Energy Enhancements for Smart Mobile Devices. *IEEE Transactions on Mobile Computing*, vol. 13, no. 8, pp. 1720–1732, August 2014.

23. Hodgson, D.A., Young, P.M., Anderson, C.W., Hittle, D.C., Duff, W.S., and Olsen, D.B. (2012) Using Steady State Predictions to Improve the Transient Response of a Water to Air Heat Exchanger, in *ASHRAE Transactions*, vol. 118, July 1.

24. Krusienski, D. Grosse-Wentrup, M., Galan, F., Coyle, D., Miller, K., Forney, E., and Anderson, C. (2011) Critical Issues in State-of-the-Art Brain-Computer Interface Signal Processing. *Journal of Neural Engineering*, vol. 8, no. 2.

25. Anderson, C.W., Forney, E., Haines, D., Natarajan, M. (2011) Reliable Identification of Mental Tasks Using Time-Embedded EEG and Sequential Evidence Accumulation. *Journal of Neural Engineering*, vol. 8, no. 2.

26. Knight, J. and Anderson, C.W. (2011) Stable Reinforcement Learning with Recurrent Neural Networks. *Journal of Control Theory and Applications*, vol. 9, no. 3, pp. 410–420. September 4th – September 13th

27. Triana, E., Labadie, J.W., Gates, T.K., and Anderson, C.W., (2010) Neural Network Approach to Stream-Aquifer Modeling for Improved River Basin Management. *Journal of Hydrology*, vol. 391, no. 3-4, pp. 235–247.

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29. Barreto, A. and Anderson, C.W., (2008) Restricted Gradient-Descent Algorithm for Value-Function Approximation in Reinforcement Learning. *Artificial Intelligence*, vol. 172, no. 4-5, pp. 454–482.

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31. Anderson, C.W., Young, P.M., Buehner, M., Bush, K.A., and Hittle, D.C. (2007) Robust Reinforcement Learning Control using Integral Quadratic Constraints for Recurrent Neural Networks. *IEEE Transactions on Neural Networks*, vol. 18, no. 4, pp. 993–1002, July, 2007.

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33. McFarland, D.J., Anderson, C.W., Müller, K.-R., Schlögl, A., and Krusienski, D.J. (2006) BCI Meeting 2005—Workshop on BCI Signal Processing: Feature Extraction and Translation, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 14, no. 2, pp. 135–138, June 2006.

34. Anderson, C.W., Knight, J.N., O'Connor, T., Kirby, M.J., and Sokolov, A. (2006) Geometric Subspace Methods and Time-Delay Embedding for EEG Artifact Removal and Classification, *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 14, no. 2, pp. 142–146, June 2006.

35. Bush, K., Knight, J.N., Anderson, C.W. (2005) Optimizing Conductance Parameters of Cortical Neural Models via Electrotonic Partitions. *Neural Networks*, vol. 18, no. 5-6, pp. 488-496.

36. Peterson, D.A., Knight, J.N., Kirby, M.J., Anderson, C.W., Thaut, M.H. (2005) Feature selection and blind source separation in an EEG-based brain-computer interface. *EURASIP Journal on Applied Signal Processing*, vol. 2005, issue 19, pp. 3128–3140.

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38. Garrett, D., Peterson, D.A., Anderson, C.W., Thaut, M.H. (2003) Comparison of Linear and Nonlinear Methods for EEG Signal Classification. *IEEE Transactions on Neural Systems and Rehabilitative Engineering*, vol. 11, no. 2, pp. 141–144.

39. Müller, K.-R., Anderson, C., and Birch, G. (2003) Linear and Non-linear Methods in Brain-Computer Interfaces. *IEEE Transactions on Neural Systems and Rehabilitative Engineering*, vol. 11, no. 2, pp. 162–165.

40. Chen, T., Bai, A., Hajjar, A., Andrews, A., and Anderson, C. (2002) Fast Antirandom (FAR) Test Generation to Improve the Quality of Behavioral Model Verification. *Journal of Electronic Testing: Theory and Applications (JETTA)*, vol. 18, no. 6, pp. 583–594, Dec. 2002.

41. Kretchmar, R.M., Young, P.M., Anderson, C.W., Hittle, D., Anderson, M., Delnero, C., and Tu, J. (2001) Robust Reinforcement Learning Control with Static and Dynamic Stability. *International Journal of Robust and Nonlinear Control*, vol. 11, pp. 1469–1500.

42. Anderson, C.W., Stolz, E.A., and Shamsunder, S. (1998) Multivariate Autoregressive Models for Classification of Spontaneous Electroencephalogram During Mental Tasks. *IEEE Transactions on Biomedical Engineering*, vol. 45, no. 3, pp. 277–286.

43. Anderson, C.W., Hittle, D.C., Katz, A.D., Kretchmar, R.M. (1997) Synthesis of Reinforcement Learning, Neural Networks, and PI Control Applied to a Simulated Heating Coil. *Journal of Artificial Intelligence in Engineering*, vol. 11, no. 4, pp. 423–431.

44. Anderson, C.W. (1997) Effects of Variations in Neural Network Topology and Output Averaging on the Discrimination of Mental Tasks from Spontaneous Electroencephalogram. *Journal of Intelligent Systems*. vol. 7, no. 1-2, pp. 165–190.

45. Anderson, C.W., Devulapalli, S., and Stolz, E.A. (1995) Determining Mental State from EEG Signals Using Neural Networks, *Scientific Programming*, Special Issue on Applications Analysis, Vol. 4, No. 3, Fall, 1995, pp. 171–183.

46. Whitley, D., Dominic, S., Das, R. and Anderson, C.W. (1993) Genetic reinforcement learning for neurocontrol problems. *Machine Learning*, *13*, pp. 259–284

47. Anderson, C.W. (1989) Learning to control an inverted pendulum with neural networks, *IEEE Control Systems Magazine*, *9*, No. 3, April, 1989, pp. 31–36. (invited paper)

48. Barto, A.G., Sutton, R.S., and Anderson, C.W. (1983) Neuron-like adaptive elements that can solve difficult learning control problems, *IEEE Transactions on Systems, Man, and Cybernetics*, *SMC-13*, No. 5, pp. 834–846. (Reprinted in *Neurocomputing: Foundations of Research*, J.A. Anderson and E. Rosenfeld (Eds.), Cambridge, MA: The MIT Press, 1988, pp. 537-549.)

49. Barto, A.G., Anderson, C.W., and Sutton, R.S. (1982) Synthesis of nonlinear control surfaces by a layered associative network, *Biological Cybernetics, 43*, pp. 175-185.

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1. J. Stock and C. Anderson (2023) Memory-Based Sequential Attention. *Proceedings of The NeurIPS 2nd Gaze Meets ML workshop in Proceedings of Machine Learning Research*, pp. 236-253, Dec 16, 2023.

2. Stock, J., and Anderson, C. (2023). Attention-Based Scattering Network for Satellite Imagery. In *AMS 103rd Annual Meeting, 22nd Conference on Artificial Intelligence for Environmental Science*, Jan, 2023.

3. Haynes, K., Stock, J., Dostalek, J., Grasso, L., Anderson, C., and Ebert-Uphoff, I. (2023). Exploring the Use of Machine Learning to Improve Vertical Profiles of Temperature and Moisture. In *AMS 103rd Annual Meeting, 22nd Conference on Artificial Intelligence for Environmental Science*, Jan, 2023.

4. Anderson, C. and Stock, J. (2022) An Interpretable Model of Climate Change Using Correlative Learning. In *NeurIPS 2022 Workshop – Tackling Climate Change with Machine Learning*, December, 2022.

5. Stock, J. and Anderson, C. (2022) Trainable Wavelet Neural Network for Non-Stationary Signals. In *AI for Earth and Space Science Workshop at the International Conference on Learning Representations*, April, 2022.

6. Anderson, C., Stock, J., Anderson, D. (2022) Interpretable Climate Change Modeling with Progressive Cascade Networks. In *AI for Earth and Space Science Workshop at the International Conference on Learning Representations*, April, 2022.

7. Stock. J., Dandy, J., I. Ebert-Uphoff, C. Anderson, J. Dostalek, L. Grasso, J. W. Zeitler, and H. Weinman. (2021) Using Machine Learning to Improve Vertical Profiles of Temperature and Moisture for Severe Weather Nowcasting. In *AMS 101st Annual Meeting, 20th Conference on Artificial Intelligence for Environmental Science*, Jan 10-15, 2021.

8. Tercan, A. and Anderson, C. (2021) Increased Reinforcement Learning Performance through Transfer of Representation Learned by State Prediction Model. in Proceedings of *International Joint Conference on Neural Networks (IJCNN)*, pp. 1–8, 2021.

