Paul M. Bodily, Ph.D.

+1-208-282-4932 • bodipaul@isu.edu • www2.cose.isu.edu/~bodipaul

Research Interests

Machine learning/AI, computational creativity, computing education, computational theory, bioinformatics

Professional Experience

- **Idaho State University** **Aug 2018 – Present**
  Assistant Professor, Department of Computer Science *Pocatello, ID*
  - 2022 Idaho State University Master Teacher Award recipient
  - PI or Co-PI on externally-funded grants totaling over $1M
  - Mentored research resulting in 31 peer-reviewed publications (19 w/ student first authors)
  - Fulfilled significant departmental service roles including lead role in 2020 launch of MS in CS program

- **Brigham Young University** **Aug 2015 – Aug 2018**
  Graduate Research Assistant, Lab of Dr. Dan Ventura *Provo, UT*
  - ***Ph.D. Dissertation***: "Machine Learning for Inspired, Structured, Lyrical Music Composition"
  - Higher-order non-homogenous Markov models for constrained sequence generation
  - Abstract structure detection via genetic algorithms and multi-Smith-Waterman sequence alignment
  - Text-transformation with constraints using probabilistic vector space language modeling
  - Automated musical key inference detection via n-gram language modeling
  - Design and development of PIERRE, a computational creativity system for culinary arts

- **Brigham Young University** **May 2010 – Aug 2015**
  Graduate Research Assistant, Lab of Dr. Mark Clement *Provo, UT*
  - ***M.S. Thesis***: "Inverted Sequence Identification in Diploid Genomic Scaffold Assembly via Weighted MAX-CUT Reduction"
  - Phased haplotype assembly using machine learning classification
  - Improving SNP calling in Alzheimer's disease via phased haplotype assembly
  - Scaffolding in assembly of diploid heterozygous raspberry genome
  - Pedigree-based variant analysis of ADHD using GNUMAP
  - Automated annotation of Pyrenophora semeniperda genome using MAKER, GBrowse, and Apollo

- **AncestryDNA** **Sep 2014 – Dec 2014**
  Bioinformatics Graduate Research Intern, Supervisor: Dr. Ross Curtis *Provo, UT*
  - Pedigree and genotype data analysis for development of ancestral birth location prediction algorithm
  - Data preparation and visualization using Visual Studio and R

- **Brigham Young University** **Jan 2009 – May 2010**
  Undergraduate Research Assistant, Lab of Dr. Mark Clement *Provo, UT*
  - Using R to infer genetic regulatory networks from microarray data

Education

- **Ph.D. in Computer Science**, Brigham Young University, GPA 4.0, 2018
- **M.S. in Computer Science**, Brigham Young University, GPA 4.0, 2013
- **B.S. in Bioinformatics**, Brigham Young University, GPA 3.98, 2010
- **B.A. in Italian**, Brigham Young University, GPA 4.0, 2010
- **Minor in Computer Science**, Brigham Young University, GPA 4.0, 2010
- **Minor in Music**, Brigham Young University, GPA 3.98, 2010

Funded Grant Proposals

- Rodriguez, R. (PI), **Bodily, P.M.** (Co-PI), "Support for transient spectrokenetic measurements", Battelle Energy Alliance LLC (BEA, INL). $101,209. 2022.
- **Bodily, P.M.** (PI), Khadka, R. (Co-PI), "Application of advanced computational theory to facilitate efficient solutions to real-world combinatorial problems", Center for Advanced Energy Studies (CAES). $22,570. 2022.
- **Bodily, P.M.** (PI), "Interactive visualization tools for teaching computer science theory", Idaho State University Office of Research. $4,954. 2022.
- Wright, M. (PI), Liday, C. (Co-PI), Nguyen, E. (Co-PI), **Bodily, P.M.** (Co-PI), Robinson, R. (Co-PI), Segall, I. (Co-PI), Del Fiol, G. (Co-PI), "Artificial intelligence in healthcare: Understanding patient information needs and designing comprehensible transparency", Food and Drug Administration (FDA). $667,023. 2021.
- **Bodily, P.M.** (PI), Isaac Griffith (Co-PI), Omid Heidari, Mary Hofle, Marco Schoen, Anish Sebastian, Kellie Wilson. "AER R-43127 Proposal: Automating predictive maintenance for energy efficiency via machine learning and IoT sensors." Avista Corporation. $82,112. 2020.
- **Bodily, P.M.** (PI), Harris, H. (Supporting), "Combining XR with CC to visually model and facilitate the creative act of social interaction," Idaho State University Office for Research. $2,500. 2019.
- Delparte, D. (PI), **Bodily, P.M.** (substitute Co-PI), "Implementing unmanned aircraft systems to detect crop viruses using hyperspectral remote sensing and machine learning", Idaho State Department of Agriculture. $161,175. 2019.
- **Bodily, P.M.** (PI), Hill, C. (Co-PI), "STEM outreach proposal," Idaho STEM Action Center. $4,000. 2018.
- **Bodily, P.M.** (PI), "CoSE internal minigrant," Idaho State University College of Science and Engineering. $2,500. 2018.

Peer-Reviewed Publications (* indicates student author)

L. Griffel*, D. Delparte, J. Whitworth, **P. M. Bodily**, and D. Hartley, "Evaluation of artificial neural network performance for classification of potato plants infected with potato virus y using spectral data on multiple varieties and genotypes," *Smart Agricultural Technology*, vol. 3, p. 100101, 2023.

J. Aamir* and **P. M. Bodily**, "Implementation of an anti-plagiarism constraint model for sequence generation systems," in *Proceedings of the 13th International Conference on Computational Creativity (ICCC)*, 2022.

P. M. Bodily and D. Ventura, "Open computational creativity problems in computational theory," in *Proceedings of the 13th International Conference on Computational Creativity (ICCC)*, 2022.

K. Marchetti* and **P. M. Bodily**, "KAMI: Leveraging the power of crowd-sourcing to solve complex, real-world problems," in *Proceedings of the 2nd Intermountain Engineering, Technology, and Computing Conference (i-ETC)*, 2022. (Best student paper award).

K. Marchetti* and **P. M. Bodily**, "Visualizing the 3SAT to CLIQUE reduction process," in *Proceedings of the 2nd Intermountain Engineering, Technology, and Computing Conference (i-ETC)*, 2022.

K. Marchetti* and **P. M. Bodily**, "John the ripper: An examination and analysis of the popular hash cracking algorithm," in *Proceedings of the 2nd Intermountain Engineering, Technology, and Computing Conference (i-ETC)*, 2022.

D. Moore*, A. Petrovic*, C. Bailey*, and **P. M. Bodily**, "Composition of short stories using book recommendations," in *Proceedings of the 2nd Intermountain Engineering, Technology, and Computing Conference (i-ETC)*, 2022.

