SAWYER BUCKMINSTER FULLER

Curriculum Vitæ

Associate Professor
Department of Mechanical Engineering
Adjunct, Paul G. Allen School of Computer Science
University of Washington
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Phone: 206-543-5488
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Professional site: http://faculty.washington.edu/minster/
Lab site: https://depts.washington.edu/airlab/

EDUCATIONAL HISTORY

California Institute of Technology, Pasadena, California
Ph. D., Bioengineering
Minors: Control and Dynamical Systems, Electrical Engineering
June 2011
Steady as she goes: Visual autocorrelators and antenna-mediated airspeed feedback in the control of flight dynamics in fruit flies and robots

Massachusetts Institute of Technology, Cambridge, Massachusetts
M.S., Mechanical Engineering
June 2004
A fast flexible ink-jet printing method for patterning networks of neurons in culture

Massachusetts Institute of Technology, Cambridge, Massachusetts
B.S., Mechanical Engineering
June 2000
Ink jet deposition of inorganic nanoparticle materials as a route to desktop fabrication of integrated logic and micromachinery

EMPLOYMENT HISTORY

University of Washington
Seattle, Washington, USA
Assistant Professor, 2015–present

Harvard University
Cambridge, Massachusetts, USA
Postdoctoral Scholar, 2011–2015

University of Verona
Verona, Italy
Researcher, 2003–2004

NASA Jet Propulsion Laboratory
Pasadena, California, USA
Intern, 2000–2001

AWARDS AND HONORS

Bioengineering Graduate Fellowship, California Institute of Technology (2004)
National Science Foundation Graduate Fellow (2002)
Presidential Fellow, Massachusetts Institute of Technology (2001)
NASA Technical Award (2001)
Silent Hoist & Crane Award: Outstanding Undergraduate Thesis in Materials Science, Massachusetts Institute of Technology (2000)
Best Student Paper, *IEEE International Conference on Robotics and Automation* (2025)

To students in my research group:

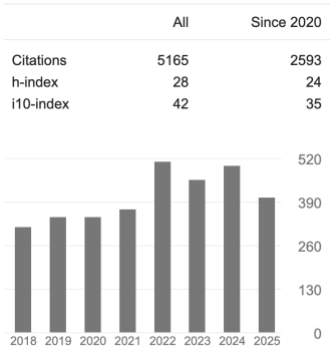
- Dr. Melanie Anderson:
  - Dept. of Mechanical Engineering *Distinguished Dissertation Award* (2022)
  - Washington Research Foundation *Postdoctoral Fellow* (2023)
  - U. Washington Comotion *Commercialization Fellow* (2022)
  - *Sweet 16 Finalist*, UW Foster School Dempsey Startup Competition (2021)
  - *NDSEG Graduate Fellow* (2018)
- Dr. Vikram Iyer
  - Association for Computing Machinery *SIGMOBILE Doctoral Dissertation Award* (2022)
  - Geekwire *Innovation of the Year* (2021)
  - Marconi Society *Paul Baran Young Scholar Award* (2020)
- Johannes James
  - *Outstanding teaching assistant of the year*, ME Department (2021)
- Cat Hannahs
  - *Brooke Owens Scholarship* (2019)
- Alyssa Giedd
  - *National Science Foundation Graduate Fellow* (2024)
  - *Ford Foundation Fellow* (2023)
  - *GEM Graduate Fellow* (2022)
  - *Mary Gates Fellow* (2021)
- Daksh Dhingra
  - *SPEEA Graduate Fellow* (2022)
  - *Outstanding teaching assistant of the year*, ME Department (2024)
- Kyle Johnson
  - *Amazon Graduate Fellow* (2022)
  - *National Science Foundation Graduate Fellow* (2021)

AFFILIATIONS AND OTHER APPOINTMENTS

Adjunct, Paul G. Allen School of Computer Science, 2018–present

PUBLICATIONS

Total citation count **5,165** as of September 2025 (Google Scholar)**.**



Names in **bold** are chaired or co-advised by Prof. Fuller. Links to related news articles appear in blue.

Refereed archival journal publications (citation counts from Google Scholar, June 2023)