9. Forney, E., and Anderson, C. (2021) Convolutional Networks with Label Aggregation and Transfer Learning for EEG Signal Classification During Mental Tasks. In Proceedings of *8th International BCI Meeting*, June 7–9, 2021.

10. Memon, P., Anderson, C., and Besio, W. (2021) Classification of EEG from Disc versus Tripolar Electrodes for Language Mapping Task. In Proceedings of *8th International BCI Meeting*, June 7–9, 2021.

11. Farhat, N., Anderson, C., and Vaughan, T. (2021) Classification of P300 Using Convolutional Neural Network. In Proceedings of *8th International BCI Meeting*, June 7–9, 2021.

12. Shirazi H., Bezawada B., Ray I., and Anderson C. (2019) Adversarial Sampling Attacks Against Phishing Detection. In *Data and Applications Security and Privacy XXXIII. DBSec 2019*, Foley S. (eds). **Best Student Paper Award**. Lecture Notes in Computer Science, vol 11559. Springer, Cham.

13. Pawlowski, B., Anderson, C., Zhao, J. (2019) Dynamic Control of Soft Robots Using Reinforcement Learning. *Dynamic Systems and Control Conference*, vol. 59155, pp. V002T14A006.

14. Shirazi, H., Ray, I., and Anderson, C. (2019) Using Machine Learning to Detect Anomalies in Embedded Networks in Heavy Vehicles. In *International Symposium on Foundations and Practice of Security*, pp. 39–55.

15. Barnes, E. A., Anderson, C., Ebert-Uphoff, I. (2018) An AI Approach to Determining Time of Emergence of Climate Change. In *Proceedings of the 8th International Workshop on Climate Informatics: CI 2018*, C. Chen, D. Cooley, J. Runge, and E. Szekely (Eds.). NCAR Technical Note NCAR/TN-550+PROC, 151, pp. 19-22.

16. Anderson, C., Besio, W. and Alzahrani, S. (2018) Comparison of Conventional and Tripolar EEG Electrodes in BCI Paradigms. In *Proceedings of the Seventh International Brain-Computer Interface Meeting: BCIs, Not Getting Lost in Translation*, May, 2018, Asilomar Conference Center, Pacific Grove, California, USA.

17. Forney, E., Anderson, C., Gavin, W. and Davies, P. (2018) Mental-Task BCIs Using Convolutional Networks with Label Aggregation and Transfer Learning. In *Proceedings of the Seventh International Brain-Computer Interface Meeting: BCIs, Not Getting Lost in Translation*, May, 2018, Asilomar Conference Center, Pacific Grove, California, USA.

18. Lee, M. and Anderson C. (2017) Can a Reinforcement Learning Agent Practice Before It STarts Learning? In *Proceedings of the 2017 International Joint Conference on Neural Networks (IJCNN'17)*, Anchorage, AK, pp. 4006-4013, May, 2017.

19. Lee, M. and Anderson C. (2016) Relevance Vector Sampling for Reinforcement Learning in Continuous Action Space. In *Proceedings of the 15th IEEE International Conference on Machine Learning and Applications (IEEE ICMLA'16)*, December 2016.

20. Lee, M. and Anderson C. (2016) Robust Reinforcement Learning with Relevance Vector Machines. In *Proceedings of the 1st International Workshop on Robot Learning and Planning (RLP 2016) in conjunction with 2016 Robotics: Science and Systems*, Ann Arbor, Michigan, USA. June 18, 2016.

21. Forney, E., Anderson, C., Davies, P., Gavin, W., Roll, M. (2016) Detecting P300 ERPs with Convolutional Networks. In *Proceedings of the Sixth International Brain-Computer Interface Meeting: BCI Past, Present, and Future*, May 30 – June 3 2016, Asilomar Conference Center, Pacific Grove, California, USA, page 206.

22. Forney, E., Anderson, C., Gavin, W., Davies, P., Roll, M., Ryzhkov, I., and Vafaei, F. (2016) CEBL3: A New Software Platform for EEG Analysis and Rapid Prototyping of BCI Technologies. In *Proceedings of the Sixth International Brain-Computer Interface Meeting: BCI Past, Present, and Future*, May 30 – June 3 2016, Asilomar Conference Center, Pacific Grove, California, USA, page 145.

23. Younis, A., Malaiya, Y., Anderson, C. and Ray, I. (2016) To Fear or Not to Fear That is the Question: Code Characteristics of a Vulnerable Function with an Existing Exploit. In *Proceedings of the Sixth ACM Conference on Data and Application Security and Privacy, (CODASPY 2016)*.

24. Anderson, C., Ebert-Uphoff, I., Deng, Y., and Ryan, M. (2015) Discovering Spatial and Temporal Patterns in Climate Data Using Deep Learning. In *Proceedings of the Fifth International Workshop on Climate Informatics: CI 2015*, J. G. Dy, J. Emile-Geay, V. Lakshmanan, Y. Liu (Eds.). September 2015. ISBN: 978-0-9973548-0-5.

25. Anderson, C., Lee, M., and Elliott, D. (2015) Faster Reinforcement Learning After Pretraining Deep Networks to Predict State Dynamics. In *Proceedings of the 2015 International Joint Conference on Neural Networks*, Killarney, Ireland. Winner of **Best Overall Paper Award**.

26. Alotaibi, S. and Anderson, C. (2015) Capturing Negation Scope Using Base Phrase Chunk in Arabic Sentiment Classification, In *Proceedings of the International Conference on Collaboration Technologies and Systems (CTS 2015)*, 2015.

27. Ugave, V., Pasricha, S., Anderson, C. and Han, Q. (2015) LearnLoc: Mobile Learning for Smart Indoor Localization. In *Proceedings of CODES '15 Proceedings of the 10th International Conference on Hardware/Software Codesign and System Synthesis, CODES-2015*, pages 37–44, IEEE Press Piscataway, NJ, 2015.

28. Ashari, R. and Anderson, C. (2014) EEG Subspace Analysis and Classification Using Principal Angles for Brain-Computer Interfaces. *2014 IEEE Symposium on Computational Intelligence in Brain-Computer Interfaces (CIBCI)*, pp. 57–63, 2014.

29. Lee, M. and Anderson, C. (2014) Convergent Reinforcement Learning Control with Neural Networks and Continuous Action Search. *2014 IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning (ADPRL)*, pp. 1–8, 2014.

30. Elliott, D. and Anderson, C. (2014) Using Supervised Training Signals of Observable State Dynamics to Speed-up and Improve Reinforcement Learning. *2014 IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning (ADPRL)*, pp. 1–8, 2014.

31. The, K., Taylor, B., Crasta, M-H Lin, Forney, E., Anderson, C., Davies, P. and Gavin, W. (2014) Brain Computer Interface Classifier Parameters Are Influenced by Practice: Results from a P300 Speller. *Proceedings of the Society of Psychophsiological Research (SPR) 2014 Meeting.*

32. Anderson, C., Gavin, W., Forney, E., Taylor, B. and Davies, P. (2013) A Comparison of EEG Systems for Use with Brain-Computer Interfaces in Home Environments. In *Proceedings of the Society of Psychophsiological Research (SPR) 2013 Meeting*, presented at the Symposium on Translational Research on Brain Computer Interfaces (BCI): From the Lab to the Home at in Florence, Italy, October 2–6, 2013.

33. Forney, E., Anderson, C., Gavin, W., and Davies, P. (2013) A Stimulus-Free Brain-Computer Interface Using Mental Tasks and Echo State Networks. In *Proceedings of the Fifth International Brain-Computer Interface Meeting: Defining the Future*, June 3–7, 2013. Graz University of Technology Publishing House. **Winner of Best Overall Poster Award.**

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35. Forney, E., Anderson, C., Davies, P., Gavin, W., Taylor, B., and Roll M. A Comparison of EEG Systems for Use in P300 Spellers by Users With Motor Impairments in Real-World Environments. In *Proceedings of the Fifth International Brain-Computer Interface Meeting: Defining the Future*, June 3–7, 2013. Graz University of Technology Publishing House.

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37. Fukami, T., Shimada, T., Forney, E., and Anderson, C. (2012) EEG Character Identification Using Stimulus Sequences Designed to Maximize Minimal Hamming Distance. In *Proceedings of the 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS)*, San Diego, California USA, 28 August - 1 September, 2012, pp. 1782-1785.

38. Hodgson, D.A., Young, P.M., Anderson, C.W., Duff, W.S., Hittle, D.C., and Olsen, D.B. (2012) Smoothly Combining Steady State Predictions with PI Control. In *Proceedings of the ASME Dynamic Systems and Control Division Conference*, Fort Lauderdale, FL. ASME, Oct 17-19, 2012.