D. Moore*, J. Edwards, H. Karimi, R. Khadka, and **P. M. Bodily**, "Temporal abstract syntax trees for understanding student coding thought process," in *Proceedings of the 2nd Intermountain Engineering, Technology, and Computing Conference (i-ETC)*, 2022.

M. Goeckner*, K. Brainard*, A. Lyman*, and **P. M. Bodily**, "Sketch-a-map (SAM): Creative route art generation," in *Proceedings of the 2nd Intermountain Engineering, Technology, and Computing Conference (i-ETC)*, 2022.

P. M. Bodily and D. Ventura, "Steerable music generation which satisfies long-range dependency constraints," *Transactions of the International Society for Music Information Retrieval (TISMIR)*, vol. 5, no. 1, 2022.

A. Suvorov, C. Scornavacca, M. S. Fujimoto, **P. M. Bodily**, M. Clement, K. A. Crandall, M. F. Whiting, D. R. Schrider, and S. M. Bybee, "Deep ancestral introgression shapes evolutionary history of dragonflies and damselflies," *Systematic Biology*, vol. 71, no. 3, pp. 526–546, 2022.

D. A. Bates, C. E. Bates, A. S. Earl, C. Skousen, A. N. Fetbrandt, J. Ritchie, **P. M. Bodily**, and S. M. Johnson, "Proximal-end bias from in-vitro reconstituted nucleosomes and the result on downstream data analysis," *PLOS ONE*, vol. 16, no. 10, p. e0258737, 2021.

P. M. Bodily, I. Griffith, M. Hofle, O. Heidari, S. Lama*, A. Conlin*, A. Christiansen*, D. Moore*, K. Wilson, A. Sebastian, and M. Schoen, "Automating predictive maintenance for energy efficiency via machine learning and IoT sensors," in *Proceedings of ISCA 34th International Conference on Computer Applications in Industry and Engineering (CAINE)*, vol. 79 of *EPiC Series in Computing*, pp. 54–63, EasyChair, 2021.

J. Aamir*, B. Durtschi*, A. Chrysler, and **P. M. Bodily**, "Detecting vibration frequencies of concrete structures via RFID tags," in *Proceedings of ISCA 34th International Conference on Computer Applications in Industry and Engineering (CAINE)*, vol. 79 of *EPiC Series in Computing*, pp. 1–10, 2021.

P. Glines*, I. Griffith, and **P. M. Bodily**, "Software design patterns of computational creativity: A systematic mapping study," in *Proceedings of the International Conference on Computational Creativity (ICCC)*, pp. 218–221, 2021.

P. M. Bodily and D. Ventura, "Inferring structural constraints in musical sequences via multiple self-alignment," in *Proceedings of the Annual Meeting of the Cognitive Science Society (CogSci)*, vol. 43, pp. 1112–1118, 2021.

J. M. Cunha, S. Harmon, C. Guckelsberger, A. Kantosalo, **P. M. Bodily**, and K. Grace, "Understanding and strengthening the Computational Creativity community: A report from the Computational Creativity Task Force," in *Proceedings of the 11th International Conference on Computational Creativity (ICCC)*, pp. 1–7, 2020.

P. M. Bodily, "Therapeutic computational creativity: Co-creativity for well-being," in *Proceedings of the Workshop on the Future of Co-Creative Systems*, pp. 1–2, 2020.

D. Lasher*, T. Hedgepeth*, N. N. Taylor*, and **P. M. Bodily**, "Emotive music composition from visual sources of inspiration," in *Proceedings of the 11th International Conference on Computational Creativity (ICCC)*, pp. 263–266, 2020.

M. Harris*, H. Harris*, and **P.M. Bodily**, "ERwEM: Events represented with emotive music using topic-filtered tweets," in *Proceedings of the 11th International Conference on Computational Creativity (ICCC)*, pp. 255–258, 2020.

B. Tyler*, K. Wildson*, and **P. M. Bodily**, "Computational humor: Automated pun generation," in *Proceedings of the 11th International Conference on Computational Creativity (ICCC)*, pp. 181–184, 2020.

A. Sewell*, A. Christiansen*, and **P. M. Bodily**, "Creative constellation generation: A system description," in *Proceedings of the 11th International Conference on Computational Creativity (ICCC)*, pp. 496–499, 2020.

P. Glines*, B. Biggs*, and **P. M. Bodily**, "A leap of creativity: From systems that generalize to systems that filter," in *Proceedings of the 11th International Conference on Computational Creativity (ICCC)*, pp. 297–302, 2020.

H. Harris*, M. Thompson*, I. Griffith, and **P. M. Bodily**, "Exploring CC in XR: Visualizing creative conversation topics to facilitate meaningful face-to-face interaction," in *Proceedings of the 11th International Conference on Computational Creativity (ICCC)*, pp. 429–436, 2020.

P. M. Bodily and D. Ventura, "What happens when a computer joins the group?," in *Proceedings of the 11th International Conference on Computational Creativity (ICCC)*, pp. 41–48, 2020.

P. Glines*, B. Biggs*, and **P. M. Bodily**, "Probabilistic generation of sequences under constraints," in *Proceedings of the 1st Intermountain Engineering, Technology, and Computing Conference (i-ETC)*, 2020.

H. Harris*, M. Thompson*, I. Griffith, and **P. M. Bodily**, "HeyLo: Visualizing user interests from Twitter using emoji in mixed reality," in *Proceedings of the 1st Intermountain Engineering, Technology, and Computing Conference (i-ETC)*, pp. 23–28, 2020.

D. Lasher* and **P. M. Bodily**, "Tweet-inspired intelligent subselection of semantically-related lyrical training data," in *Proceedings of the 1st Intermountain Engineering, Technology, and Computing Conference (i-ETC)*, pp. 41–45, 2020.

P. M. Bodily, P. Glines*, and B. Biggs*, "'She Offered No Argument': Constrained probabilistic modeling for mnemonic device generation," in *Proceedings of the 10th International Conference on Computational Creativity (ICCC)*, pp. 81–88, Association for Computational Creativity, 2019.

M. S. Fujimoto, C. A. Lyman, **P. M. Bodily**, M. J. Clement, and Q. Snell, "GNUMAP 4.0: Space and time efficient NGS read mapping using the FM-index," *Insights of Bioinformatics*, vol. 1, no. 1, pp. 1–8, 2019.

B. Bay, **P. M. Bodily**, and D. Ventura, "Dynamically scoring rhymes with phonetic features and sequence alignment," in *Proceedings of the IEEE 31st International Conference on Tools with Artificial Intelligence (ICTAI)*, pp. 1581–1585, 2019.

P. M. Bodily and D. Ventura, "Comparative analysis of key inference models for musical metacreation," in *Proceedings of the 6th International Workshop on Musical Metacreation (MUME)*, 2018.