1. Saeed Rafee Nekoo, Ramy Rashad, Christophe De Wagter, ***S. B. Fuller***, Guido de Croon, Stefano Stramigioli, and Anibal Ollero, "A Review on Flapping-Wing Robots: Evolution and Challenges," *IEEE Transactions on Robotics* (2025).
2. **D. Dhingra**, Kadieran Kaheman, and ***S. B. Fuller***, "Modeling and LQR Control of Insect Sized Flapping-Wing Robot," *Nature Robotics Portfolio Journal* (2025).
3. **K. Johnson,** V. Arroyos, A. Ferran, A. Aliseda, ***S. B. Fuller***, V. Iyer, and S. Gollakota, "Solar powered shape-changing origami microflyers," *Science Robotics* (September 13, 2023) Vol. 8, No. 4, pp. 1–14. (9.2% acceptance rate) (**top 10% Altimetric Attention Score for same-age articles in *Science Robotics***) (**38**)
   IEEE Spectrum, Popular Science
4. ***S. B. Fuller*, Z. Yu**, and **Y. P. Talwekar**, "A gyroscope-free visual-inertial flight control and wind sensing system for 10 mg robots," *Science Robotics* (November 23, 2022) Vol. 7, No. 72, pp.1–13. (9.2% acceptance rate) (**32**)
   IEEE Spectrum, TechXplore
5. G.C.H.E. de Croon, J.J.G. Dupeyroux, ***S.B. Fuller***, and J.A.R. Marshall, "Insect-inspired Artificial Intelligence for Autonomous Robots," *Science Robotics* (June 15, 2022) Vol. 7, No. 62, pp.1–11. (9.2% acceptance rate) (**110**)
6. P. Shukla, A. Muralidhar, N. Iliev, T. Tulabandhula, ***S. B. Fuller***, and A. Trivedi, "Ultra-low power localization of insect-scale drones: Interplay of probabilistic filtering and compute-in-memory," *IEEE Transactions on Very Large Scale Integration Systems* (2022) Vol. 30, No. 1, pp. 68–80. (**29**)
7. **Y. M. Chukewad, J. M. James, A. Singh**, and ***S. B. Fuller***, "RoboFly: An insect-sized robot with simplified fabrication that is capable of flight, ground, and water surface locomotion," *IEEE Transactions on Robotics* (2021) Vol. 37, No. 6, pp. 2025–

2040. (**102**)
Seeker, TechXplore, Washington Post

8. **Y. M. Chukewad** and ***S. B. Fuller***, "Yaw control of a hovering flapping-wing aerial vehicle with a passive wing hinge," *Robotics and Automation Letters* (2021) Vol. 6, No. 2, pp. 1864–1871. (**28**)
9. **M. J. Anderson**, J. G. Sullivan, T. Horiuchi, ***S. B. Fuller***, and T. L. Daniel, "A bio-hybrid odor-guided autonomous palm-sized air vehicle," *Bioinspiration and Biomimetics* (2020) Vol. 16, No. 2, pp. 026002–026011. (**top 1% Altimetric Attention Score for same-age articles in *Bioinspiration and Biomimetics***) (**65**)
Wired, Tech Crunch, Geekwire
10. **V. Iyer**, A. Najafi, **J. M. James**, ***S. B. Fuller***, & S. Gollakota, "Wireless steerable vision for live insects and insect-scale robots," *Science Robotics* (2020) Vol. 5, No. 4, pp. 1–12. (9.2% acceptance rate) (**top 1% Altimetric Attention Score for same-age articles in *Science Robotics***) (**109**)
CNN, NPR, BBC, IEEE Spectrum, CNBC
11. **H. K. Hari Prasad**, R. S. Vaddi, **Y. M. Chukewad, E. Dedic**, I. Novosselov, and ***S. B. Fuller***, "A laser-microfabricated electrohydrodynamic thruster for centimeter-scale aerial robots," *PLoS One* (2020) Vol. 15, No. 4, pp. e0231362–e0231376. (**43**)
Wired
12. **D. Dingra, Y. M. Chukewad**, and ***S. B. Fuller***, "A device for rapid, automated trimming of insect-sized flying robots," *IEEE Robotics and Automation Letters (RA-L)* (2020) Vol. 5, No. 2, pp. 1373–1380. (**32**)
13. ***S. B. Fuller***, "Four wings: An insect-sized aerial robot with steering ability and payload capacity for autonomy," *IEEE Robotics and Automation Letters (RA-L)* (2019) Vol. 4, No. 2, pp. 570–577. (**100**)
IEEE Spectrum
14. ***S. B. Fuller***, Z. E. Teoh, P. Chirarattananon, N. O. Pérez-Arancibia, J. Greenberg, and R. J. Wood. "Stabilizing air dampers for hovering aerial robotics: design, insect-scale flight tests, and scaling," *Autonomous Robots* (2017) Vol. 41, No. 8, pp. 1555–1573. (**22**)
15. M. A. Graule, P. Chirarattananon, ***S. B. Fuller***, N. T. Jafferis, K. Y. Ma, M. Spenko, R. Kornbluh, and R. J. Wood, "Perching and takeoff of a robotic insect on natural and artificial overhangs using switchable electrostatic adhesion," *Science* (2016) Vol. 352, No. 6288, pp. 978–982. (6.1% acceptance rate) **(top 2% Altimetric Attention Score for same-age articles in *Science***) (**387)**
New York Times
16. ***S. B. Fuller***, A. D. Straw, M. Peek, R. M. Murray, and M. H. Dickinson, "Flying *Drosophila* stabilize their vision-based velocity controller by sensing wind with their antennae," *Proc. Nat. Acad. Sci.* (2014) Vol. 111, No. 13, pp. E1182–1191. (12% acceptance rate) (**top 10% Altimetric Attention Score for same-age articles in *PNAS***) (**151**)
Phys.org
17. ***S. B. Fuller***, M. Karpelson, A. Censi, K. Y. Ma, and R. J. Wood, "Controlling free flight of a robotic fly using an onboard vision sensor inspired by insect ocelli," *J. Royal Society Interface* (2014) Vol. 11, No. 97. (**139**)
The Scientist, Science News, Motherboard
18. K. Y. Ma, P. Chirarattananon, ***S. B. Fuller***, and R. J. Wood, "Controlled flight of a biologically-inspired, insect-scale robot," *Science* (2013) Vol. 340, No. 6132, pp. 603–607. (6.1% acceptance rate) (**top 2% Altimetric Attention Score for same-age articles in *Science***) (**1357**)
NYTimes, Economist, Wired