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UNREFEREED PUBLICATIONS

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GRANTS AND CONTRACTS

Current:

National Institutes of Health, $403,440, 2021–2023, *New approach to studying white matter aging: symmetric multimodal fusion of MRI techniques targeting different biophysical properties of white matter.* , PI: Aga Burzynska, Department of Human Development and Family Studies.

National Science Foundation, $19,998,596, 08/15/20–08/15/25, *AI Institute: Artificial Intelligence for Environmental Sciences(AI2ES)*, PI: Amy McGovern (U. of Oklahoma), Senior Personnel: C. Anderson.

Past:

National Science Foundation, $29,945. 1/1/2020–7/30/2022, *Participant Support: Brain Computer Interface Belgium Meeting*, June, 2021, PI: Anderso.

Klein Buendel, $41,882, 7/6/2020–6/30/2022, *Using retrospective and real-time physical activity tracking to predict risk of sunburn in outdoor exercisers on Strava.* PI: K. Henry (Psychology), co-PI: Anderson.

USDA-ARS-Agricultural Research Service, $19,908, 9/1/2020–8/31/2022, *Bringing Historic Seed Test Data Alive Through Machine Learning Algorithms: Proof of Concept.* PI: Anderson.

National Science Foundation, $97,682, 12/1/2020–11/30/2022, *EAGER: Detecting Real and Imagined Movement of Individual Fingers from Scalp EEG.* PI: Anderson.

National Oceanic and Atmospheric Administration, $197,914, 08/2019–07/2021, *Identifying Varying Patterns of Combined Change over the 21st Century with Neural Networks*, Senior-Personnel: Anderson.

National Science Foundation, $570,295, 7/1/2016–7/1/2019, *ABI Innovation: DeepStruct: Learning representations of protein 3-d structures and their interfaces using deep architectures*, PI: A. Ben-Hur, co-PI: C. Anderson.

National Science Foundation, $1,222,325, 5/1/11–5/1/18, *HCC:Medium:Removing Barriers to the Practical Use of Non-Invasive Brain-Computer Interfaces*, Award 1065513, PI: C. Anderson

National Science Foundation, $24,000, 5/1/15–5/1/17, REU Supplemental funding to *HCC:Medium:Removing Barriers to the Practical Use of Non-Invasive Brain-Computer Interfaces*, PI: C. Anderson

National Science Foundation, $599,999, 07/01/13–06/30/17, *Comprehensive Carbon Metric Tools and Integrated Architecture for Environmental Product and Building Declarations*, PI: K. Paustian (NREL), co-PIs: C. Anderson, T. Bradley, B. Dunbar, A. Guggemos.

School of Global Environmental Sustainability, Colorado State University, $16,800, 2011–2012, *Carbon Footprint Metric for the Built Environment*, co-PIs: C. Anderson, A. Carpenter, National Renewable Energy Laboratory, K. Paustian, Department of Soil and Crop Sciences.

Colorado State University Clean Energy Supercluster, $15,000, 5/1/10–4/30/11, *Predictive Modeling of Wind Farm Power and On-Line Optimization of Wind Turbine Control*

National Science Foundation, Grant Number 0934499, $15,975 1/1/10–8/31/10, PI: C. Anderson, *REU: Geometric Pattern Analysis and Mental Task Design for a Brain-Computer Interface*

National Science Foundation, Grant Number 0208958, $721,125, 9/15/02–8/31/10, PI: C. Anderson (Computer Science), M. Kirby (Mathematics), CSU, *Geometric Pattern Analysis and Mental Task Design for a Brain-Computer Interface*

PRSE Research Funds, Department of Occupational Therapy, CSU $4,811, 9/15/02–8/31/10, PI: C. Anderson (Computer Science), M. Kirby (Mathematics), CSU, *Geometric Pattern Analysis and Mental Task Design for a Brain-Computer Interface*

Science Foundation of Ireland: Equipment Grant, €380,030, 1/1/07, *High Resolution Diffuse Optical Tomography System*, 05/RFP/ENG0089/EC07, with T. Ward (PI), B. Pearlmutter, R. Roche, S. Commins, and J. Lowry.

Science Foundation of Ireland, E.T.S. Walton Award, €155694, 3/1/07–12/31/07, with B. Pearlmutter, National University of Ireland, Maynooth, *Real-Time Classification of EEG for Brain-Computer Interfaces.*

National Science Foundation, Grant Number 0434351, $594,423, 7/15/04–7/14/07, PI: M. Kirby, H. Kley, C. Peterson (Mathematics), C. Anderson, J. R. Beveridge, (Computer Science), CSU, *MSPA_MCS: New Tools for Algebro-Geometric Data Analysis*

National Science Foundation, Grant Number 0542947, $92,145, 9/9/05–8/31/06, PI: C. Anderson (Computer Science), M. Kirby (Mathematics), CSU, *Geometric Pattern Analysis and Mental Task Design for a Brain-Computer Interface*, Supplemental Funding, travel for Anderson's sabbatical with two graduate students to Europe.

National Science Foundation, REU, $11,125, 9/15/02, PI: C. Anderson, *REU: Geometric Pattern Analysis and Mental Task Design for a Brain-Computer Interface*

Department of Health and Human Services, Public Health Service, $1,999,971, 7/1/02–6/30/03, PI: M. Re-

ite, Department of Psychiatry, University of Colorado Health Sciences Center, Denver, CO, C. Anderson one of several scientists, *Whole-Head MEG System for Brain Research*, equipment grant

National Science Foundation, Grant Number 0245291, $512,751, 5/1/03–4/30/06, PI: D. Hittle (Mechanical Engineering), C. Anderson (Computer Science), P. Young (Electrical Engineering), CSU, *Robust Learning Control for Building Energy Systems*

National Science Foundation, CMS-9804747, 9/15/98–8/31/02, $746,717, PI: D. Hittle (Mechanical Engineering), C. Anderson (Computer Science), P. Young (Electrical Engineering), CSU, *Robust Learning Control for Heating, Ventilating, and Air-Conditioning Systems*

National Science Foundation, SBIR Phase II, $398,132, 6/1/99–5/31/01, PI: T. McCracken (Visible Productions, Inc., Fort Collins), C. Anderson (Computer Science), *Complete Software System for 3D Surface Modeling of Anatomy from 2D Sections*

National Science Foundation, MIP-9628770, 8/96–7/99, $314,313, PI: A. von Mayrhauser, C. Anderson (Computer Science), T. Chen (Electrical Engineering), *Behavioral Level Design Verifications Using Software Testing Techniques and Neural Networks*

Colorado Advanced Software Institute, 1/1/99–7/31/99, $39,997, PI: C. Anderson (Computer Science, CSU), T. McCracken (Visible Productions, Fort Collins), *Fast Generation of NURBS Surfaces from Polygonal Mesh Models of Human Anatomy*

National Science Foundation, SBIR Phase I, 1/1/99–6/30/99, $93,210, PI: T. McCracken (Visible Productions), C. Anderson (Computer Science), R. Miranda, (Mathematics), CSU, *Fast and Accurate NURBS Surfaces from Polygonal Mesh Models of Organic Structures*

Colorado Advanced Software Institute, 8/97–7/98, $34,411, PI: C. Anderson (Computer Science), T. McCracken (Visible Productions), *Semi-automated Boundary Tracing of Medical Images for Three-Dimensional Model Development*

Colorado Advanced Software Institute, 8/97–7/98, $34,048, PI: C. Anderson, B. Draper (Computer Science), T. Donohue (CTA Simulation Systems, Greenwood Village, CO), *Modeling Student Pilots for Intelligent Training*

National Science Foundation, SBIR Phase I, $85,596, 1/1/98–6/30/98, PI: T. McCracken (Visible Productions), C. Anderson (Computer Science), *Complete Software System for 3D Surface Modeling of Anatomy from 2D Sections*

National Science Foundation, CMS-9401249, 1/95–12/96, $133,196, PI: D. Hittle (Mechanical Engineering), C. Anderson (Computer Science), *Neural Networks for Control of Heating and Air-Conditioning Systems*

National Science Foundation CISE Instrumentation, 1/95–1/96, $39,429, faculty in Computer Science, *Multiprocessor and Sensor Hardware for Vision, Optimization, Learning, Planning and Parallel Processing Research*

National Science Foundation, IRI-9212191, 7/92–6/94, $59,495 PI: C. Anderson, *The Generality and Practicality of Reinforcement Learning for Automatic Control*

National Science Foundation, IRI-9202100, 9/92–8/95, $285,241, PI: C. Anderson (Computer Science), J. Aunon (Electrical Engineering), *Alternate Modes of Human-Computer Interaction: EEG Recognition with Neural Networks*

Colorado State University, 1992, $2,000, PI: A. Menon (Marketing), C. Anderson (Computer Science), *Nonlinear Regression Using Neural Networks on the PIMS Database from the Wharton School of Business*

American Gas Association, 12/91–9/92, $49,760, PI: B. Willson (Mechanical Engineering), C. Anderson (Computer Science), *Review of State of Art of Intelligent Control for Large Stationary Engines*

Colorado State University Faculty Research Grant, 1/92–12/92, $3,900, PI: C. Anderson, *Real-Time Automatic Control with Neural Networks*

PROFESSIONAL ACTIVITIES

Program Committees

2021 International Brain-Computer Interface (BCI) Meeting, program committee, Virtual meeting, June 7–9, 2021.

2019 International Joint Conference on Neural Networks, technical committee, Budapest, July 14-19, 2019.

2018 International Brain-Computer Interface (BCI) Meeting, program committee, Asilomar Conference Center, Pacific Grove, CA, May 21–May 25, 2018.

