

Corey Lynn Murphey

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Website | ORCID | Github

EDUCATION

- Ph.D.** **University of Colorado – Boulder** **8/2021 – present**
In Progress *Department of Computer Science*
Advisors: Elizabeth Bradley and Jed Brown
Focus: Numerical and Scientific Computing
- M.S.** **University of Colorado – Boulder** **8/2021 - 5/2024**
Department of Computer Science
Advisors: Elizabeth Bradley and Jed Brown
Focus: Numerical and Scientific Computing
- M.S.** **Stanford University** **4/2012 – 4/2014**
Department of Mechanical Engineering
Advisor: Reginald Mitchell
Focus: Energy Systems; Breadth: Biomechanics and Manufacturing
- B.S.** **Stanford University** **8/2008 – 1/2013**
Department of Mechanical Engineering
Advisor: Ellen Kuhl
Focus: Computational Biomechanics and Biomechanical Engineering

RESEARCH EXPERIENCE

- 6/2021 – present **University of Colorado – Boulder**
Graduate Research Assistant, Advised by Elizabeth Bradley and Jed Brown
Developed models of phonation and vibration-induced aerosolization.
Simulated fluid-structure interaction within the larynx.
Generated musical chord progressions using chaotic dynamics and the Tonnetz.
Analyzed Indian ocean sediment core data using Information Theory.
- 9/2012 – 6/2013 **Stanford University, Hearing Dynamics**
Research Assistant, Advised by Sunil Puria
Built a model of Békésy's pendulum to demonstrate hair cell dynamics.
Developed a computational model of Békésy's analogy for the inner ear.
- 5/2010 – 8/2012 **Stanford University, Living Matter Laboratory**
Research Assistant, Advised by Ellen Kuhl
Modeled electrochemical conductive pathways of the heart.
Generated electrocardiogram plots of simulated cardiac pacing.
Developed patient-specific models of implant-induced skin growth.

Worked with graduate students to create a model of red blood cell division.
Designed a continuum growth model of the vocal folds and vocal polyps.

PROFESSIONAL EXPERIENCE

- 10/2018 - 7/2021 **Bolder Industries**, Boulder, CO
R&D Engineer, IP Manager, and Chief of Staff
Modeled tire pyrolysis reaction kinetics to anticipate pyrolytic outputs.
Implemented an intellectual property strategy to protect Bolder Industries' IP.
- 5/2018 – 8/2018 **Caban Systems**, San Mateo, CA
Thermal Engineer, Consultant
Modeled heat emitted by batteries inside an energy-storage cabinet.
Calculated cooling required for peak operation of batteries in the cabinet.
- 3/2017 – 4/2018 **Run8 Patent Group**, San Francisco, CA
Patent Agent
Drafted and prosecuted over 50 patent applications.
Managed domestic and foreign patent portfolios.
- 6/2015 – 3/2017 **Nebia**, San Francisco, CA
R&D Engineer and Engineering Project Manager
Simulated heat-transfer from droplets emitted from showerhead nozzles.
Modeled internal fluid pathways optimized for nozzle performance.
Drafted and maintained product requirements documents.
- 4/2014 – 4/2015 **Schox Patent Group**, San Francisco, CA
Patent Agent
Drafted patent applications and managed portfolios of startups.
Maintained a patent portfolio with over 50 distinct projects.
- 6/2013 – 9/2013 **Benvenue Medical Inc.**, Santa Clara, CA
R&D Engineering Intern
Established testing protocols for vertebral augmentation implants.
Developed surgical protocols for mixing and dispensing bone cement.

TEACHING

- Spring 2025 **Numerical Solutions to Partial Differential Equations (CSCI 5636)**
Teaching Assistant, University of Colorado – Boulder
- Spring 2025 **Chaotic Dynamics (CSCI 4446/5446)**
Grader & Course Assistant, University of Colorado – Boulder
- Fall 2024 **Numerical Computation (CSCI 3656)**
Teaching Assistant, University of Colorado – Boulder
- Spring 2023 **Chaotic Dynamics (CSCI 4446/5446)**

- Course Manager*, University of Colorado – Boulder
- Fall 2013 **Patent Law and Strategy for Engineers (ME 208)**
Course Assistant, Stanford University
- Fall 2012 **Engineering Dynamics (E15)**
Grader, Stanford University

