

## Curriculum Vitae

### Shivayogi V. Hiremath

February 22, 2021

Assistant Professor  
Department of Health and Rehabilitation Sciences  
College of Public Health, Temple University  
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Pronouns: he/him/his

#### Research Interests:

Rehabilitation Sciences; Rehabilitation Engineering; Personal Health Informatics; Spinal Cord Injury; Assistive Technology; Exercise; Health and Physical Activity; Orthotics; Prosthetics; Wearable devices

#### Education:

- 2013      **University of Pittsburgh, Pittsburgh, PA, USA**  
PhD in Rehabilitation Science  
Dissertation title: *Physical activity monitoring system for manual wheelchair users.*  
Advisor: Dan Ding
- 2009      **University of Pittsburgh, Pittsburgh, PA, USA**  
MS in Rehabilitation Science and Technology  
Thesis title: *Evaluation of accelerometer-based activity monitors to assess energy expenditure of manual wheelchairs users with spinal cord injury.*  
Advisor: Dan Ding
- 2005      **Visveswaraiah Technological University, India**  
Bachelor of Engineering in Electrical and Electronics  
Thesis title: *Probabilistic methodologies for mobile robot navigation.*  
Advisor: Sartaj Singh

#### Appointments and Research Experience:

- 2016-Present      Assistant Professor on Tenure Track  
Neuromotor Science and Physical Therapy Programs  
Department of Health and Rehabilitation Sciences, Temple University
- 2017-Present      Affiliate Member, Center for Obesity Research and Education, Temple University
- 2017-2018      Visiting Scholar, Center for Large Data Research and Data Sharing in Rehabilitation,  
University of Texas Medical Branch, Galveston
- 2013-2015      Post-Doctoral Associate, Human Rehabilitation and Neural Engineering Laboratory  
Department of Physical Medicine and Rehabilitation, University of Pittsburgh,  
Pittsburgh, PA, USA; Mentors: Wei Wang, Michael L. Boninger
- 2007-2013      Graduate Student Researcher, Human Engineering Research Laboratories

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Department of Rehabilitation Science and Technology, University of Pittsburgh,  
Pittsburgh, PA, USA; Mentors: Dan Ding, Rory A. Cooper

- 2007-2013 Graduate Student Researcher (without compensation: WOC) w/ Dan Ding, PhD, and Rory A. Cooper, PhD, VA Pittsburgh Healthcare System, Pittsburgh, PA
- 2008-2013 Visiting Researcher, Informatics Group  
BodyMedia, Inc., Pittsburgh, PA, USA
- 2005-2007 Project Engineer  
Systemantics India Pvt. Ltd., Bengaluru, India
- 2005 Visiting Researcher  
Spastics Society of Karnataka, Bengaluru, India
- 2005 Research Assistant  
Centre for Artificial Intelligence and Robotics, Bengaluru, India
- 2002-2005 Research Experience for Undergraduate Student, Mass Spectroscopy Laboratory  
Indian Institute of Science, Bengaluru, India

### Research Funding:

#### Ongoing Research Support

- Principal Investigator (National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), Administration for Community Living), *Harnessing social networks to personalize sensor-driven, just-in-time physical activity interventions for individuals with spinal cord injury*, Grant number: 90IFDV0018. (\$600,000; 9/2020-8/2023: 15% Effort).
- Principal Investigator (Eunice Kennedy Shriver National Institute of Child Health & Human Development (NICHD), National Institutes of Health (NIH)), *Evaluating associations between trauma-related characteristics and functional recovery in individuals with spinal cord injury*, Grant number: 1R03HD101064. (\$331,040; 8/2020-8/2022: 30% Effort).
- Co-Investigator (PI: Gretchen Snethen) (Novo Nordisk), *Developing a peer & community approach for managing diabetes in disability*. (\$20,000; 1/2021-12/2021: 2.5% In-kind Effort).