2017 7th Graz Brain-Computer INterface Conference: From Vision to Reality, program committee, Graz, Austria.

2017, 2018 Association for the Advancement of Artificial Intelligence (AAAI) Conference, technical program committee.

2016 1st International Workshop on Robot Learning and Planning, program committee, Ann Arbor, Michigan, June 18, 2016.

2016 IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning (IEEE ADPRL'16), part of IEEE SSCI 2016, program committee, Athens, Greece, December 6–9, 2016.

2016 International Brain-Computer Interface (BCI) Meeting, program committee, Asilomar Conference Center, Pacific Grove, CA, May 30–June 3, 2016.

2016 Association for the Advancement of Artificial Intelligence (AAAI) Conference, technical program committee.

2013 International Joint Conference on Neural Networks (IJCNN), Dallas, Texas, August 4-9, 2013.

The Seventh IASTED International Conference on Advances in Computer Science and Engineering (ACSE 2012), April 2 – 4, 2012, Phuket, Thailand.

Third world Congress on Nature and Biologically Inspired Computing (NaBIC 2011) Salamanca, Spain, October 19-21, 2011.

2011 International Joint Conference on Neural Networks (IJCNN), San Jose, California, July 31 - August 5, 2011.

2nd International Symposium on Computational Intelligence for Engineering Systems (ISCIES'2011), Coimbra, Portugal, November, 2011.

2010 Fourth International Brain-Computer Interface Meeting, June, 2010, Asilomar Conference Center, Monterey, CA.

2007, 2009, 2011 IEEE International Symposium on Approximate Dynamic Programming and Reinforcement Learning.

ICTAI-2003, 2004, 2006, 2009, 2013, 2014, 2015 IEEE International Conference on Tools with Artificial Intelligence.

2nd IEEE Workshop on Vision for Human Computer Interaction (V4HCI), New York, NY, June 22, 2006.

CASB 2006: The IASTED International Conference on Computational and Systems Biology, November 13-15, 2006 Dallas, Texas, USA.

ICMLA-2005, The 2005 International Conference on Machine Learning and Applications, 15-17 December 2005, Los Angeles, CA.

IEEE Workshop on CVPR for Human Computer Interaction, CVPR-HCI-05, June, 2006.

AAAI-04 Workshop on *Supervisory Control of Learning and Adaptive Systems*, San Jose, California, July 25-29, 2004.

ICMLA-2004, The 2004 International Conference on Machine Learning and Applications, 16-18 December 2004, Louisville, KY.

TAINN-2003, the International Twelfth Turkish Symposium on Artificial Intelligence and Neural Networks, July 2–4 July, 2003, in Cannakkale, Turkey.

ICML-2003, International Conference on Machine Learning, Washington DC, 2003.

First IEEE Workshop on CVPR for Human Computer Interaction (at CVPR-2003), Madison, Wisconsin, June, 2003.

ICML-2002, International Conference on Machine Learning, Sydney, Australia, 2002. Program committee member and area chair.

ANNIMAB-1, International Conference on Artificial Neural Networks in Medicine and Biology, Goteborg, Sweden, May, 2000.

EANN'98, Conference on Engineering Applications of Neural Networks, Gibraltar, October, 1998.

World Congress on Expert Systems, Applications of Neural Networks Workshop, 1998.

FLAIRS, the Florida AI Research Symposium, 1991, 1997, 1998, 1999.

NIPS-94 (Neural Information Processing Systems Conference).

IEEE International Conference on Tools with Artificial Intelligence, 1993.

IEEE ICNN-93 (International Conference on Neural Networks).

Eighth International Workshop on Machine Learning, Constructive Induction, 1991.

Other Conference Organizing Activity

Organized and chaired workshop on "Focal Bi-Directional Brain Computer Interfacing with Concentric Electrode Technology", at the Eighth International Brain-Computer Interface Meeting, June, 2021, Virtual Meeting.

Chaired workshop on "Deep Learning and other Machine Learning and Signal Processing Methods for Analyzing EEG in BCI Paradigms", at the Sixth International Brain-Computer Interface Meeting, June, 2016, Asilomar Conference Center, Monterey, CA.

Organized and chaired workshop on "Brain-Computer Interfaces: Demonstrations and Discussions of Applications", at the 2015 Meeting of the Rehabilitation Engineering and Assistive Technology Society of North America (RESNA), Denver, CO, June, 2015.

Organized and chaired workshop on "Translational Research on Brain Computer Interfaces (BCI): From the Lab to the Home" at 53rd Annual Meeting of the Society for Psychophysiological Research, October 2–6, 2013, Florence, Italy.

Chaired workshop on "Conducting BCI Experiments in theHome", at the Fifth International Brain-Computer Interface Meeting, June, 2013, Asilomar Conference Center, Monterey, CA.

Chaired workshop on "Feature Extraction and Translation" at the Fourth International Brain-Computer Interface Meeting, June, 2010, Asilomar Conference Center, Monterey, CA.

Organized workshop on *Supercomputing from Your Desktop Using CxC—A New Solution to Parallel Computing* at Colorado State University, supported by Engineered Intelligence, Fort Collins, and CSU's ISTeC, September 15, 2003.

Co-Chair of First Workshop on the Colorado Grid Computing Initiative (COGrid), May 19th, 2003, Colorado State University.

Session Chair at ICML-2000 (Inter. Conf. on Machine Learning),

Session Chair at NIPS-98.

Local arrangements chair for NIPS-93 and NIPS-92 (Neural Information Processing Systems Conference).

Session Chair at NNACIP'94, AMCA/IEEE International Workshop on Neural Networks Applied to Control and Image Processing, Mexico City, 1994.

Session Chair on reinforcement learning for IEEE ICNN-93, 1993.

Session Chair at ASSETS'94, ACM SIGCAPH conference on computer aids for the disabled, Marina Del Rey, CA, 1994.

Member of the Faculty at the 1993 Connectionist Models Summer School in Boulder, CO. I was invited to lead discussions on reinforcement learning. 1993.

Member of organizing committee for AAAI-93 Workshop on Learning Action Models, 1993.

Review Panels

Science Foundation Ireland, 2016, member of two grant review panels.

Science Foundation Ireland, 2013, member of on-site review panel for mid-term evaluation of "Pattern Recognition Systems for continuous neurological Monitoring in NEOnates [NEOPRISM]" at UCC, Cork, Ireland.

National Science Foundation Review Panels, 1994–1996, 2003–2023 for CISE: IIS, HCC; Neural & Cognitive Systems; Small Business Innovation Research (SBIR); Human-Computer Interfaces; Multimedia/Multimodal Processing; Small-Business Innovation Research; Special Panel on Integration of Biology and Neuroscience; Collaborative Research in Neuroscience; RIA and regular panels in Knowledge, Models, & Cognitive Systems; Digital Libraries; and EPSCoR RII Site Review.