19. N. E. Sanjana and ***S. B. Fuller***, "A Fast flexible ink-jet printing method for patterning dissociated neurons in culture," *J. Neuroscience Methods* (2004) Vol. 136, pp. 151–163. (**314**)
20. ***S. B. Fuller***, E. J. Wilhelm, and J. M. Jacobson. "Ink-jet printed nanoparticle micro-electromechanical systems," *IEEE/ASME J. Micro-electromechanical Systems* (2002) Vol. 11, No. 1, pp. 54–60. (**878**)
    MIT Technology Review (cover article)

Competitive peer-reviewed conference proceedings

Proceedings for the top robotics conferences, e.g. *ICRA* and *IROS* represent the primary publication venue for robotics. *ICRA* and *IROS* have an *h5*-index that exceeds nearly all robotics journals, and a low acceptance rate. These are included along with computer science conferences in this sub-category.

* *ICRA*, exceeds *h5*-index of all but *Robotics and Automation Letters*
***h5* = 129** (Google Scholar *h*-index for preceding 5 years)

\+ *IROS*, exceeds all but top 6 robotics conferences and journals
***h5* = 92**

^ computer science proceedings

21. ***Z. Yu, J. Tran, C. Li, A. Weber, Y. Talwekar,** and ***S. B. Fuller***, "TinySense: A Lighter Weight and More Power-efficient Avionics System for Flying Insect-scale Robots," *IEEE Int. Conf. Robotics and Automation (ICRA)* (May 2025). (37% acceptance rate)
    Best Student Paper (4 out of 2109 articles published at conference received this award)
    ME News, Paul Allen School News
22. +**K. Johnson, V. Arroyos**, R. Villanueva, A. Schultz, ***S. B. Fuller***, V. Iyer, "Toward sub-gram helicopters: Designing a miniaturized flybar for passive stability," *IEEE Int. Conf. Intelligent Robots and Systems (IROS)* (October 2023). (<50% acceptance rate)
23. +**Z. Yu**, Gioele Zardini, Andrea Censi, and ***S. B. Fuller***, "Visual Confined-Space Navigation Using an Efficient Learned Bilinear Optic Flow Approximation for Insect-scale Robots", *IEEE Int. Conf. Intelligent Robots and Systems (IROS)* (Kyoto, Japan, October 2022). (<50% acceptance rate)
24. ***Y. P. Talwekar**, **A. Adie**, V. Iyer, and ***S. B. Fuller***, "Towards sensor autonomy in sub-gram flying insect-robots: A lightweight and power-efficient avionics system," *IEEE Int. Conf. Robotics and Automation* (*ICRA*) (<50% acceptance rate) (Philadelphia, PA USA, May 2022). (**12**)
25. +**N. Elkunchwar, S. Chandrasekaran, V. Iyer**, and ***S. B. Fuller***, "Toward battery-free flight: Duty cycled recharging of small drones," *IEEE Int. Conf. Robotics and Intelligent Systems (IROS)* (Prague, Czech Republic, September 2021). (45% acceptance rate) (**21**)
26. ***J. M. James** and ***S. B. Fuller***, "A high-voltage power electronics unit for flying insect robots that can modulate wing thrust", *IEEE Int. Conf. Robotics and Automation* (*ICRA*) (Xi'an, China, May 2021). (<50% acceptance rate) (**7**)
27. +**M. J. Anderson**, J. G. Sullivan, J. L. Talley, K. M. Brink, ***S. B. Fuller***, and T. L. Daniel, "The "Smellicopter": A bio-hybrid odor localizing nano air vehicle," *IEEE Int. Conf. Intelligent Robots and Systems (IROS)* (Macau, China, November 2019). (**6**)