P. M. Bodily and D. Ventura, "Musical metacreation: Past, present, and future," in *Proceedings of the 6th International Workshop on Musical Metacreation (MUME)*, 2018.

P. M. Bodily and D. Ventura, "Explainability: An aesthetic for aesthetics in computational creative systems," in *Proceedings of the 9th International Conference on Computational Creativity (ICCC)*, pp. 153–160, 2018.

P. M. Bodily, B. Bay, and D. Ventura, "Computational creativity via human-level concept learning," in *Proceedings of the 8th International Conference on Computational Creativity (ICCC)*, pp. 57–64, 2017.

P. M. Bodily and D. Ventura, "HBPL: a framework for debating, developing, and reusing foundational models of musical metacreativity," in *Proceedings of the 5th International Workshop on Musical Metacreation (MUME)*, 2017.

B. Bay, **P. M. Bodily**, and D. Ventura, "Text transformation via constraints and word embedding," in *Proceedings of the 8th International Conference on Computational Creativity (ICCC)*, pp. 49–56, 2017.

A. Suvorov, N. Jensen, C. Sharkey, M. S. Fujimoto, **P. M. Bodily**, H. Wightman, T. Ogden, M. J. Clement, and S. M. Bybee, "Opsins have evolved under the permanent heterozygote model: insights from phylotranscriptomics of Odonata," *Molecular Ecology*, vol. 26, no. 5, pp. 1306–1322, 2017.

M. Fujimoto, C. Lyman, A. Suvorov, **P. M. Bodily**, Q. Snell, K. Crandall, S. Bybee, and M. J. Clement, "Genome polymorphism detection through relaxed de Bruijn graph construction," in *Proceedings of the 17th IEEE International Conference on Bioinformatics and Bioengineering (BIBE)*, pp. 212–216, 2017.

C. A. Lyman, M. Fujimoto, A. Suvorov, **P. M. Bodily**, Q. Snell, K. A. Crandall, S. M. Bybee, and M. J. Clement, "Whole genome phylogenetic tree reconstruction using colored de Bruijn graphs," in *Proceedings of the IEEE 17th International Conference on Bioinformatics and Bioengineering (BIBE)*, pp. 260–265, 2017.

M. S. Fujimoto, **P. M. Bodily**, C. A. Lyman, A. Jacobsen, Q. Snell, and M. J. Clement, "Modeling global and local codon bias with deep language models," in *Proceedings of the IEEE 17th International Conference on Bioinformatics and Bioengineering (BIBE)*, pp. 151–156, 2017.

P. M. Bodily, M. S. Fujimoto, J. T. Page, M. J. Clement, M. T. Ebbert, and P. G. Ridge, "A novel approach for multi-SNP GWAS and its application in Alzheimer's disease," *BMC Bioinformatics*, vol. 17, no. 7, pp. 455–463, 2016.

P. M. Bodily, M. S. Fujimoto, Q. Snell, D. Ventura, and M. J. Clement, "ScaffoldScaffolder: Solving contig orientation via bidirected to directed graph reduction," *Bioinformatics*, vol. 32, no. 1, pp. 17–24, 2016.

P. M. Bodily, M. Fujimoto, C. Ortega, N. Okuda, J. C. Price, M. J. Clement, and Q. Snell, "Heterozygous genome assembly via binary classification of homologous sequence," *BMC Bioinformatics*, vol. 16, no. 7, 2015.

M. S. Fujimoto, **P. M. Bodily**, S. Amin, M. J. Clement, Q. Snell, and B. Bundy, "Nucleotide sequence inference of polypeptides using hidden Markov models," in *Proceedings of the Biotechnology and Bioinformatics Symposium (BIOT)*, 2014.

M. S. Fujimoto, **P. M. Bodily**, N. Okuda, M. J. Clement, and Q. Snell, "Effects of error-correction of heterozygous next-generation sequencing data," *BMC Bioinformatics*, vol. 15, no. S7, p. S3, 2014.

M. M. Soliai, S. E. Meyer, J. A. Udall, D. E. Elzinga, R. A. Hermansen, **P. M. Bodily**, A. A. Hart, and C. E. Coleman, "De novo genome assembly of the fungal plant pathogen Pyrenophora semeniperda," *PLoS ONE*, vol. 9, no. 1, 2014.

M. Seeley, M. Clement, C. Giraud-Carrier, Q. Snell, **P. M. Bodily**, and M. S. Fujimoto, "A structured approach to ensemble learning for Alzheimer's disease prediction," in *Proceedings of the 5th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM-BCB)*, pp. 605–606, 2014.

P. M. Bodily, M. J. Clement, Q. Snell, M. S. Fujimoto, and P. G. Ridge, "Haplotype-centered mapping for improved alignments and genetic association studies," in *Proceedings of the 5th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics*, pp. 499–505, 2014.

N. Okuda, **P. M. Bodily**, J. Price, M. Clement, and Q. Snell, "Hapmaker: Synthetic haplotype generator," in *Proceedings of the International Conference on Bioinformatics & Computational Biology (BIOCOMP)*, pp. 370–374, 2013.

J. O'Rawe, T. Jiang, G. Sun, Y. Wu, W. Wang, J. Hu, **P. M. Bodily**, L. Tian, H. Hakonarson, W. Johnson, Z. Wei, K. Wang, and G. Lyon, "Low concordance of multiple variant-calling pipelines: Practical implications for exome and genome sequencing," *Genome Medicine*, vol. 5, no. 3, 2013.

P. M. Bodily, M. J. Clement, Q. Snell, J. C. Price, M. S. Fujimoto, and N. Okuda, "Application of a MAX-CUT Heuristic to the contig orientation problem in genome assembly," in *Proceedings of the 4th ACM Conference on Bioinformatics, Computational Biology and Biomedical Informatics (ACM-BCB)*, pp. 476–483, 2013.

R. G. Morris, S. H. Burton, **P. M. Bodily**, and D. Ventura, "Soup over bean of pure joy : Culinary ruminations of an artificial chef," in *Proceedings of the 3rd International Conference on Computational Creativity (ICCC)*, (Dublin, Ireland), pp. 119–125, 2012.

J. A. Ward, J. Calvin Price, M. Clement, M. Schatz, C. A. Weber, J. D. Swanson, **P. M. Bodily**, K. S. Lewers, F. Fernandez Fernandez, P. Burns, and Others, "A draft assembly and analysis of the highly heterozygous diploid red raspberry genome (Rubus idaeus cv. Heritage)," in *Proceedings of the 20th Plant & Animal Genome (PAG) Conference*, p. W315, 2012.

J. C. Price, J. A. Udall, **P. M. Bodily**, J. A. Ward, M. C. Schatz, J. T. Page, J. D. Jensen, Q. O. Snell, and M. J. Clement, "De novo identification of "heterotigs" towards accurate and in-phase assembly of complex plant genomes," in *Proceedings of the International Conference on Bioinformatics & Computational Biology (BIOCOMP)*, pp. 144–150, 2012.