Reviewing and Refereeing

Funding Agencies: Army Research Office; Austrian Science Fund; Colorado Advanced Software Institute; Council of Physical Sciences of the Netherlands Organization for Scientific Research (NWO); Department of Energy; Danish Council for Independent Research; Engineering and Physical Sciences Research Council (EPSRC), UK; Israel Science Foundation; MITACS-Accelerate Program, Canada; National Institutes of Health; National Science Centre Poland; National Science Foundation; National University of Singapore, Office of Research; New Zealand Foundation for Research, Science & Technology; Science Center programs of the U.S. Department of State; Science Foundation of Ireland; Swiss National Science Foundation; United States Civilian Research and Development Foundation (CRDF) Cooperative Grants Program; Volkswagen Foundation's Lichtenberg Professorship;

Publishers: Addison Wesley Longman; Benjamin/Cummings; Biomedical Engineering Online; Cambridge University Press; Computer Society Press; Digital Press; MacMillan Press, Ltd; McGraw-Hill; Prentice Hall; Springer-Verlag;

Journals: ACM Transactions on Evolutionary Learning and Optimization; Advances in Artificial Intelligence; AI Journal; Annals of Biomedical Engineering; Applied Artificial Intelligence; Artificial Intelligence Review; Autonomous Robots; Biomedical Engineering OnLine; BioMed Research International Journal; Brain Computer Interfaces; Cognitive Science Journal; Communications of the ACM; Computational Intelligence and Neuroscience; Computer and Software Engineering; Computer; Computers in Medicine and Biology; Connection Science Journal; EURASIP Journal of Applied Signal Processing; Evolutionary Computation; Frontiers in Human Neuroscience; IEEE Control Systems Magazine; IEEE Trans. on Biomedical Engineering; IEEE Trans. on Human-Machine Systems; IEEE Trans. on Knowledge and Data Engineering; IEEE Trans. on Neural Networks; IEEE Trans. on Neural Systems and Rehabilitation; IEEE Trans. on Parallel and Distributed Systems; IEEE Trans. on Pattern Analysis and Machine Intelligence; IEEE Trans. on Reliability; IEEE Trans. on Signal Processing; IEEE Trans. on Software Engineering; IEEE Trans. on Systems, Man, and Cybernetics; IIE Trans. on Quality and Reliability Engineering; International Journal of Neural Systems; Journal of Adaptive Control and Signal Processing; Journal of Autonomous Robots; Journal of AI Research; Journal of Autonomous Robots; Journal of Biomedical Signal Processing and Control; Journal of Computational Intelligence; Journal of Empirical Software Engineering; Journal of Neural Engineering; Journal of NeuroEngineering and Rehabilitation; Journal of Neural Systems; Journal of Neuroscience Methods; Journal of Pattern Recognition and Artificial Intelligence; Journal of Process Control; Journal of the Royal Society Interface; Journal of Solar Energy; Machine Learning; Medical & Biological Engineering & Computing Journal; Medical Engineering and Physics Journal; Neural Networks; Neural Network Review; Neurocomputing; Open Neuroscience Journal; ORSA Journal of Computing; Physiological Measurement; Proceedings of the IEEE; Public Library of Science (PLOS) ONE; R Journal; Simulation; Solar Energy; The Open Neuroscience Journal.

Conferences: 2020 AIBC, AI and Blockchain Conference; 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems; 2017 7th Graz Brain-Computer Interface Conference: From Vision to Reality, Sept. 2017, Graz, Austria; 2017 IEEE Conference on Systems, Man and Cybernetics; 2016 First International Workshop on Robot Learning and Planning; 2016, 2017 Advancement of Artificial Intelligence (AAAI) Conference; 1993–98, 2003, 2007, 2008, 2010, 2013, 2014 Neural Information Processing Systems Conferences (NIPS); 2007, 2009, 2013, 2014, 2015, 2016, 2019 International Joint Conference on Neural Networks (IJCNN); 2010–11, 2014, 2021 IEEE Symposium Series in Computational Intelligence; 2009, 2012 IASTED Internatonal Symposium on Computational Biology and Bioinformatics; 2007 International Conference on Computational Intelligence and Security (CIS); 2006 28th Annual Conference of the Cognitive Science Society; 2004, 2013, 2014 IEEE International Conference on Tools with Artificial Intelligence; 2004 International Conference on Network and Parallel Computing; 2004 AAAI Workshop on Supervisory Control of Learning and Adaptive Systems; 2003 International Conference on Tools for Artificial Intelligence; 2003 International Twelfth Turkish Symposium on Artificial Intelligence and Neural Networks (TAINN); 2003 IEEE—EURASIP Workshop on Nonlinear Signal and Image Processing, Italy; 2000, 2003 Int. Conference on Machine Learning (ICML); 1998–99 Int. Conference on Applications of Neural Networks (ICANN); 1996 Int. Conference on Parallel Processing; IJCAI-95; Supercomputing'94; IEEE Int. Conference on Robotics and Automation; 1993 Int. Conference on Decision and Control; 1993 Int. Software Metrics Symposium; 1993 American Control Conference;

Invited Talks, Tutorials, and Unpublished Presentations

Anderson, C., *What is Artiificial Intelligence and Why Is It Suddenly Everywhere?*, University Science Club, Colorado State University, invited. 2019.

Anderson, C. *Faster Reinforcement Learning After Pretraining Deep Networks to Predict State Dynamics*, National Science Foundation Workshop on Real-Time Learning and Decision Making in Dynamical Systems, invited, 2018.

Anderson, C. *Fast Reinforcement Learning by Pre-Training*, Distinguished Speaker Program, Mexico Autonomous Institute of Technology (ITAM), 2017.

Anderson, C. *Patterns in EEG Related to Mental Tasks for Brain-Computer Interfaces and Recent Results with Tripolar EEG Electrodes.* Invited talk to the Department of Electrical, Computer & Biomedical Engineering, University of Rhode Island, November 9, 2016.

Anderson, C. *Patterns in EEG for Brain-Computer Interfaces: Recent Results with Convolutional and Recurrent Neural Networks.* Invited talk to the Laboratory of Systems Pharmacology, Harvard Medical School, December 6, 2016.

Anderson, C. *Patterns in EEG for Brain-Computer Interfaces: Recent Results with Convolutional and Recurrent Neural Networks and Tripolar Electrodes*, invited talk to National Center for Adaptive Neurotechnologies, Wadsworth Center, December 8, 2016.

Anderson, C. *Faster Reinforcement Learning After Pretraining Deep Networks to Predict State Dynamics*, invited by Dr. M. Littman to present to the Humanity Centered Robotics Initiative (HCRI), Brown University, October 27, 2016.

Anderson, C., *Signal Processing and Deep Learning for BCI*, invited tutorial to the NSF Student Colloquium at the Sixth International Brain-Computer Interface Meeting, June, 2016, Asilomar Conference Center, Monterey, CA.

Anderson, C., *Brain-Computer Interfaces: An Enabling Technology*, poster at CSU Ventures, Innosphere, Fort Collins, Colorado, April 12, 2013.

Forney, E., Anderson, C., Gavin, W., Davies, P., and Cabral, B., *Non-Invasive Brain-Computer Interfaces using Echo State Networks*, poster at the 2012 Front Range Neuroscience Group meeting, Fort Collins, Co, November, 2012.

Cabral, B., Forney, E., Anderson, C., Davies, P., and Gavin, W., *A Comparison of EEG Systems for Use With Brain-Computer Interfaces in Home Environments*, poster at the 2012 Front Range Neuroscience Group meeting, Fort Collins, Co, November, 2012.

Anderson, C., *Machine Learning Methods for Adaptive Control of Wind Turbines and Smart Grid*, invited talk to the Cenergy Expo, CSU, April, 2012

Anderson, C., *The Future of Direct Brain-Computer Interfaces*, invited talk to FutureVisions 2012, ISTEC, CSU, April 2012.

Anderson, C., *Reinforcement Learning and Robust Control*, invited talk to the Celebratory Workshop for Andrew Barto's Research in Reinforcement Learning, University of Massachusetts, Amherst, June, 2012.

Anderson, C., *Direct Brain to Computer Communication for Motor Impaired Individuals*, invited talk to the Department of Human Development and Familty Studies, Colorado State University, October 14, 2011.

Forney, E. and Anderson, C. *Modeling and Classification of EEG by Forecasting with Recurrent Artificial Neural Networks*, one of four selected presentations at the 9th Annual Meeting of the Front Range Neuroscience Group, Fort Collins Marriott, Dec 7, 2011.

On-Line Optimization of Wind Turbine Control using Reinforcement Learning, Poster at Cenergy, Clean Energy Supercluster, Colorado State University, April 20, 2011.

Brain-Computer Interfaces, CSU ACM Club, 2010.

Translating Thoughts into Actions: The Potential for a Brain-Computer Interface, ISTeC FutureVisions Symposium, CSU, 2010.

with P. Davies, *Brain-Computer Interfaces for Motor-Impaired Individuals*, School of Biomedical Engineering Seminar Program, CSU, 2010.

Poster presentation *On-Line Optimization of Wind Turbine Control Using Reinforcement Learning*, 2nd Annual CREW (Center for Research and Education in Wind) Symposium at Colorado School of Mines, August, 2010.

Poster presentation with Z. Cashero, *Feature Extraction from High-Impedance EEG Recordings Using Maximum Noise Fraction*, Fourth International Brain-Computer Interface Meeting, 2010, Asilomar Conference Center, Monterey, CA.

Poster presentation with E. Forney, *Modeling and Classification of EEG Using Recurrent Neural Networks*, Fourth International Brain-Computer Interface Meeting, 2010, Asilomar Conference Center, Monterey, CA.

Poster presentation with E. Forney, *Modeling and Classification of EEG Using Recurrent Neural Networks*, Molecular, Cellular and Integrative Neuroscience Symposium, Colorado State University, 2010.