28. ***A. Singh**, T. Libby, and ***S. B. Fuller***, "Rapid inertial reorientation of an aerial insect-sized robot using a piezo-actuated tail," *IEEE Int. Conf. Robotics and Automation (ICRA)* (Quebec, Canada, May 2019). (44% acceptance rate) (**5**)
29. ^**V. Iyer**, R. Nandakumar, A. Wang, ***S. B. Fuller*,** and S. Gollakota, "Living internet-of-things: A flying wireless platform on live insects," *ACM Int. Conf. on Mobile Computing and Networking (MOBICOM)* (Los Cabos, Mexico, October 2019). (<20% acceptance rate, ***h5=49***) (**76**)
NBC News, Forbes,
30. +**Y. M. Chukewad, J. M. James**, **A. Singh**, and ***S. B. Fuller***, "A new robot fly design that is easier to fabricate and capable of flight and ground locomotion," *IEEE Int. Conf. Intelligent Robotics and Systems (IROS)* (Madrid, Spain, October 2018). (47% acceptance rate) (**22**)
31. ***J. James, V. Iyer, Y. Chukewad**, S. Gollakota, and ***S. B. Fuller***, "Liftoff of a 190 mg laser-powered aerial vehicle: The lightest wireless robot to fly," *IEEE Int. Conf. Robotics and Automation (ICRA)* (Brisbane, Australia, May 2018). (41% acceptance rate) (**153**)
Economist, Wired, IEEE Spectrum, Popular Science, CNBC, YouTube (320k views)
32. +Y. Chen, ***S. B. Fuller***, and K. Dantu, "Quadrobee: Simulating flapping wing aerial vehicle dynamics on a Quadrotor", *Int. Conf. Intelligent Robots and Systems (IROS)* (Vancouver, Canada, September 2017) (<50% acceptance rate) (**2**)
33. **+*S. B. Fuller***, J. P. Whitney, and R. J. Wood, "Rotating the heading angle of flapping-wing flyers by wriggle-steering," *IEEE/RSJ Int. Conf. Intelligent Robots and Systems* (*IROS*) (Hamburg, Germany, September 2015). (<50% acceptance rate) (**11**)
34. *E. F. Helbling, ***S. B. Fuller***, and R. J. Wood, "Pitch and yaw control of a robotic insect using an onboard magnetometer," *IEEE Int. Conf. on Robotics and Automation (ICRA)* (Hong Kong, May 2014). (<50% acceptance rate) (**51**)
35. ***S. B. Fuller***, A. Sands, A. Haggerty, M. Karpelson, R. J. Wood, "Estimating attitude and wind velocity using biomimetic sensors on a microrobotic bee," *IEEE Int. Conf. Robotics and Automation (ICRA)* (Karlsruhe, Germany, May 2013). (<50% acceptance rate) (**30**)
36. +Z. E. Teoh, ***S. B. Fuller***, P. Chirarattananon, N. O. Perez-Arancibia, J. Greenberg, and R. J. Wood, "A Hovering flapping-wing microrobot with altitude control and passive upright stability," *IEEE/RSJ Int. Conf. Intelligent Robots and Systems (IROS)* (Algarve, Portugal, October 2012). (<50% acceptance rate) (**122**)

Book Chapters

37. E. F. Helbling, **S. *B. Fuller***, and R. J. Wood. "Altitude estimation and control of an insect-scale robot with an onboard proximity sensor. In: A. Bicchi and W. Burgard (Eds.) *Robotics Research*. Springer Proceedings in Advanced Robotics, Springer, Cham (2018) Vol. 2. (**19**)

Other refereed conference proceedings

38. **Johannes M. James**, Xingyi Shi, Joshua R. Smith, and ***Sawyer B. Fuller***, "Magnetically coupled resonators for wireless power transmission to insect sized flapping wing robots," *Solid-State Sensors, Actuators, and Microsystems Workshop* (Hilton Head, NC USA, June 2024).
39. **N. Elkunchwar**, **V. Iyer**, **M. Anderson**, K. Balasubramanian, J. Noe, **Yash Talwekar**, and ***S. B. Fuller***, "Simultaneous source seeking and obstacle avoidance on a palm-sized drone," *Int. Conf. Unmanned Aircraft Systems (ICUAS)* (Dubrovnik, Croatia, June 2022). (**10**)