P. M. Bodily, J. Price, M. Clement, and Q. Snell, "ScaffoldScaffolder: An aggressive scaffold finishing algorithm," in *Proceedings of the International Conference on Bioinformatics & Computational Biology (BIOCOMP)*, pp. 385–390, 2012.

N. L. Clement, B. A. Shepherd, **P. M. Bodily**, S. Tumur-Ochir, Y. Gim, Q. Snell, M. J. Clement, and W. E. Johnson, "Parallel pair-HMM SNP detection," in *Proceedings of the 26th IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW) 2012*, pp. 675–683, 2012.

G. J. Lyon, T. Jiang, R. Van Wijk, W. Wang, **P. M. Bodily**, J. Xing, L. Tian, R. J. Robison, M. Clement, Y. Lin, P. Zhang, Y. Liu, B. Moore, J. T. Glessner, J. Elia, F. Reimherr, W. W. van Solinge, M. Yandell, H. Hakonarson, J. Wang, W. E. Johnson, Z. Wei, and K. Wang, "Exome sequencing and unrelated findings in the context of complex disease research: ethical and clinical implications.," *Discovery medicine*, vol. 12, no. 62, pp. 41–55, 2011.

S. H. Burton, **P. M. Bodily**, R. G. Morris, C. D. Knutson, and J. L. Krein, "Design team perception of development team composition: Implications for Conway's law," in *Proceedings of the 2nd International Workshop on Replication in Empirical Software Engineering Research (RESER)*, 2011.

Professional Teaching Experience

- **Assistant Professor** — **Aug 2018 – Present**
  Department of Computer Science, Idaho State University — *Pocatello, ID*

- Awarded Idaho State University's Master Teacher Award, 2022
- ratemyprofessors.com rating of 5.0/5.0 (94 ratings)
- Courses taught include:
  - CS 1337 - Introduction to Computer Organization and Architecture
  - CS 4412/5512 - Advanced Algorithms
  - CS 3305 - Introduction to Computational Theory
  - CS 6605 - Computational Theory
  - CS 4473/5573 - Computational Creativity
  - CS 4478/5578 - Machine Learning
  - CS 3385 - Data Structures and Algorithms
  - CS 4499 - Artificial Intelligence
  - CS 4481 - Compilers
  - CS 4492 - Special Problems: NP-Complete Reductions and Solutions
  - CS 6699 - Introduction to Quantum Computing
- Majority of courses offered in hybrid or fully online format (https://www2.cose.isu.edu/~bodipaul/courses/)
- Created a department-wide service-learning initiative for junior and senior students

Subject Matter Expert **Apr 2019 – Present**
Ignite Their Future Summer Camp, Idaho State University *Pocatello, ID*

- Developed new curriculum for Python Programming for Beginners
- Trained prospective high school computer science instructors and middle school students
- Delivered camp virtually to high schoolers and instructors in 2020

CS 673 Teaching Assistant **2017**
Department of Computer Science, Brigham Young University *Provo, UT*

- Substitute lecturer and advised students on incorporating machine learning in computational creativity systems

CS 312 Teaching Assistant **2016**
Department of Computer Science, Brigham Young University *Provo, UT*

- Tutored and assisted two classes of 48 students with algorithm and complexity analysis

CS 142 Course Instructor **May 2015 – June 2015**
Department of Computer Science, Brigham Young University *Provo, UT*

- Prepared and taught 3-hour lectures twice a week for 6 weeks for 90 students
- Aided in development of course curriculum and assessment procedures
- Directed and supervised 7 Teaching Assistants
- Received 7.1/8.0 on Overall Instructor Ratings (.5 above College Instructor average)
- I developed several teaching examples for this course (see http://tinyurl.com/bodily-examples)

CS 360 Teaching Assistant **2015**
Department of Computer Science, Brigham Young University *Provo, UT*

- Tutored and assisted two classes of 40 students with web programming concepts and application
- Concepts included Javascript, Angular, and MongoDB

CS 418 Teaching Assistant **2012 – 2015**
Department of Computer Science, Brigham Young University *Provo, UT*

- Assisted in developing curriculum, assignments, and exams for undergraduate bioinformatics course

CS 618 Teaching Assistant **2011 – 2013**
Department of Computer Science, Brigham Young University *Provo, UT*

- Assisted in developing curriculum, assignments, and exams for graduate bioinformatics courses
- Aided graduate biology students in development of bioinformatics tools for lab-specific projects

CS 142 Administrative Teaching Assistant **2010 – 2011**
Department of Computer Science, Brigham Young University *Provo, UT*

- Directed, trained, and supervised 9 Teaching Assistants for 3 sections of introductory programming course
- Aided in development of course curriculum and assessment procedures
- Occasional presentation of class lectures over fundamental Java/C++ programming concepts

Italian 101/102 Accelerated, Italian 201 Instructor **2007 – 2010**
Department of Italian, Brigham Young University *Provo, UT*

- Prepared and taught lectures daily on Italian grammar and vocabulary
- Originated the BYU Palio, a semiannual cultural celebration that regularly hosts 400 faculty/students
- Received 7.2/8.0 on Overall Course Student Ratings in 2010 (.5 above BYU Instructor average)

Instructor/Private Tutor **2009**
The New British Centre *Rome, Italy*

- Received extensive training in rules of English grammar
- Prepared and taught lessons to native Italians on English grammar, vocabulary, and conversation

Awards

- **Finalist (10th place)**, International AI Song Contest, 2022
- **Master Teacher Award**, Idaho State University, 2022
- **Career Path Internship Supervisor of the Semester Nominee**, Idaho State University, 2021
- **Career Path Internship Supervisor of the Semester Runner-up**, Idaho State University, 2020
- **Graduate Student Society Research Presentation Award**, Brigham Young University, 2018
- **Graduate Student Society Research Presentation Award**, Brigham Young University, 2017
- **Student Research Conference Session Winner**, Brigham Young University, 2017
- **Graduate Research Fellowship** ($15,000), *College of Physical and Mathematical Sciences*, Brigham Young University, 2016
- **Student Scholarship Award**, *PROSECCO Code-Camp*, Antwerp, Belgium, 2016
- **Graduate Student Society Research Presentation Award**, Brigham Young University, 2016
- **ACM BCB '14 Travel Award**, National Science Foundation, 2014
- **ACM BCB '13 Travel Award**, National Science Foundation, 2013
- **Summa Cum Laude Graduate**, Brigham Young University, 2010
- **Spring/Summer Academic Scholarship**, Brigham Young University, 2008
- **Spring/Summer Academic Scholarship**, Brigham Young University, 2007
- **Brigham Young Bicentennial Award**, Full-tuition, Academic Scholarship, Brigham Young University, 2006 – 2009
- **Brigham Young Bicentennial Award**, Full-tuition, Academic Scholarship, Brigham Young University, 2002 – 2003
- **International Baccalaureate Diploma**, Henry D. Sheldon High School, Eugene, OR, 2002
- **Eagle Rank Award** (6 Eagle Palms), Boy Scouts of America, 2000

Proposals in Progress

- **Bodily, P.M.** (PI), "A Dynamic, Interactive Approach to NP-Complete Problems, Reductions, and Solutions with Redux", National Science Foundation (NSF), $2,400, Target date: September 18, 2023.