Poster presentation with D. Hains and E. Forney, *An Inexpensive Real-Time Brain-Computer Interface Using P300 Event-Related Potentials*, Fourth International Brain-Computer Interface Meeting, 2010, Asilomar Conference Center, Monterey, CA.

Poster presentation with D. Hains, *An Inexpensive Real-Time Brain-Computer Interface Using P300 Event-Related Potentials*, Molecular, Cellular and Integrative Neuroscience Symposium, Colorado State University, 2010.

Poster presentation with Forney, Hains, and Natarajan, *Reliable Identification of Mental Tasks Using Time-Embedded EEG and Sequential Evidence Accumulation*, Fourth International Brain-Computer Interface Meeting, 2010, Asilomar Conference Center, Monterey, CA.

Estimating Sparse Inverse Covariance Matrices for Brain Computer Interface Applications, A. Natarajan and C. Anderson, Poster at the CMB, MCIN, BMB, MIP Research Symposium, CSU, Feb. 27, 2009.

Machine Learning for Biomedical Applications, Animal Cancer Care, Clinical Sciences, Colorado State University, December 8, 2008.

Discrimination of EEG from Five Mental Tasks using Short-Time Principal Components Analysis, invited presentation at the Ohio State University Mathematical Biosciences Institute (MBI) Workshop on Real-Time Brain Interfacing Workshop, May 12-15, 2008.

Use a Computer with Your Mind Alone: A Real-Time Brain-Computer Interface, J. Bratman and C. Anderson, Poster at the CMB, MCIN, BMB, MIP Research Symposium, CSU, Feb. 29, 2008.

A Semi-Automated Approach to Tracking Biological Cells in Video Microscopy, J. Aronoff and C. Anderson. Poster at the CMB, MCIN, BMB, MIP Research Symposium, CSU, Feb. 29, 2008.

Invited E.T.S. Walton Lecture, *Translating Thoughts into Actions by Finding Patterns in Brainwaves*, at the Royal Irish Academy, Dublin, Ireland, December 4, 2007.

An Inexpensive System for On-Line EEG Analysis for Brain-Computer Interface Experiments, to the *Symposium on Human EEG and ERPs* in association with the Department of Psychology, National University of Ireland, Maynooth, August 1, 2007.

Classification of Time-Embedded EEG Using Short-Time Principal Component Analysis, Hamilton Institute, National University of Ireland, Maynooth, June 5, 2007.

Short-Time PCA for EEG Pattern Analysis, IDIAP, Martigny, Switzerland, January 30, 2007.

Robust Reinforcement Learning Control with Guaranteed Stability While Learning, invited presentation at the 2006 NSF Workshop and Outreach Tutorials on Approximate Dynamic Programming, Cocoyoc, Mexico, April 3–6, 2006.

Signal Representations Based on SingularValue Decompositions for Discrimination of EEG for Different Mental Tasks, invited presentation at Brain-Computer Interface Technology: Third International Meeting, Rensselaerville, NY. June 14–19, 2005.

Robust Reinforcement Learning, invited presentation at the National Wind Technology Center, Boulder, CO, September 22, 2005.

Analysis of Spontaneous EEG During Cognitive Task for Brain-Computer Interfacing, invited presentation at the 2004 Neural and Information Processing Systems (NIPS) Workshop called "Towards Brain-Computer Interfacing", December 17, 2004, Whistler, Canada.

EEG Pattern Analysis for a New Mode of Communication, invited presentation at The 2004 Occupational Therapy Research Symposium: Next Generation—Science and Technology, Colorado State University, April 5, 2004.

Improvements in Deterministic and Probabilistic Tropical Cyclone Surface Wind Predictions, talk presented by Mark DeMaria, NOAA/NESDIS/ORA, Fort Collins, CO, at the Inter-Departmental Hurricane Conference March 3, 2004 Charleston, SC. Included overview of my contribution to non-linear models for hurricane forecasting.

Poster presentation *Patterns in EEG for Discrimination Between Mental Behaviors and Artifact Removal* at the Annual Molecular, Cellular, and Integrative Neuroscience (MCIN), Colorado State University, poster session, Feb 27, 2004.

Poster presentation *Modeling Observed Developmental Changes Influencing CA1 and CA3 Hippocampal Epileptiform Burst Characteristics* at the Annual Molecular, Cellular, and Integrative Neuroscience (MCIN), Colorado State University, poster session, Feb 27, 2004.

Poster presentation *Reinforcement Learning Control with Robust Stability* at the Second Annual Intermountain/Southwest Conference on Industrial and Interdisciplinary Mathematics, at Colorado State University, Feb 28 - March 1, 2003.

Poster presentation *Patterns in EEG that Correlate and Discriminate Between Mental Behaviors* at the Annual Molecular, Cellular, and Integrative Neuroscience (MCIN), Colorado State University, poster session, Feb 28, 2003.

Invited presentation on *Comparison of Linear and Nonlinear Methods for EEG Signal Classification* and panel member for debate on *Linear versus Non-linear Methods in BCI Research* at the NIH-sponsored workshop on Second International Brain-Computer Interface Workshop titled " Brain-Computer Interface Technology: Moving Beyond Demonstrations", Rensselaerville Institute, New York, June 12-16, 2002.

Invited presentation on *Robust RL control with Static and Dynamic Stability* at the NSF-sponsored workshop on Learning and Approximate Dynamic Programming, Playacar, Mexico, April 8-10, 2002.

Inverting Functions with Neural Networks, Department of Atmospheric Sciences, invited by Graeme Stephens, December 14, 2001.

EEG Signal Analysis with Neural Network, Department of Electrical Engineering, University of Sydney, Sydney, Australia, August 6, 1999.

EEG Signal Analysis with Neural Network, Department of Computer Science and Engineering, University of New South Wales, Sydney, Australia, August 30, 1999.

EEG Signal Analysis with Neural Network, Department of Health Sciences, University of Technology, Sydney, Australia, September 16, 1999.

Temporal Neighborhoods for Function Approximation in Reinforcement Learning, University of Sydney, September 24, 1999.

Synthesis of Robust Control and Reinforcement Learning, Department of Systems Engineering, The Australian National University, Canberra, Australia, November 18, 1999.

Modeling Student Pilots for Intelligent Training, Department of Computer Science and Engineering, University of New South Wales, Sydney, Australia, December 17, 1999.

Invited presentation on *Brain-Computer Interface Research at Colorado State University* at the NIH-sponsored workshop on Brain-Computer Interface (BCI) Technology: Theory and Practice, Rensselaerville Institute, New York, June 16-20, 1999.

Invited session on "Analysis of Brainwaves" at the 5th International Work-Conference on Artificial and Natural Neural Networks (IWANN'99), Alicante, Spain, June 2-4 1999.

Machine-Learned Assist for Boundary Contour Tracing, NIH Second Visible Human Project Conference, Washington, DC, October, 1998, presented by S. Crawford-Hines, coauthored with Crawford-Hines and T. McCracken.

Spatial Analysis of Spontaneous EEG During Cognitive Tasks, 38th meeting of the Society for Psychophysiological Research, Denver, Colorado, September 23-27, 1998.

Determining Mental State from EEG Signals Using Parallel Implementations of Neural Networks, 20th International Congress of Applied Electronics, ITESM Campus Monterrey, Mexico, October, 1997.

Semi-Automated Tracing and Visualization of Medical Images Using MATLAB, MATLAB'97, Mathworks Conference on MATLAB, San Jose, CA, October, 1997.

Boundary Tracing of Medical Images for Three-Dimensional Model Development Assisted by Neural Networks, Hewlett-Packard Labs, Palo Alto, CA, October 8th, 1997.

Classification of EEG Signals for Human-Computer Interfaces, First Colorado Neural Network Symposium, Colorado School of Mines, October 11th, 1996.

Identifying Mental Tasks Using EEG Represented by AR Models, Computer Science Department, University of Wyoming, 1996.

Comparison of EEG Signal Representations for Classification, NIPS Workshop titled *Online Neural Information-*

Processing Systems: Prospects for Neural Human-Machine Interfaces, chaired by S. Makeig of the Naval Health Research Center, 1995.

Invited participant at National Science Foundation Grantees Workshop on Interactive Systems, 1995.

Comparison of EEG Signal Representations for Classification, Math and Computer Science Department, Colorado School of Mines, 1995.

Neural Networks, Control, and Reinforcement Learning, Colorado Machine Learning Colloquium Series, Colorado School of Mines, April 5th, 1993. Invited by Prof. Pratt of CSM.

Neural Networks and Reinforcement Learning, CSU Applied Mathematics Seminar, Feb. 18th, 1993. Invited by Prof. Kirby of the mathematics department.