AWARDS AND HONORS

- 2024 **Computer Science Department Nominee for Sheryl R. Young Award**
University of Colorado – Boulder, Computer Science Department
- 2024 **College of Engineering and Department Nominee for Google PhD Fellowship**
University of Colorado – Boulder, College of Engineering and Computer Science Department
- 2024 **Outstanding Departmental Service Award**
University of Colorado – Boulder, Computer Science Department
- 2024 **Poster Award - Work in Progress Research, Computer Science Research Expo**
University of Colorado – Boulder, Computer Science Department
For the work-in-progress poster entitled “Generation of Novel Chord Progressions via a Musically-Inspired Chaotic Mapping” with primary author, Zachary Atkins.
- 2024 **First Prize - Poster Awards, Dynamics Days 2024**
For the poster entitled “A Dynamics-Inspired Model for Phonation-Induced Aerosolization”.
- 2024 **Second Prize - Poster Awards, Dynamics Days 2024**
For the poster entitled “Generation of Novel Chord Progressions via a Musically-Inspired Chaotic Mapping” with primary author, Zachary Atkins.
- 2023 **D. J. Kasik (1972) Scholarship Fund Award**
University of Colorado – Boulder, College of Engineering and Applied Sciences
- 2023 **Outstanding Departmental Service Award**
University of Colorado – Boulder, Computer Science Department
- 2022 **CS Endowed Founder’s Fellowship**
University of Colorado – Boulder, Computer Science Department
- 2021 **Early Career Professional Development Fellowship**
University of Colorado – Boulder, Computer Science Department

GRANTS

- 2019 **Colorado Advanced-Industries Early-Stage Capital and Retention Grant**
State of Colorado, OEDIT
- 2010 – 2012 **Vice Provost of Undergraduate Education (VPUE) Grant**
Stanford University
- 2010 – 2012 **Summer Undergraduate Research Institute (SURI) Grant**
Stanford University
- 2008 **Stanford Summer Engineering Academy (SSEA) Grant**
Stanford University

CONFERENCES

- 2025 Dynamics Days US 2025, Denver, CO.
- 2024 Dynamics Days US 2024, Davis, CA.
- 2023 American Association for Aerosol Research (AAAR) 41st Annual Conference, Portland, OR.
- 2023 SIAM Conference on Applications of Dynamical Systems (DS23), Portland, OR.
- 2023 15th International Conference on Advances in Quantitative Laryngology, Voice and Speech Research 2023, Phoenix, AZ.
- 2023 Dynamics Days US 2023, Virtual.
- 2011 ASME 2011 Summer Bioengineering Conference, Portland, OR.
- 2011 IUTAM Symposium on Computer Models in Biomechanics, Stanford, CA.

Conference & Travel Grants

- 2025 **Dynamics Days Travel Fellowship**
For travel to Dynamics Days US 2025.
- 2024 **Dynamics Days Travel Fellowship**
For travel to Dynamics Days US 2024.
- 2024 **Clive Bailie Memorial Conference Support Fellowship**
Clive Bailie Memorial Fund, University of Colorado – Boulder.
For travel to Dynamics Days US 2024.
- 2023 **AAAR US 2023 Student Travel Grant**
American Association for Aerosol Research.
For American Association for Aerosol Research (AAAR) 41st Annual Conference.
- 2023 **Conference Support Fellowship**
Department of Computer Science, University of Colorado – Boulder.
For SIAM Conference on Applications of Dynamical Systems (DS23).
- 2023 **AQL 2023 Student Registration Award**
For 15th International Conference on Advances in Quantitative Laryngology, Voice and Speech Research 2023.
- 2023 **Graduate School Domestic Travel Grant**
University of Colorado – Boulder.
For 15th International Conference on Advances in Quantitative Laryngology, Voice and Speech Research 2023.

PUBLICATIONS

Reviewed Conference Papers

- 2011 **C. L. Murphey**, J. Wong, and E. Kuhl, “Computational Simulation of Biventricular Pacing in an Asymptomatic Human Heart,” in SBC2011, ASME 2011 Summer Bioengineering Conference, Parts A and B, Jun. 2011, pp. 917–918, doi: 10.11105/SBC2011-53110.
- 2011 **C. L. Murphey**, J. Wong, and E. Kuhl, “Computational Simulation of Biventricular Pacing in a Human Heart,” in Proceedings of the IUTAM Symposium on Computer Models in Biomechanics, Stanford, California, 2011.

Presentations

Posters

- 2024 **C. L. Murphey**, A. Hilger, E. Bradley, “A Dynamics-Inspired Model for Phonation-Induced Aerosolization,” Dynamics Days US 2024, Davis, CA, Jan. 2024¹.
- 2024 Z. Atkins, **C. L. Murphey**, “Generation of Novel Chord Progressions via a Musically-Inspired Chaotic Mapping,” Dynamics Days US 2024, Davis, CA, Jan. 2024².
- 2023 **C. L. Murphey**, A. Hilger, E. Bradley, “An Experimentally Validated Model of Phonation-induced Aerosolization,” American Association for Aerosol Research 41st Annual Conference (AAAR 2023), Portland, OR, Oct. 2023.
- 2023 **C. L. Murphey**, A. Hilger, E. Bradley, “A Dynamics-Inspired Model for Phonation-Induced Aerosolization,” SIAM Conference on Applications of Dynamical Systems (DS23), Portland, OR, May 2023.
- 2023 **C. L. Murphey**, A. Hilger, E. Bradley, “A Computational Model of Phonation-Induced Aerosolization,” 15th International Conference on Advances in Quantitative Laryngology, Voice and Speech Research 2023, Phoenix, AZ, Mar. 2023.
- 2023 **C. L. Murphey**, A. Hilger, E. Bradley, “A Dynamics-Inspired Model for Phonation-Induced Aerosolization,” University of Colorado – Boulder Applied Math Department’s Research Poster Session, Mar. 2023.
- 2023 **C. L. Murphey**, A. Hilger, E. Bradley, “A Dynamics-Inspired Model for Phonation-Induced Aerosolization,” Dynamics Days US 2023, Virtual, Jan. 2023.
- 2011 **C. L. Murphey**, J. Wong, and E. Kuhl, “Computational Simulation of Biventricular Pacing in an Asymptomatic Human Heart,” ASME Summer Bioengineering Conference, Farmington, PA, Jun. 2011.