40. ***S. B. Fuller***, B. Greiner, J. Moore, R. M. Murray, R. van Paasen, and Rory Yorke, "The Python Control Systems Library (python-control)," *IEEE Conf. Decision and Control (CDC)* (Austin, Texas, December 2021). (***h5=48***) (**49**)
41. **S. Balasubramanian, Y. M. Chukewad, J. M. James**, G. Barrows, and ***S. B. Fuller***, "An insect-sized robot that uses a custom-built onboard camera and a neural network to classify and respond to visual input," *IEEE Int. Conf. on Biomedical Robotics and Biomechatronics (BIOROB)* (Twente, Netherlands, August 2018). (**21**)
42. T. S. Clawson, ***S. B. Fuller*,** S. Ferrari, "Robust hovering control for flapping insect-scale robots," *IEEE Int. Symp. Series on Computational Intelligence (SSCI)* (Honolulu, Hawaii, November 2017). (**8**)
43. T. S. Clawson, ***S. B. Fuller*,** S. Ferrari, and R. J. Wood, "A blade element approach to modeling aerodynamic flight of an insect-scale robot," *American Control Conference (ACC)* (Seattle, WA, May 2017). (***h5=43***) (**7**)
44. T. S. Clawson, S. Ferrari, ***S. B. Fuller***, and R. J. Wood, "Spiking neural network (SNN) control of a flapping insect-scale robot," *Int. Conf. on Decision and Control (CDC)* (Las Vegas, NV, December 2016). (***h5=48***) (**77**)
45. E. F. Helbling, ***S. B. Fuller***, and R. J. Wood, "Altitude estimation and control of an insect-scale robot with an onboard proximity sensor," *Int. Symp. on Robotics Res.* (*ISRR*) (Sestri Levante, Italy, September 2015) (**11**)
46. D. Miller, I. Fitzner, ***S. B. Fuller***, and S. Revzen, "Focused modularity: Rapid iteration of design and fabrication of a meter-scale hexapedal robot," *Int. Conf. Climbing and Walking Robots* (*CLAWAR*) (Hangzou, China, September 2015). (**2**)
47. ***S. B. Fuller*** & E. F. Helbling, P. Chirarattananon, and R. J. Wood, "Using a MEMS gyroscope to stabilize the attitude of a fly-sized hovering robot," *Int. Conf. Micro Air Vehicles (IMAV)* (Delft, the Netherlands, August 2014). (**55**)
48. ***S. B. Fuller*** and R. M. Murray, "An insect-inspired autocorrelation model for visual flight control in a corridor," *IEEE Int. Conf. on Robotics and Biomimetics (ROBIO)* (Phuket, Thailand, December 2011). (**25**)
49. A. Censi, S. Han, ***S. B. Fuller***, and R. Murray, "A bio-plausible method for attitude stabilization," *IEEE Int. Conf. on Decision and Control (CDC)* (Shanghai, China, January 2010). (***h5=48***) (**18**)
50. M. Epstein, S. Waydo, ***S. B. Fuller***, A. D. Straw, W. Dickson, M. H. Dickinson, and R. M. Murray, "Biologically inspired feedback for *Drosophila* flight," *American Control Conf. (ACC)* (New York, NY, June 2007). (***h5=43***) (**29**)
51. S. Schell, A. Tretten, J. Burdick, ***S. B. Fuller***, and P. Fiorini, "Hopper on wheels: evolving the hopping robot concept," *IEEE Int. Conf. on Field and Service Robotics (FSR)* (Helsinki, Finland, June 2001). (**11**)
52. ***S. B. Fuller*** and J. M. Jacobson, "Ink jet fabricated nanoparticle MEMS," *IEEE Int. Conf. on Microelectromechanical Systems (MEMS)* (Miyazaki, Japan, January 2000). (**21**)

Articles under review or revision

53. **A. Weber, D. Dhingra**, and ***S. B. Fuller***, "A flexured-gimbal 3-axis force-torque sensor reveals minimal cross-axis coupling in an insect-sized flapping-wing robot" (under review)

Patents submitted and/or awarded

Awarded

1. **J. James, V. Iyer, Y. Chukewad**, S. Gollakota, and ***S. B. Fuller***, "Untethered flying micro-robots," U.S. Patent Application No. 17/053,318 (November 16, 2023).
2. **M. Anderson**, K. Brink, T. Daniel, ***S. B. Fuller***, J. Sullivan, and J. Talley, "A bio-hybrid odor-guided autonomous palm-sized air vehicle," U. S. Patent No. 11,703,88u2. (July 18, 2023)
3. J. M. Jacobson, B. N. Hubert, B. Ridley, B. Nivi, and ***S. B. Fuller***, "Nanoparticle-based electrical, chemical, and mechanical structures and methods of making same," U.S. Patent 6,294,401 (September 25, 2001).

Submitted

1. **K. Johnson,** V. Iyer, V. Arroyos, ***S. B. Fuller***, R. Villanueva, A. Schultz, "Flybar Apparatus," U.S. Patent Application filed December 20, 2023.
2. **Y. Talwekar**, ***S. B. Fuller***, V. Iyer, **Y. Chukewad**, Z. Yu, "Motion Tracking Systems Based On Visual, Inertial, And Distance Sensors", filed May 24, 2023.
3. ***S. B. Fuller***, **Y. Chukewad**, and **D. Dhingra**, "Control Method for Aerial Vehicle," U.S. Patent Application No. 18/170,094, filed February 16, 2023.

Provisional

4. T. Daniel, **M. Anderson**, ***S. B. Fuller***, **V. Iyer**, and J. Sullivan, "Bio-hybrid smartphone connected odor sensing platform," U.S. Provisional Application, filed 2/10/2022.