Neural Networks and Regression, CSU Horticulture Department, invited by Prof. F. Moore, 1993.

A Model-Based Approach to Reinforcement Learning, Parallel Distributed Processing Group of faculty and students, University of Colorado, Boulder, 1993.

Advantages and Pitfalls of Applying Neural Networks to Predict the Performance of Financial Portfolios, Mortgage Bankers Association of America, June, 1992.

Reinforcement Learning and the Difficulty of Training Multilayer Neural Networks, Math and Computer Science Department, Colorado School of Mines, 1991.

Tutorial on *Neural Networks for Control*, 1990 Conference on Industrial and Engineering Applications of AI and Expert Systems.

Presenter at the 1988 NSF Workshop on Neural Networks for Robotics and Control.

Advising, Committee, and Other Service

External examiner for Ph.D. student at Thapar Institute of Engineering & Technology, Punjab India.

External examiner for Ph.D. student at University of British Columbia

Organized Computer Science Olympics for Ram Welcome, Fall, 2004–2006.

Member CSU College of Natural Sciences Sabbatical Review Committee, 2002–2004.

Member CSU College of Natural Sciences Teaching Awards Committee, 2000–2004.

Marshall for CSU College of Natural Sciences Graduation Ceremony, 2002.

Faculty adviser for local Linux User's Group, 1999–.

Faculty adviser for local ACM chapter, 1991-2002.

Member CSU College of Natural Sciences Faculty Research Grant Committee, 1996–1997.

Member IEEE-CS Elections Committee, 1994–1996.

Member of Admissions Cozmmittee for the CSU Molecular, Cellular, and Integrative Neuroscience (MCIN) Program, 1997–1999.

Member or past member of CS department's Executive Committee, Research Committee, Scholarship Committee, Graduate Committee, Undergraduate Committee, Facilities Committee, Awards Committee, and Faculty search committees.

AWARDS AND HONORS

CSU Online Outstanding Distance Educator Award, 2024.

Nominated for the 2022 Best Teacher Award, sponsored by the Colorado State University Alumni Association.

Best Overall Paper Award at *2015 International Joint Conference on Neural Networks (IJCNN)*, Killarney, Ireland, July, 2015. `http://www.ijcnn.org/assets/docs/ijcnn2015-awards.pdf`.

Since 2014, member of *Nu Rho Psi*, National Honor Society in Neuroscience

Since 2013, *Senior Member of IEEE*

In 2013, *Journal of Neural Engineering Highlights: A Compilation of the best papers published within the last two years* includes the article "Critical Issues in State-of-the-Art Brain-Computer Interface Signal Processing", Krusienski, D. Grosse-Wentrup, M., Galan, F., Coyle, D., Miller, K., Forney, E., and Anderson, C., *Journal of Neural Engineering*, vol. 8, no. 2.

In 2013, *Best Overall Poster Award*, out of 80 posters, at the Fifth International Brain-Computer Interface Meeting, for poster by Forney, E., Anderson, C., Gavin, W., and Davies, P., titled " A Stimulus-Free Brain-Computer Interface using Mental Tasks and Echo State Networks".

In 2009, *Best Paper Award* from IEEE Engineering in Medicine and Biology Society (EMBS), for paper by Müller, K.-R., Anderson, C.W., and Birch, G.E, titled "Linear and nonlinear methods for brain-computer interfaces", *IEEE Trans. on Neural Systems and Rehabilitation*, Vol. 11, No. 2, pp. 165-169, June 2003, for most cited paper published in the TNSRE journal over the past 5 years.

Outstanding Teacher in the Department of Computer Science, awarded by Students as Leaders in Science and the College of Natural Sciences, CSU, 2004.

Undergraduate Teaching Award from the College of Natural Sciences, CSU, 1995-1996.

Nominated for the Colorado State Board Teaching Award for 1995–1996.

Nominated for National Technological University (NTU) Outstanding Instructor Award, 1995–1996.

One of two nominated by CSU for the National Science Foundation Faculty Fellow Award, 1993.

Best Presentation of Session Award, American Control Conference, 1988.

Won a position on the ACM programming team at University of Nebraska, 1978.

Member of honoraries Upsilon Pi Epsilon, Pi Mu Epsilon, Tau Beta Pi, Alpha Lambda Delta.

Superior Scholarship Award, University of Nebraska, 1978.

CONFERENCES AND WORKSHOPS ATTENDED

Eighth International Brain-Computer Interface Meeting, Virtual Conference, June 2021.

Seventh International Brain-Computer Interface Meeting, Asilomar Conference Center, Pacific Grove, CA, May, 2018.

Sixth International Brain-Computer Interface Meeting, Asilomar Conference Center, Pacific Grove, CA. June, 2016.

Fifth International Brain-Computer Interface Meeting, Asilomar Conference Center, Pacific Grove, CA. June 3-7, 2013.

Brain-Computer Interface Technology: Fourth International Meeting, Asilomar Conference Center, Pacific Grove, CA. May 31 - June 4, 2010.

MAIA Workshop titled *BCI Meets Robotics: Challenging Issues in Brain-Computer Interaction and Shared Control*, at K.U. Leuven, Belgium, a final meeting for Jose Millan's European Commission project on BCI, November 19–20, 2007.

Intel workshop on Multicore programming workshop, at Trinity College, Dublin, May 23–25, 2007.

IM2 Winter Institute meeting, for Interactive Multimedia Information Management project involving IDIAP and partners at several institutions in Switzerland. Meeting held at Centre Loewenberg in Morat, Switzerland, February 19–22, 2007.

2006 NSF Workshop and Outreach Tutorials on Approximate Dynamic Programming, Cocoyoc, Mexico, April 3–6, 2006. Invited.

Brain-Computer Interface Technology: Third International Meeting, Rensselaerville, NY. June 14–19, 2005. Invited.

Neural Information Processing Systems, NIPS, 2005, Vancouver, Canada, and invited presentation to workshop titled *Towards Brain-Computer Interfacing*, Whistler, Canada. Also, attended NIPS 1991–1997.

1st IEEE Workshop on Computer Vision and Pattern Recognition for Human Computer Interaction (CVPRHCI), Madison, Wisconsin, June 17, 2003. Invited.

Brain-Computer Interface Technology: Moving Beyond Demonstrations, Rensselaerville Institute, New York, June 12-16, 2002. Sponsored by the National Institutes of Health. Invited.

Workshop on Learning and Approximate Dynamic Programming, Playacar, Mexico, April 8-10, 2002, psponsored by the National Science Foundation. Invited.

Brain-Computer Interface (BCI) Technology: Theory and Practice, Rensselaerville Institute, New York, June 16-20, 1999, sponsored by NIH. Invited.

5th International Work-Conference on Artificial and Natural Neural Networks (IWANN'99), Alicante, Spain, June 2-4 1999. Invited.

17th International Conference on Machine Learning, ICML-2000, Stanford University, June, 2000.

12th Australian Joint Conference on Artificial Intelligence, AI'99, Coogee, Australia, December, 1999.

38th meeting of the Society for Psychophysiological Research, Denver, Colorado, September 23-27, 1998.

20th International Congress of Applied Electronics, ITESM Campus Monterrey, Mexico, October, 1997.

MATLAB'97, Mathworks Conference on MATLAB, San Jose, CA, October, 1997.

MWSCAS'96, IEEE International Midwest Symposium on Circuits and Systems, 1996.

EANN'96, the International Conference on Engineering Applications of Neural Networks, London, England, June, 1996.

NSF Interactive Systems Program Grantees Workshop, November, 1995.

EMBC'95, the IEEE Engineering in Medicine and Biology Conference, Montreal, September, 1995.

NNSP'95, '97, the IEEE Workshop on Neural Networks for Signal Processing, Cambridge, MA, August, 1995; Amelia Island Plantation, FL, September, 1997.

NNACIP'94, the IEEE International Workshop on Neural Networks Applied to Control and Image Processing, Mexico City, 1994.

NBER/NSF Time Series Seminar, (unpublished presentation), 1994.

ACM *ASSETS'94*, The First Annual International ACM/SIGCAPH Conference on Assistive Technologies, 1994.

ICNN'93, IEEE International Conference on Neural Networks, 1993.

Invited tutorial on neural network applications at *IEAAIE'90*, International Conference on Industrial Engineering Applications of Artificial Intelligence and Expert Systems, 1990.

IEEE International Symposium on Intelligent Control, 1988–1990.

International Workshop on Machine Learning, 1987, 1989.

Neural Network Models of Conditioning and Action, The Twelfth Symposium on Models of Behavior at Harvard University, 1989.

MIT Machine Learning Workshop, 1989.

NSF Workshop on the Application of Neural Networks to Robotics and Control, 1988 (invited).

First Annual Meeting of the International Neural Network Society, 1988.