Other Proposals

- Turner, K. (PI), Grinath, A. (Co-I), **Bodily, P.M.** (Co-I), "RII Track-2 FEC: Artificial intelligence for plant systems science through EPSCoR AI-campus", National Science Foundation (NSF). $814,498. 2021. Not funded.
- **Bodily, P.M.** (PI), "RII Track-2 FEC: Artificial intelligence for plant systems science through EPSCoR AI-campus towards industries of tomorrow", National Science Foundation (NSF). $964,000. 2021. Not

funded.

- **Bodily, P.M.** (PI), "CS summer camp proposal", Associated Students of Idaho State University (ASISU). $2,400. 2021. Not funded.
- **Bodily, P.M.** (PI), "ISU ACM makerspace grant request", Associated Students of Idaho State University (ASISU). $15,000. 2021. Not funded.
- **Bodily, P.M.** (PI), "STEM outreach proposal," Associated Students of Idaho State University (ASISU). $4,000. 2021. Not funded.
- **Bodily, P.M.** (PI), "Application for professional development award", Idaho State University Staff Council. $296, 2021. Not funded.
- **Bodily, P.M.** (PI), "CAES Summer Visiting Faculty Program," Center for Advanced Energy Studies (CAES). $10,000. 2021. Not funded.
- Robinson, R. (PI), **Bodily, P.M.** (Co-PI), Wright, M. (Co-PI), Griffith, I. (Co-PI), "Focused data Capture and Utilization Support (FoCUS): A cloud based, multi-view, mobile-health application for childhood ADHD," National Institutes of Health (NIH). $639,000. 2021. Not funded.
- Robson, N. (PI), Rasche, M. (Co-PI), McCarthy, J.M. (Co-PI), Schoen, M. (Co-PI), Banerjee, A. (Co-PI), Buchanan, J. (Co-I), **Bodily, P.M.** (Co-I), "NSF GCR: Cognitive human interactive robotics for real-world environments using intelligent body/limb morphology", National Science Foundation (NSF). $866,975. 2021. Not funded.
- Turner, K. (PI), Grinath, A. (Co-I), **Bodily, P.M.** (Co-I), "RII Track-2 FEC: artificial intelligence for plant systems science through EPSCoR AI-Campus", National Science Foundation (NSF). $814,498. 2021. Not funded.
- Schoen, M. (Co-PI), **Bodily, P.M.** (Co-I), Wilson, K. (Co-I), Sebastian, A. (Co-I), Heidari, O. (Co-I), Hofle, M. (Co-I), Griffith, I. (Co-I), "NSF Major Research Instrumentation Program - NSF 18-513 ISU pre-proposal", National Science Foundation (NSF). $198,800. 2020. Not funded.
- McCarthy, J. (PI), Robson, N. (Co-PI), Schoen, M. (Co-PI), Banerjee, A. (Co-PI), **Bodily, P.M.** (Co-I), Delparte, D. (Co-I), "NSF Major Research Instrumentation Program - NSF 18-513 ISU Pre-Proposal", National Science Foundation (NSF). $198,800. 2020. Not funded.
- Robinson, R. (PI), **Bodily, P.M.** (Co-I), Wright, M. (Co-I), Griffith, I. (Co-I), "Focused data Capture and Utilization Support (FoCUS): a cloud-based, multi-view, mobile-health application to streamline medication-management of ADHD," National Institutes of Health (NIH). $300,000. 2020. Not funded.
- Robinson, R. (PI), Wright, M. (Co-PI), **Bodily, P.M.** (Co-I), Griffith, I. (Co-I), "Focused data Capture and Utilization Support (FoCUS): A cloud-based, multiview, mobile-health application for childhood ADHD," National Institutes of Health (NIH). $299,999. 2020. Not funded.
- Chrysler, A. (PI), **Bodily, P.M.** (Co-PI), "Genetic algorithms for design of small satellite antenna arrays," National Aeronautics and Space Administration (NASA). $49,768. 2020. Not funded.
- Turner, K. (PI), **Bodily, P.M.** (Co-PI), "Connecting artificial intelligence and plant biology to understand adaptation to environment," National Science Foundation (NSF). $809,901. Not funded.
- Azmy, Y. (PI), Avramova, M. (Supporting), Palmtag, S. (Supporting), Dinh, N. (Supporting), Hou, J. (Supporting), Chi, M. (Supporting), Briggs, S. A. (Supporting), Ke, J.-H. (Supporting), **Bodily, P.M.** (Supporting), Hudelot, J.-P. (Supporting), Blaise, P. (Supporting), "Data-driven multi-physics simulation-guided characterization and optimization of test conditions and fuel performance in the VTR," US Department of Energy (DOE). $4,500,000. 2019. Not funded.
- Perez, A. (PI), Delparte, D. (PI), Sebastian, A. (PI), **Bodily, P.M.** (PI), Lybecker, D. (PI), "NRI:INT: COLLAB: In-situ plant virus detection using a scalable, multi-agent robotic sensing and learning collaborative system," National Science Foundation (NSF). $1,065,380. 2019. Not funded.
- Chrysler, A. (PI), **Bodily, P.M.** (Co-PI), "Training undergraduate students in genetic algorithms for design of small satellite antennas," National Aeronautics and Space Administration (NASA). $31,314. 2019. Not funded.
- Perez Gracia, A. (PI), **Bodily, P.M.** (Co-PI), Schoen, M. P. (Co-PI), Devine, N. (Co-PI), Perry, J. (Co-PI), Wolbrecht, E. (Co-PI), Sebastian, A. (Co-PI), Griffith, I. (Co-PI), Lloyd, K. (Co-PI), Delparte, D. (Co-PI), Robertson, D. (Co-PI), "Industry 5.0 in Idaho: Automation using intelligent human-machine

systems," Idaho State Board of Education (SBOE). $1,980,630. 2019. Not funded.
- Parsekian, A. (PI), Paige, G. (Co-I), Grana, D. (Co-I), Harpold, A. (Co-I), Sullivan, B. (Co-I), Yang, Y. (Co-I), McCoy, S. (Co-I), Hanan, E. (Co-I), Godsey, S. (Co-I), Aho, K. (Co-I), Glenn, N. (Co-I), **Bodily, P.M.** (Co-I), "BigCZData: Connecting surface and subsurface information to quantify resilience, build capacity, and increase participation in critical zone science," National Science Foundation (NSF). $5,763,893. 2018. Not funded.
- Edwards, J. M. (PI), **Bodily, P.M.** (PI), Griffith, I. D. (Co-PI), Fulton, E. K. (Co-PI), Recker, M. M. (Co-PI), "Collaborative Research: Sustainable professional development of high school computer programming teachers using syntax scaffolding," National Science Foundation (NSF). $271,974. 2018. Not funded.