Abstracts, letters, non-refereed papers, technical reports

Abstracts

1. ***S. B. Fuller***, "Biology-inspired intelligence in the design, control, and power systems of insect-sized flying robots," *Hilton Head Solid State Sensors, Actuators, and Microsystems Workshop* (Hilton Head, South Carolina, June 2022).
2. **A. T. Sing, Y. M. Chukewad**, and ***S. B. Fuller***, "A robot fly design with a low center of gravity folded from a single laminate sheet," *Workshop on Foldable Robotics, IEEE Int. Conf. Intelligent Robots and Systems (IROS)* (Vancouver, Canada, 2017).
3. **M. Anderson**, J. Sullivan, ***S. B. Fuller***, J. Riffell, K. Brink, J. Talley, M. Reynolds, and T. Daniel "The Smellicopter: Odor Localization on a Micro Air Vehicle using Bioinspired Control and Hybrid Biological/Synthetic Integrated Sensors," in *Workshop on Robotics-inspired Biology, IEEE/RSJ Int. Conf. Intelligent Robots and Systems (IROS)* (Vancouver, Canada, 2017).
4. ***S. B. Fuller***, "Visual motion control in flies and fly-sized robots," *Northeast Robotics Colloquium* (Cambridge, MA, 2013).
5. Z. E. Teoh, ***S. B. Fuller***, A. Baisch, and R. J. Wood, "Pop-up book MEMS assembly of complex microrobots," *Workshop on Meso-scale manufacturing, IEEE Int. Conf. Robotics and Automation (ICRA)* (Karlsruhe, Germany, 2013).
6. ***S. B. Fuller***, A. D. Straw, R. M. Murray, and M. H. Dickinson, "Do flies use correlators to measure forward velocity?" in *Conf.: Visual Processing in Insects: from Anatomy to Behavior II.* (Howard Hughes Medical Institute Janelia Farm Research Campus, Ashburn, VA, May 2009).
7. ***S. B. Fuller*** and R. M. Murray, "A geometric analysis of Hassenstein-Reichardt correlators," *Workshop on visual guidance systems for small autonomous aerial vehicles, IEEE/RSJ Int. Conf. on Intelligent Robots and Systems (IROS)* (Nice, France, 2008).

8. ***S. B. Fuller***, A. D. Straw, M. Epstein, S. Waydo, W. B. Dickson, M. H. Dickinson, and R. M. Murray, "Geometric analysis of Hassenstein-Reichardt elementary motion detectors and application to control in a fruit fly simulator and a robot," *Int. Symp. Flying Insects and Robotics (FIR)* (Ascona, Switzerland, 2007).

Non-refereed papers

1. ***S. B. Fuller***, M. Epstein, S. Waydo, W. B. Dickson, A. D. Straw, M. H. Dickinson, R. M. Murray, "Flight control in a flapping-wing fruit fly simulator," *The Neuromorphic Engineer* (2007).

Technical Reports

1. A. Censi, E. Frazzoli, and ***S. B. Fuller***, "On the optimal codesign of vehicle sensing and actuation," *Technical Report* (2014).

Other significant research dissemination (web sites, software, Wikis, etc.)

- Core developer (top 3 contributor of 60), open-source Python Control Systems Library, ***downloaded more than 2 million times per year***
- Online tutorial posted for origami-folded robots posted publicly here, here and here

OTHER SCHOLARLY ACTIVITY

Invited lectures and seminars.

1. Invited speaker, UCSD Contextual Robotics Institute (May 2025)
2. Invited symposium speaker, *Society of Integrative and Comparative Biology:* Robust and adaptive locomotion (January 2024)
3. Invited speaker, *Conference on Decision and Control* Workshop on Benchmarking, Reproducibility, and Open-Source Code in Controls (December 2023)
4. *TU Delft, Department of Aerospace Engineering* (July 2023)
5. *Carnegie Mellon Mechanical Engineering Speaker Series* (September 2022)
6. *Pennsylvania State Controls Seminar Series*, Biology-inspired flying insect robots for air telemetry (June 2022)
7. Invited speaker (one of 4), "Microsystems Invited Speakers on grand challenges," *Solid-State Sensors, Actuators, and Microsystems (Hilton Head) Workshop*, "Biology-inspired intelligence in the design, control, and power systems of insect-sized flying robots," (June 2022)
8. Invited speaker, *State of the art Review (SOAR)* international consortium (2022)
9. Invited speaker, *IEEE ICRA workshop on advances in flapping-wing robotics* (September 2022)
10. Invited speaker, *AIAA Sci-Tech conferences*: Bio-inspired innovations. "Insect-inspired artificial intelligence and power in insect-sized robots." (January 2022)
11. *ETH Zurich Autonomy Series*, "Flying Autonomous, Insect-sized Robots" (April 2021) video
12. *U.C. Berkeley EECS Department Colloquium Series*, "Flying Autonomous, Insect-sized Robots" (March 2021) video
13. U. Maryland Robotics Center Seminar Series (April 2019)
14. U. Washington NanoEngineered Systems (NanoES) (April 2019)