Patents

Inventor

- 2020 US D881,340, “Showerhead and arm,” Apr. 14, 2020.
- 2019 US 10,421,083, “Immersive showerhead,” Sep. 24, 2019.
- 2019 US D855,759, “Shower wand,” Aug. 06, 2019.
- 2018 US 9,931,651, “Immersive showerhead,” Apr. 03, 2018.
- 2018 US 9,925,545, “Immersive showerhead,” Mar. 27, 2018.
- 2018 US D810,233, “Shower wand and adjustable mount,” Feb. 13, 2018.
- 2018 US D810,234, “Showerhead and adjustable bracket,” Feb. 13, 2018.

Books

- 2013 [*Contributor and Editor*] J. Schox, Not So Obvious: An Introduction to Patent Law and Strategy, 3rd ed. CreateSpace Independent Publishing Platform, 2013.

Articles

- 2016 G. Parisi-Amon and **C. L. Murphey**, “Full Steam Ahead,” ANSYS Advantage, vol. 10, no. 1, pp. 10–12, 2016.

¹Awarded best poster at Dynamics Days 2024 in Davis, CA.

²Awarded second prize for poster awards at Dynamics Days 2024 in Davis, CA.

SERVICE

Academic Service at the University of Colorado – Boulder

2024 – 2025	Computing Advisory Board <i>Student Member and Representative</i>
Fall 2024	Computer Science Ph.D. Application Feedback Program <i>Mentor</i>
Spring 2024	Computer Science PhD Open House <i>Graduate Student Organizer, Computer Science Department</i>
Fall 2023	Computer Science Graduate Student Association (CSGSA) <i>CSGSA Chair, Computer Science Department</i>
Fall 2023	Computer Science Ph.D. Application Feedback Program <i>Mentor and Program Organizer, Computer Science Department</i>
Spring 2023	Computer Science PhD Open House <i>Graduate Student Organizer and Panelist, Computer Science Department</i>
2022 – 2023	Computer Science Graduate Committee <i>Ph.D. Student Representative, Computer Science Department</i>
Spring 2022	Summer Program for Undergraduate Research (SPUR) <i>Advisor to Mentors, College of Engineering and Applied Sciences</i>
Spring 2022	Discovery Learning Apprenticeship (DLA) Program <i>Mentor and Judge, College of Engineering and Applied Sciences</i>
Spring 2022	Computer Science PhD Student Open House <i>Graduate Student Panelist, Computer Science Department</i>

Peer Mentorship at the University of Colorado – Boulder

2024 – 2025	Wisang Sugiarta, Ph.D. Student, Computer Science Department
2022 – 2023	Zachary Atkins, Ph.D. Student, Computer Science Department
2022 – 2023	Maria Valentini, Ph.D. Student, Computer Science Department
2022 – 2023	Aditya Pandey, M.S. Student, Computer Science Department
2022 – 2023	Armin Gholampoor, M.S. Student, Computer Science Department

PROFESSIONAL MEMBERSHIPS, AFFILIATIONS, & CERTIFICATIONS

Certifications

2015 – Present United States Patent and Trademark Office, Registered Patent Agent

General Membership

Acoustical Society of America (ASA)
 Society for Industrial and Applied Mathematics (SIAM)
 The Voice Foundation
 Society of Women Engineers (SWE)
 American Society of Mechanical Engineers (ASME)

Other Service and Affiliations

2025 – present Boulder Aquatic Masters: Coach
2021 – 2024 Westview Lutheran Church: Alto section leader
2021 – 2023 Renova New Music Ensemble: Founding Member, Webmaster, Soprano/Alto
2021 – 2023 CU – Chamber Singers: Alto 1
2018 – 2021 St. Thomas Aquinas – Boulder: Cantor, Soprano 2 Section Leader
2018 – 2020 St. Vrain Innovation Center: Middle School Robotics Mentor
2018 – 2020 Boulder Area Masters Swimming: Volunteer Coach
2012 – 2018 Stanford Masters Swimming: Volunteer Coach
2012 – 2018 NorCal Golden Retriever Rescue : Volunteer
2011 – 2012 Stanford Women’s Varsity Swimming: Team Manager

Updated January 2025