Manuscripts in progress (* indicates student author)

- **P.M. Bodily** and Dan Ventura, "Computational creativity: Theory and application", targeting the Journal of Computational Creativity.
- K. Marchetti* and **P.M. Bodily**, "Visualizations tools in computational theory education: A systematic literature review", targeting the 28th Innovation and Technology in Computer Science Education (ITiCSE).
- K. Marchetti*, A. Diviney*, C. Eardley*, D. Igbokwe*, and **P.M. Bodily**, "Redux: An interactive, dynamic tool for learning NP-completeness and mapping reductions", targeting the 28th Innovation and Technology in Computer Science Education (ITiCSE).
- D. Moore*, J. Edwards, H. Karimi, **P.M. Bodily**, "Measuring abstract computational thinking in novice programmers via analysis of temporal abstract syntax trees", targeting the 28th Innovation and Technology in Computer Science Education (ITiCSE).
- B. Biggs* and **P.M. Bodily**, "Phrasal category tagging for natural language generation via constrained hidden Markov processes", targeting the 32nd International Joint Conference on Artificial Intelligence (IJCAI).
- P. Glines* and **P.M. Bodily**, "Constrained hidden Markov processes for sequence generation", targeting the 32nd International Joint Conference on Artificial Intelligence (IJCAI).

Seminars, Colloquia and Presentations

- *Computational Creativity and the International AI Song Contest.* Unitarian Universalist Association. Pocatello, ID, 2022.
- *Pop*: The Humanity of AI Songwriting.* Idaho State University College of Arts and Letters Humanities Cafe. Pocatello, ID, 2022.
- *Open Computational Creativity Problems in Computational Theory.* 13th International Conference on Computational Creativity. Bolzano, Italy, 2022.
- *Implementation of an Anti-Plagiarism Constraint Model for Sequence Generation Systems.* 13th International Conference on Computational Creativity. Bolzano, Italy, 2022.
- *Open Computational Creativity Problems in Computational Theory.* 13th International Conference on Computational Creativity. Bolzano, Italy, 2022.
- *Composition of short stories using book recommendations.* 2nd Intermountain Engineering, Technology, and Computing Conference. Orem, UT, 2022.
- *Temporal abstract syntax trees for understanding student coding thought process.* 2nd Intermountain Engineering, Technology, and Computing Conference. Orem, UT, 2022.
- *Sketch-a-map (SAM): Creative route art generation.* 2nd Intermountain Engineering, Technology, and Computing Conference. Orem, UT, 2022.
- *Automating Predictive Maintenance for Energy Efficiency via Machine Learning and IoT Sensors.* American Public Works Association. Pocatello, ID, 2022.
- *Developing an Ontological Knowledge Base and Visualization Front End for NP-complete Problems.*

Collaborative Computing Center, Idaho National Laboratory. Idaho Falls, ID (virtual), 2022.
- *Data Science Research Discussion Panel: Tools Applications, Networking, and Collaboration.* 2021 Summer Boot Camp, Center for Advanced Energy Studies (CAES). Idaho Falls, ID (virtual), 2021.
- *Crossing Darwin and Computer Science: The Staying Power of Evolutionary Algorithms* workshop. 2021 Summer Boot Camp, Center for Advanced Energy Studies (CAES). Idaho Falls, ID (virtual), 2021.
- *Detecting Vibration Frequencies of Concrete Structures via RFID Tags* poster. National Council on Undergraduate Research. Virtual, 2021
- *Automating Predictive Maintenance* poster. Idaho State University Undergraduate Poster Session. Virtual, 2021
- *Inferring structural constraints in musical sequences via multiple self-alignment* poster. Annual Meeting of the Cognitive Science Society. Vienna, Austria (virtual), 2021.
- *Heylo: Visualizing User Interests From Twitter Using Emoji in Mixed Reality* poster. Idaho Conference on Undergraduate Research. Boise, ID (virtual), 2020.
- *Heylo: Visualizing User Interests From Twitter Using Emoji in Mixed Reality* poster. Idaho State University Undergraduate Research Symposium. Pocatello, ID (virtual), 2020.
- *HPC, GAs, and NNs, Oh My!* CAES Computing, Data, and Visualization Working Group. Idaho Falls, ID, 2020.
- *Interactive Machine Learning Workshop* ISU ACM Club, Pocatello ID, 2020.
- *Creative Activities at the Intersection of Art, Science and Engineering.* ISU College of Science and Engineering Seminar. Pocatello, ID, 2019.
- *Unix Commandline, Vim, and Supercomputing.* ISU ACM Club. Pocatello, ID, 2019.
- *"She Offered No Argument": Constrained Probabilistic Modeling for Mnemonic Device Generation* poster. The 10th International Conference on Computational Creativity. Charlotte, North Carolina, 2019.
- *CS Education and Careers.* Marshall Public Library. Pocatello, ID, 2019.
- *Machine Learning Models for Geographic Information Systems.* Idaho National Laboratory, Data Science Community of Practice, GIS Working Group. Idaho Falls, ID, 2018.
- *An Interactive Tutorial on 3 Machine Learning Algorithms.* ISU ACM Club. Pocatello, ID, 2018.
- *Why should you consider a PhD in Computer Science?* BYU PhD Recruiting Dinner. Provo, UT, 2018.
- *Computational Creativity: Machine Learning in Music Composition*. BYU Student Research Conference. Provo, UT, 2018.
- *Comparative Analysis of Key Inference Models for Musical Metacreation*. International Workshop on Musical Metacreation. Salamanca, Spain, 2018.
- *Musical Metacreation: Past, Present, and Future*. International Workshop on Musical Metacreation. Salamanca, Spain, 2018.
- *Explainability: An Aesthetic for Aesthetics* poster. The 9th International Conference on Computational Creativity. Salamanca, Spain, 2018.
- *Computational Creativity via Human-Level Concept Learning*. International Conference on Computational Creativity. Atlanta, GA, 2017.
- *HBPL: a Framework for Debating, Developing, and Reusing Foundational Models of Musical Metacreativity*. International Workshop on Musical Metacreation. Atlanta, GA, 2017.
- *Human-Level Concept Learning for Musical Metacreativity in Lyrical Sectional-Form Symbolic Music*. Doctoral Consortium of the International Conference on Computational Creativity. Atlanta, GA, 2017.
- *Pop*: Using Concept Learning to Compose Lyrical Music.* BYU Student Research Conference. Provo, UT, 2017.
- *Human-Level Concept Learning for Musical Metacreativity* poster. Brigham Young University Grad Expo. Provo, UT, 2017.
- *Computational Creativity in Popular Music Composition*. BYU Student Research Conference. Provo, UT, 2016.
- *Heterozygous Genome Assembly via Binary Classification of Homologous Sequence*. BYU Student Research Conference. Provo, UT, 2015.
- *Haplotype-Centered Mapping for Improved Alignments and Genetic Association Studies*. Association for

Computing Machinery Conference on Bioinformatics, Computational Biology, and Health Informatics. Newport Beach, CA, 2014.