15. Invited speaker, IDA (DARPA Institute for Defense Analytics) workshop on millimeter-scale wireless sensors (July 2018)
16. Invited speaker, Workshop on Planning Legged and Aerial Locomotion with Dynamic Motion Primitives, *IEEE Int. Conf. Intelligent Robots and Systems (IROS)* (September 2017)
17. Invited speaker, Workshop on Robotics Inspired Biology, *IEEE Int. Conf. Intelligent Robots and Systems (IROS)* (September 2017)
18. Selected by popular vote of UW ME Faculty: University of Washington Mechanical Engineering Colloquium (May 2017)
19. University of Washington Biology Colloquium: *Aerial Autonomy at Insect scale: What can biology teach us about robotics and vice versa*? (October 2016)
20. University of Washington Electrical Engineering Colloquium: *Aerial Autonomy at Insect scale: What can biology teach us about robotics and vice versa*? (April 2016)
21. University of Washington Computer Science Robotics Colloquium Seminar: *Aerial Autonomy at Insect scale: What can biology teach us about robotics and vice versa*? (October 2015)
22. Stanford University Aeronautics and Astronautics Seminar, *Aerial Autonomy at Insect scale: What can biology teach us about robotics and vice versa?* (April 2015)
23. Columbia University Mechanical Engineering Seminar, *Aerial Autonomy at Insect scale: What can biology teach us about robotics and vice versa?* (March 2015)
24. MIT Enterprise Forum, *Outperforming the fly: bio-inspired solutions to small-scale flight*, (May 2014)
25. **Opening Plenary Speaker**. "Outperforming the fly: bio-inspired solutions to small-scale flight" *International Micro Aerial Vehicle Conference*, Technical University of Delft, Delft, The Netherlands (August 2014)
26. US Army Research Laboratory, *Feedback control strategies inspired by the fly* (March 2011)

Professional society memberships.

Member, Institute of Electrical and Electronics Engineers (IEEE)

Other

Reviewer:
Nature (1 article, most recent 1/21)
Science (1 article, 2/18)
Science Robotics (4 articles, 6/25)
IEEE Robotics and Automation Letters (14 articles, 10/22)
IEEE Transaction on Industrial Electronics (1 article, 4/23)
Science Advances (1 article, 4/22)
International Journal of Robotics Research (1 article, 11/17)
J Royal Society Interface (3 articles, 7/16)
Robots and Autonomous Systems (1 article, 5/17)
Bioinspiration and Biomimetics (2 articles, 2/16)
Robotics: Science and Systems (2 articles, 4/21)
Conference on Decision and Control (1 article, 5/21)
Proceedings of the IEEE (1 article, 1/14)
Scientific Advances (1 article, 9/16)
Sensors & Actuators A (1 article, 1/17)
ACM User Interface Science and Technology Conference (UIST) (1 article, 1/17)
IEEE Robotics Conferences ICRA and IROS (16 articles, 3/22)
Nature Food (1 article, 11/19)

GRADUATE STUDENTS

Chaired Doctoral Students

Dr. Yogesh Chukewad, August 2016–September 2020. (Currently at Monarch Tractor, San Francisco, CA) (chair)
Dr. Melanie Anderson (NDSEG Graduate Fellow) September 2016–December 2021 (co-chair, with Tom Daniel, UW Dept. of Biology) (Currently Comotion Commercialization Fellow)
Dr. Daksh Dhingra, September 2017–August 2024 (chair)
Dr. Johannes James, June 2016–August 2024 (chair)

Current Doctoral Students

Zhitao Yu, September 2020–present (passed generals) (chair)
Yash Talwekar, January 2020–present (passed quals) (chair)
Kyle Johnson (NSF Fellow), September 2020–present (passed generals) (co-chaired with Vikram Iyer, UW CSE)
Alyssa Giedd (Ford Foundation Fellow, NSF Fellow), April 2022–present (passed quals) (chair)
Aaron Weber, April 2022–present (pre-quals) (co-chaired with Santosh Devasia, UW ME)

Chaired Masters Degrees

Avinash Singh, June 2017 (now Mechatronics Engineer at Fresh Consulting, Seattle WA)
Sivabala Balasubramanian, June 2018 (now Software Engineer at Samsung, San Francisco, CA)
Daksh Dhingra, June 2020 (now a Ph.D. student at UW in my group)
Hari Krishna Hari Prasad, June 2020 (now Ph.D. student at U. Colorado Boulder)
Yash Talwekar, (Dec. 2021, now a Ph. D. student in my group)
Nishant Elkunchwar (Dec. 2021, now at Monarch Tractor)
Suvesha Chandrasekaran (Dec. 2021, now at Amazon Robotics and AI)

Current Masters Students

Sriram Kodey

Other significant student supervision

MS thesis committees (completed degree)
Keshav Rajasekaran (Chair: Ashis Banerjee, 2017)
Yana Sosnovskaya (Chair: Sam Burden, Electrical & Computer Engineering, 2017)
Balakumaran Gopalarethinam (chair: Jinkyu Yang, Aero, 2018)
Tianqi Li (chair: Sam Burden, Electrical & Computer Engineering, 2018)
Liam Han (chair: Sam Burden, Electrical & Computer Engineering, 2018)
Brianna Goodwin (chair: Kat Steele, ME, 2018)
Anusha Mangal (chair: Brian Fabien, ME, 2018)
Dylan Reinsdorf (Chair: Patrick Aubin, ME, 2019)
Wenqing Ju (Chair: Jae-Hyun Chung, 2019)
Xinyu Cao (Chair: Bruce Darling, Electrical & Computer Engineering, 2020)
Anshul Sungra (Chair: Brian Fabien, ME, 2020)
Xiangyu Xie (ECE; Chair: Josh Smith, Electrical & Computer Engineering, 2020)
Mingyu Wang (ME; Chair: Xu Chen, ME, 2021)

MS thesis committees (in progress):

