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

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

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**
Award notification pending
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

2024 Dynamics Days US 2024, Davis, CA.

2023 American Association for Aerosol Research (AAAR) 41^{st} 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

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. 2024[1].

2024 Z. Atkins, **C. L. Murphey**, "Generation of Novel Chord Progressions via a Musically-Inspired Chaotic Mapping," Dynamics Days US 2024, Davis, CA, Jan. 2024[2].

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

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

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.

SERVICE

Academic Service at the University of Colorado – Boulder

2024 – 2025 **Computing Advisory Board**
Student Member and Representative

Spring 2024 **Computer Science PhD Open House**
Graduate Student Organizer, Computer Science Department

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

Other Service and Affiliations

2021 – Present	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

Peer Mentorship at the University of Colorado – Boulder

2022 – 2023	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 & 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)

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