- *Inverted Sequence Identification in Diploid Genomic Scaffold Assembly via Weighted MAX-CUT Reduction*. BYU Student Research Conference. Provo, UT, 2014.
- *A structured approach to ensemble learning for Alzheimer's disease prediction* poster. The 5th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics. Newport Beach, CA, 2014.
- *Haplotype-Centered Mapping for Improved Alignments and Genetic Association Studies* poster. The 5th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics. Newport Beach, CA, 2014.
- *Application of a MAX-CUT Heuristic to the Contig Orientation Problem in Genome Assembly*. Association for Computing Machinery Conference on Bioinformatics, Computational Biology and Biomedical Informatics. Washington D.C., 2013.
- *Inverted Sequence Identification in Diploid Genomic Scaffold Assembly via Weighted MAX-CUT Reduction*. Master's Thesis Defense Presentation. Provo, UT, 2013.
- *Bipartite Classification of Node Traversal in Weighted Bidirected Scaffold Graphs*. BYU Student Research Conference. Provo, UT, 2013.
- *Heterozygous Genome Assembly via Binary Classification of Homologous Sequence* poster. Biotechnology and Bioinformatics Symposium. Provo, UT, 2013.
- *Application of a MAX-CUT Heuristic to the Contig Orientation Problem in Genome Assembly* poster. Association for Computing Machinery Conference on Bioinformatics, Computational Biology and Biomedical Informatics PhD Forum. Washington D.C., 2013.
- *ScaffoldScaffolder: An aggressive scaffold finishing algorithm*. International Conference on Bioinformatics & Computational Biology. Las Vegas, NV, 2012.
- *Heterozygous Genome Assembly Using a Greedy Best-First Search*. BYU Spring Research Conference. Provo, UT, 2012.
- *Effects of Error-Correction of Heterozygous Next-Generation Sequencing Data* poster. Biotechnology and Bioinformatics Symposium. Provo, UT, 2012.
- *Leaving the 99 to search for the 1: Improving SNP calling using GNUMAP*. BYU Spring Research Conference. Provo, UT, 2011.

Professional Conferences/Workshops Attended

- **Therapeutic Computational Creativity & The Third Hand**, Bolzano, Italy, Jun 28, 2022
- **Quantum Computing for Computational Creativity**, Bolzano, Italy, Jun 27 – 28, 2022
- **The Carpentries Training**, Virtual, June 9 – 10, 2021
- **Developing Empirical Education Research Studies (DEERS) in CS**, Charlottesville, VA (Virtual), July 13 – 16, 2020
- **NSF Grants Conference**, Los Angeles, CA, May 20 – 21, 2020
- **Master Teacher Conference**, Atlanta, GA, May 8 – 10, 2019
- **Teach for Learning (T4L) Conference**, Utah State University, Logan, UT, March 21 – 22, 2019

Mentored Research Students

Idaho State University, Computer Science

- **Show Pratoomratana**, BS Student, 2022-present
- **Alex Diviney**, BS Student, 2022-present
- **Daniel Igbokwe**, BS Student, 2022-present
- **Garrett Stouffer**, BS Student, 2022-present
- **Caleb Eardley**, BS Student, 2022-present
- **Kaden Marchetti**, MS Student, 2021-present

- **Delaney Moore**, MS Student, 2021-present
- **Janita Aamir**, BS Student, 2020-2022 (CS PhD Student at Oregon State University)
- **Andrew Christiansen**, BS Student, 2020-2021 (Programmer/Analyst at McGuire Bearing Company)
- **Brandon Biggs**, MS Student, 2019-2022 (HPC Admin at Idaho National Laboratories)
- **Porter Glines**, MS Student, 2019-2022
- **Hunter Harris**, BS Student, 2019-2021 (Freelance Full-stack Developer at Precision Pumping Systems)
- **Dylan Lasher**, BS Student, 2019-2020 (Global Health Research Scientist at UW Medicine's IHME)

Professional Activities

- **Organizing Committee**, *International Conference on Computational Creativity*, Ontario, Canada, 2023
- **Program Committee**, *International Conference on Computational Creativity*, Bolzano, Italy, 2022
- **Ad Hoc Reviewer**, *Intermountain Engineering, Technology, and Computing Conference*, 2022
- **Program Committee**, *International Conference on Computational Creativity*, Mexico City, Mexico, 2021
- **Invited Reviewer**, *Journal of Computational Creativity*, 2021
- **Program Committee**, *International Conference on Computational Creativity*, Coimbra, Portugal, 2020
- **RESPOND Training Certification**, *ISU Counseling and Testing Services*, Pocatello, ID, 2019
- **Program Committee**, *International Conference on Computational Creativity*, Charlotte, North Carolina, 2019
- **Program Committee**, *International Conference on Computational Creativity*, Salamanca, Spain, 2018
- **Ad Hoc Reviewer**, *International Joint Conference on Artificial Intelligence*, Stockholm, Sweden, 2018
- **Code-Camp participant**, *PROSECCO*, Antwerp, Belgium, 2016
- **Reviewer**, *International Conference on Computational Creativity*, Paris, France, 2016
- **Reviewer**, *Biotechnology and Bioinformatics Symposium*, Provo, UT, 2015
- **Reviewer**, *Biotechnology and Bioinformatics Symposium*, Provo, UT, 2014
- **Reviewer**, *Biotechnology and Bioinformatics Symposium*, Provo, UT, 2013
- **Reviewer**, *International Conference on Machine Learning and Applications*, Honolulu, HI, 2011
- **Computer Lab Assistant**, *Marriott School of Management, Brigham Young University*, 2008
- **Physician Job Shadowing** (cardiology, anesthesiology, dermatology, radiology, urology, and ophthalmology), Eugene, OR, 2005 – 2006