Committee member
Dr. Mark A. Jankauski (Chair: Steve Shen, ME, defended March 2017)
Dr. Kevin Kadooka (Chair: Minoru Taya, ME, defended March 2017)
Dr. Ben Schuman (Chair: Katherine Steele, ME, defended June 2019)
Dr. Thomas Mohren (Chair: Steve Brunton, ME, defended March 2020)
Dr. Behnoosh Parsa (Chair: Ashis Banerjee, ME, defended December 2020)
Dr. Ravi Sankar Vaddi (Chair: Igor Novosselov, ME, defended March 2021)
Dr. Vikram Iyer (Chair: Shyam Gollakota, CSE, defended August 2021)
Assistant Professor, UW CSE
Dr. Kadierdan Kaheman (Chair: Steve Brunton, ME, defended May 2022)
Dr. Anthony Anderson (Chair: Patrick Aubin, ME)
Dr. Abishek Sharma (Chair: Eric Rombokas, ME)
Dr. Andy Lewis (Chair: Blake Hannaford, ECE)

Graduate School Representative
Dr. Sweta Agarawal (Chair: Michael Dickinson, defended November 2015)
Dr. Joshua Ensworth (Chair: Matt Reynolds, defended January 2017)
Dr. Apoorva Sharma (Chair: Matt Reynolds, ECE, defended May 2019)
Dr. Alexander Tung Hoang (Chair: Matt Reynolds, ECE, defended June 2019)
Dr. Xiaojie Fu (Chair: Matt Reynolds, ECE, defended June 2019)
Dr. Aditya Vamsikrishna (Chair: Siddartha Srinivasa, CSE, defended March 2021)
Dr. Patrick Lancaster (Chairs: Siddartha Srinivasa and Josh Smith, CSE, defended May 2022)
Dr. Purnarand Elango (Chair: Behcet Acikmese, defended August 2024)
Dr. Matthew Schmittle (Chair: Sidd Srinivasa)
Soham Dutta (Chair: Brian Johnson, ECE)
Xiangyun Meng (Chair: Dieter Fox, CSE)
Boling Yang (Chairs: Josh Smith and Byron Boots, CSE & EE)

Undergraduate students advised (UW)
Maxx Yamasaki
Yicheng Hu
Cat Hannahs
Elma Dedic
Andrew Adie
Marika Ridder
Alyssa Giedd
Merrill Keating
Megs Cambra
Ryan O'Hara
Callum Keddie
Finnley Meinig
Josh Tran
Claire Li
Arjun Subramanian
Giannah Donahoe
Semayat Yewondwossen
Ousman Nije

Momoka Sakamoto

High school students advised
Shravan Misku

RESEARCH ACTIVITIES

Funded Research

Total as PI or Co-PI: >**$15 M**
Total to my group: **$1.7 M**

Funding Agency	***Title***	**Role**	**Total Amount**	**Dates**
National Science Foundation	*NCS: Insect based brain-machine interfaces for basic science and engineering applications*	Co-PI (PI: Barani Raman, Washington U. St. Louis)	$4.3M, my amount $480k	9/1/2023–8/31/2027
NSF Future of Semiconductors (FuSe)	*Ultra-low-power and Robust Autonomy of Edge Robotics with 2D Semiconductors*	Co-PI (PI: Amit Trivedi, U. Illinois, Chicago)	$300k, my amount $85k	6/1/2023–5/31/2025
UW Comotion Innovation Gap Fund	*Wearable Motion Capture System*	PI (co-PIs Kat Steele UW ME, Vikram Iyer, UW CSE)	$10k, my amount $10k	1/1/2023–12/31/2023
NSF Foundational Research in Robotics (FRR)	*Visual flight control for the very smallest aerial vehicles*	PI	$883k, my amount $883k	7/2021–6/2025
AFOSR	*Miniature Autonomous Odor-Guided Flight Vehicles for Chemical Verification: Establishing test and evaluation paradigms for the emerging technologies of bio-hybrid systems*	Co-PI (PI Jeff Riffell, UW Biology, Co-PI Tom Daniel, UW Biology)	$801k, my amount $70k	9/2020–8/2023
NSF-MRI-1624513	*Acquisition of a Nanoscribe 3D laser lithography system*	Significant Personnel (PI: Nicholas Boechler, UW ME)	shared equipment grant, total $623k	9/16–8/19
NSF-MRI	*Development of a hyper-sensed*	Co-PI (PIs: Jeff Riffell,	shared equipment grant, total $523	9/17–8/20

	environmentally controlled wind tunnel	UW Biology, and Steve Brunton, UW ME)		
Air Force	*Air Force Center of Excellence in Nature-Inspired Flight Technologies and Ideas* AFOSR FA9550-14-1-0398	Co-PI (PI: Tom Daniel, UW Biology, +10 more)	$9,253k my amount $150k	9/14–9/20
U. Wash. Royalty Research Fund	*Aerial insect robotics powered by human-safe magnetically-coupled wireless power transfer*	PI	$40k, my amount $40k	3/15/2018–3/14/2019