Invited presentation at American Control Conference, 1988.

IEEE First Annual International Conference on Neural Networks, 1987.

Second International Conference on Genetic Algorithms, 1987.

Annual Conference of the Cognitive Science Society, 1985 and 1986.

Fourth Yale Workshop on Applications of Adaptive Systems Theory, 1985.

IJCAI'85, Ninth International Joint Conference on Artificial Intelligence, 1985.

NCAI'84,82, National Conference on Artificial Intelligence, 1982 and 1984.

ACADEMIC ACTIVITIES

Courses Taught

Number	*Level*	*Title*
CS681	Advanced Graduate	Reinforcement Learning and Neural Networks
CS680	Advanced Graduate	Neural Networks and Reinforcement Learning
CS645	Advanced Graduate	Deep Learning, Reinforcement Learning
CS640	Advanced Graduate	Research Topics in Artificial Intelligence I
CS641	Advanced Graduate	Research Topics in Artificial Intelligence II
CS612	Advanced Graduate	Research Topics in Computer Graphics
NB586	Graduate	Techniques in Neuroscience II, Team taught
CS580	Graduate	Neural Networks
CS545	Graduate	Machine Learning
CS540	Graduate	Artificial Intelligence
CS510	Graduate	Computer Graphics
CS480	Advanced Undergraduate	Introduction to Machine Learning
CS445	Advanced Undergraduate	Introduction to Machine Learning

Number	*Level*	*Title*
CS440	Advanced Undergraduate	Introduction to Artificial Intelligence
CS410	Advanced Undergraduate	Introduction to Computer Graphics
CT310	Undergraduate	Web Development
CS345	Undergraduate	Machine Learning Foundations and Practices
CS301	Undergraduate	Foundations of Computer Science
CS253	Undergraduate	Data Structures and Algorithms
CS200	Undergraduate	Data Structures and Algorithms
CS192	Undergraduate	First Year Seminar
CS166	Undergraduate	Discrete Structures
CS161	Undergraduate	Object Oriented Problem Solving

Visiting Collaborators and Visiting Students Supervised

- Edwin Torres Garcia, 2012, Ph.D. candidate from Universidad de los Andes, Bogotá, Colombia.
- Dr. Tadanori Fukami, Department of Informatics Graduate School of Science and Engineering, Yamagata University, Japan, 2011.
- Reinaldo Uribe Muriel, 2009-2010, Ph.D. candidate from Universidad de los Andes, Bogotá, Colombia.
- Jorge del Rió Vera, 2003, Ph.D. candidate from the University of Malaga, Spain, Brain-computer interface research.
- Peter Raicevec, 2001, Ph.D. candidate from the Royal Institute of Tech in Stockholm Sweden, recurrent networks for reinforcement learning;
- Alex Duncan, 1999, Ph.D. candidate from University of Glasgow, EEG pattern classification;
- Zlatko Sijerčić, 1995–1996, post-doc from University of Illinois, Chicago, EEG signal processing;

Ph.D. Graduate Students Currently Advising

Name	*Degree*	*Thesis Topic*
Al-Sharif, M.	Ph.D. CS	Gesture recognition
Sharma, K.	Ph.D. CS	Brain-computer interfaces
Markovikj, D.	Ph.D. CS	Reinforcement Learning
Memon, P.	Ph.D. CS	Brain-computer interfaces

Graduate Students Advised

Name	*Degree*	*Thesis Title*
Stock, J.	Ph.D. CS	rom Neuro–Inspired Attention Methods to Generative Diffusion: Applications to Weather and Climate
Vafaei, F.	Ph.D. CS 2023	Machine Learning and Deep Learning Applications in Neuroimaging for Brain Age Prediction
Farhat, N.	M.S. CS 2022	Classification of P300 from non-invasive EEG signal using convolutional neural network
Kommrusch, S.	Ph.D. CS, 2022	Machine learning for computer aided programming: from stochastic program repair to verifiable program equivalence
Blondheim, D.	Ph.D. Systems Engineering, 2021	Machine Learning in Die Casting
Stock, J.	M.S. CS 2021	Using machine learning to improve vertical profiles of temperature and moisture for severe weather nowcasting
Yeluri, A.	M.S. CS 2020	Classification Using Out of Sample Testing of Neural Networks and Siamese-Like Neural Network for Handwritten Characters
Cuomo, J.	M.S. CS 2020	Machine Learning Models Applied to Weather Nowcasting
Kumar, A.	M.S. CS 2020	Policy Optimization for Industrial Benchmark Using Deep Reinforcement Learning
Surayagari, H.	M.S. CS 2020	Stock Market Prediction Using Machine Learning

Forney, E.	Ph.D. CS 2019	Convolutional Neural Networks for EEG Signal Classification in Asynchronous Brain-Computer Interfaces
Alzahrani, S.	Ph.D. SBME 2019	Brain-computer interfaces
Elliott, D.	Ph.D. CS 2018	Wisdom of the Crowd: Ensembles of Reinforcement Learning Neural Networks
Lee, M.	Ph.D. CS 2017	Sparse Bayesian Reinforcement Learning
Alzahrani, S.	M.S. SBME 2016	Brain-computer interfaces
Alotaibi, S.	Ph.D. CS 2015	Sentiment Analysis in the Arabic Language Using Machine Learning
Ashari, R.	Ph.D. CS 2015	EEG Subspace Analysis and Classification Using Principal Angles for Brain-Computer Interfaces
Verlekar, P.	M.S. CS 2014	Detecting Error-Related Negativity Using EEG Potentials Generated During Simulated Brain Computer Interaction
Sobhani, A.	M.S. CS 2014	P300 Classification Using Deep Belief Networks
Cashero, Z.	M.S. CS 2011	Comparison of EEG Preprocessing Methods to Improve the Classification of P300 Trials
Elliott, D.	M.S. CS 2010	Covariance Regularization in Mixture of Gaussians for High-Dimensional Image Classification
Natarajan, A.	M.S. CS 2009	Frequency-Based Representations of EEG Signals for Brain-Computer Interfaces
Aronoff, J.	M.S. CS 2009	A Semi-Automated Approch to Tracking Biological Cells in Video Microscopy
Knight, J.	Ph.D. CS 2009	Stability Analysis of Recurrent Neural Networks with Applications
Bush, K.	Ph.D. CS 2008	An Echo State Model of Non-Markovian Reinforcement Learning
Peterson, D.	Ph.D. CS 2007	EEG Oscilations Associated with Auditory Verbal Learning
Teli, M.	M.S. CS 2007	Dimensionality Reduction and Classification of Time Embedded EEG Signals
Chatzidimitriou, K. C.	M.S. CS 2006	Robust and Interpretable Statistical Models for Predicting the Intensification of Tropical Cyclones
Crawford-Hines, S.	Ph.D. CS 2003	Machine Learned Boundary Definitions for an Expert's Assistant in Image Processing
Knight, J.	M.S. CS 2003	Signal Fraction Analysis and Artifact Removal in EEG
Bush, K.	M.S. CS 2003	Modeling Observed Developmental Changes Influencing Hippocampal CA1 and CA3 Epileptiform Burst Characteristics
Tu, J.	M.S. CS 2001	Robust Reinforcement Learning and PI Control
Kretchmar, R.M.	Ph.D. CS 2000	A Synthesis of Reinforcement Learning and Robust Control Theory
Li, Qing,	M.S. CS 2000	Computer Modeling of the Kainate Model of Epilepsy
Denker, W.	Ph.D. CS 1998	Geometric Continuity of Rational Surfaces
Thorpe, T.	M.S. CS 1997	Vehicle Traffic Light Control Using SARSA
Schroeder, S.	M.S. CS 1997	Revisiting Karhunen-Loéve Compression for Seismic Reflection Data
Devulapalli, S.	M.S. CS 1996	Non-Linear Principal Component Analysis and Classification of EEG During Mental Tasks
Ford, D.	M.S. CS 1996	Analysis of LVQ in the Context of Spontaneous EEG Signal Classification
Martin, C.	M.S. CS 1996	Applying Neural Networks to Radiosity Form Factor Computation
Alvarez, S.	M.S. CS 1995	Mapping Terrain Elevations to Color Using Neural Networks
Stolz, E.	M.S. EE 1995	Multivariate Autoregressive Models for Classification of Spontaneous Electroencephalogram during Mental Tasks
Yoo, N.-W.	M.S. CS 1995	Neural Networks for Robot Navigation
Hong, Z.	M.S. CS 1993	Reinforcement Learning with Modular Networks
Furrow, E.	M.S. CS 1993	Controlling a Dynamic System in Real Time
Orosz, E.	M.S. CS 1993	Classification of EEG Signals
Johnson, J.	M.S. CS 1992	Reinforcement Learning Using Cascade Correlation