Committee and Service Assignments

- **New Student Orientation Advising**, College of Science and Engineering, Idaho State University, 2021 – present
- **Marketing and Outreach Coordinator**, Computer Science Department, Idaho State University, 2018 – present
- **Member**, CS Undergraduate Curriculum Committee, Computer Science Department, Idaho State University, 2018 – present
- **Member**, *Faculty Search Committee*, Mechanical Engineering Department, Idaho State University, 2022 – 2023
- **Kanan Chowdhury MS Advisory Committee GFR**, Mechanical Engineering Department, Idaho State University, 2022
- **Robbie Spiers Honors Thesis Advisory Committee GFR**, Chemistry Department, Idaho State University, 2021
- **Shankar Medesetti MS Advisory Committee GFR**, Mechanical Engineering Department, Idaho State University, 2021 – 2022
- **Shishir Khanal MS Advisory Committee GFR**, Mechanical Engineering Department, Idaho State University, 2021 – 2022
- **Pepo Mena PhD Advisory Committee**, Computer Science Department, Idaho State University, 2021 – 2022

- **Member**, *Faculty Search Committee*, Mechanical Engineering Department, Idaho State University, 2021 – 2022
- **Member**, *Staff Search Committee*, University HPC Administration, Idaho State University, 2021 – 2022
- **ACM Student Organization Faculty Advisor**, Computer Science , Idaho State University, 2018 – 2021
- **Harmony Poore MS Advisory Committee GFR**, Mathematics Department, Idaho State University, 2021
- **Member**, *Faculty Search Committee*, Mechanical Engineering Department, Idaho State University, 2020 – 2021
- **Member**, *Faculty Search Committee*, Polytechnic Initiative, Idaho State University, 2020 – 2021
- **Member**, *Staff Search Committee*, Academic Advising, Idaho State University, 2021 – 2022
- **Member**, *Faculty Search Committee*, Polytechnic Initiative, Idaho State University, 2019 – 2020
- **Member**, *Faculty Search Committee*, Informatics and Computer Science Department, Idaho State University, 2019 – 2020
- **Dual Enrollment Coordinator**, Computer Science Department, Idaho State University, 2019 – 2022
- **Graduate Coordinator**, Computer Science Department, Idaho State University, 2019 – 2021
- **CS 1181 Coordinator**, Computer Science Department, Idaho State University, 2019 – 2022
- **Website Administrator**, Computer Science Department, Idaho State University, 2019 – 2021

Programming Skills

- Proficient in C, C++, C#, Java, Python, and Perl
- Significant Experience with Objective C, MySQL, PHP, LaTeX, and R
- Web programming experience using Javascript, Angular, and MongoDB
- Programming experience implementing Bioinformatic, Machine Learning, and Natural Language Processing methods
- Extensive experience with remote high performance computing in Linux environment, Vim, and shell scripting
- Experience with Eclipse, Visual Studio, and PyCharm IDEs and GDB

Languages

- **English:** First language
- **Italian:** Fluent, Advanced High ACTFL Oral Proficiency Certification (2010)
- **French:** Practical, intermediate level of reading and writing
- **Spanish:** Practical, intermediate level of reading and writing
- **Japanese:** Basic reading, writing and conversation skills

Memberships

- Certified Instructor, The Carpentries
- CAES Computing, Data, and Visualization group (CDV)
- ISU Data Science Alliance (DSA)
- Association for Computing Machinery (ACM)
- Vocal Point Alumni Association
- Phi Kappa Phi Honor Society, BYU Chapter

Service

- **Cubmaster**, Pack 1295, Grand Teton Council, 2021-present

  - Founded new pack that has served 30 cub scouts grades K-5
  - Fulfilled roles as Den Leader, Advancement Chair, and Treasurer
- **Technical Advisory Committee**, Century and Highland High Schools, Pocatello, ID, 2019 – present
- **Pocatello Women's Correctional Center**, Pocatello, ID, September 2019 – Present
  - Preparation and oversight of delivery of introductory programming course to 12 female inmates
- **CS K-12 Outreach**, Pocatello, ID, Aug 2018 – Present
  - Regular participation in school, campus, and community events to encourage higher education and STEM
  - Provide hands on demonstrations teaching Python programming via Turtle Graphics and LEGO robots
- **imPACT East Idaho**, United Way, Pocatello, ID, Dec 2018 – 2021
  - Meet monthly to discuss and implement strategies to increase the go-on rate of high schoolers to higher education in east Idaho
- **CS Basketball Team Coach**, Brigham Young University, Provo, UT, Mar 2012
  - Organized CS graduate and undergraduate students in formal competition against a team of students from the Math Department
- **BYU Palio Creator**, Italian Department, Brigham Young University, Provo, UT, Mar 2010 – Apr 2010
  - Originated the BYU Palio, a semiannual cultural celebration that regularly hosts 400 faculty/students
- **Youth Leadership Camp Counselor**, Camp W.I.L.D., Salmon, ID, Jan 2006 – Aug 2008
  - Annually planned and executed 6-week camp designed to conduct self-efficacy research among at-risk youth
  - Guided multi-day raft trips
- **Hospital Volunteer**, Utah Valley Regional Medical Center, Provo, UT, Sep 2006 – Apr 2007
  - Weekly volunteer in Radiology/Pre-op departments
- **Peer Mentor**, Foundations of Leadership, Brigham Young University, Provo, UT, Sep 2006 – Sep 2007
  - Volunteer leadership and academic advisor for incoming freshman at year-opening retreat
- **Italian-Speaking Volunteer**, The Church of Jesus Christ of Latter-day Saints, Milan Italy, Sep 2003 – Sep 2005
  - Supervised volunteers in working 12 hours a day to meet specific goals, refined public speaking skills, taught English as a second language to 5-8 community members weekly
- **Eagle Scout Service Project**, Lane County Parks, Eugene, OR, 2000
  - Planned and directed construction of 20' footbridge in Blue Mountain County Park

Personal

- **Pocatello Pop Rox**, Pop Rock Band, Pocatello, 2021 – present
  - Play keyboard and sing lead for regular paid performances throughout Southeast Idaho
- **Sing++**, Computer Science Department, Brigham Young University, 2016 – 2018
  - Lead tenor in the BYU Computer Science department barbershop quartet
- **Utah Valley Handbell Choir**, United Way, Provo, UT, 2017
  - Rang bass bells in a handbell choir of 20 members
- **Vocal Point**, Brigham Young University, Provo, UT, Sep 2007 – Aug 2010
  - Travelled with and sang in BYU's 9-man internationally-renowned a cappella group
  - Featured in Back in Blue album with 3 solos and 2 arrangements

- **Jazz Piano**, Brigham Young University, Provo, UT, Sep 2006 – Apr 2007
  - Studied private jazz piano improvisation and theory with Dr. Steve Lindeman at BYU
- **Guitar**, Brigham Young University, Provo, UT, Jan – Apr 2003, Sep – Dec 2006
  - Studied technique and theory under Lawrence Green at BYU
- **Jazz Combo**, Brigham Young University, Provo, UT, Sep 2002 – Dec 2002
  - Played solo saxophone in a BYU jazz combo
- **BYU Marching Band**, Brigham Young University, Provo, UT, Sep 2002 – Dec 2002
  - Played trumpet in Marching Band at all home football games for 2002 season