#### Completed Research Support

- Principal Investigator (Center for Large Data Research and Data Sharing in Rehabilitation, University of Texas Medical Branch; Prime: NIH), *Examining the impact of admission latency and functional status on post-acute outcomes in individuals with spinal cord injury*. (\$25,000; 2018-19: 10% Effort).
- Principal Investigator (Craig H. Neilsen Foundation Pilot Grant), *Just-in-time adaptive feedback systems to assist individuals with spinal cord injury*, Project Number: 382252. (\$300,000; 2016-19: 14.5% Effort).
- Principal Investigator (National Science Foundation, Student Travel Grant), *Student mentoring and travel support for the 5<sup>th</sup> International Conference on Ambulatory Monitoring of Physical Activity and Movement (ICAMPAM) 2017*, Award Number: 1737459. (\$15,000; 2017-18: 0% Effort, Supported 10 graduate students in the US to travel to ICAMPAM to present their research and receive mentorship).
- Principal Investigator (Grant-In-Aid, Temple University), *Location based physical activity levels in individuals with spinal cord injury*. (\$2,833; 2018: 0% Effort: Supported an undergraduate student researcher at the Personal Health Informatics and Rehabilitation Engineering Laboratory).
- Principal Investigator (Paralyzed Veterans of America Research Foundation Fellowship Grant), *Use of sensory inputs for brain-computer interface training*, PVA#3039 (\$100,000; 2015: 67% Effort, 2016: 20% Effort).
- Site-Principal Investigator, University of Pittsburgh, Lead Carnegie Mellon University (PI: Jodi

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- Forlizzi) (Google, Inc.), *Shared attention in human-robot collaboration*. (\$9,453; 2014-15: 10%).
- Principal Investigator (Mary E. Switzer Research Fellowship from National Institute on Disability and Rehabilitation Research, U.S. Department of Education), *Development of a physical activity monitor system for manual wheelchair users*, Grant Number: H133F110032. (\$65,000; 2011-12: 100% Effort).

## Publications:

Google Scholar: Citations: 771; H-index: 15; i10-index: 18 [Feb. 22, 2021]

Web of Science: Citations: 370; H-index: 11; Average citations per item: 13.21 [Feb. 22, 2021]

### Peer Reviewed Journal Proceedings

\* indicates Mentee or Advisee, <sup>ψ</sup> indicates Senior Author

1. **Hiremath, S.V.**, <sup>ψ</sup> Karmarkar, A.M., Kumar, A., Coffman, D.L., Marino, R.J. *Factors associated with post-acute functional status and discharge dispositions in individuals with spinal cord injury*. The Journal of Spinal Cord Medicine, 19 February 2021.
2. **Hiremath, S.V.**, <sup>ψ</sup> Kupfer, M., Ruediger, M. *Timing and pattern of readmission in individuals with spinal cord injury in the setting of a specialized medical home*. Journal of Spinal Cord Medicine, , 19 February 2021.
3. Snethen, G., Brusilovskiy, E., McCormick, B.P., **Hiremath, S.V.**, Salzer, M.S. *The relationship between community participation and physical activity among individuals with serious mental illnesses*. Mental Health and Physical Activity, 20, 100381, 2021
4. Canori, A.\*, Kumar, A., **Hiremath, S.V.** <sup>ψ</sup> *Factors associated with multiple hospital readmissions for individuals with spinal cord injury*. CommonHealth, 1 (2), 57-61, 2020.
5. Canori, A.\*, Amiri, A.M.\*, Thapa-Chhetry, B., Finley, M.A., Schmidt-Read, M., Lamboy, M.R., Intille, S.S. and **Hiremath, S.V.** <sup>ψ</sup> *Relationship between pain, fatigue, and physical activity levels during a technology-based physical activity intervention*. The Journal of Spinal Cord Medicine. 2020 May pp.1-8.
6. Brusilovskiy, E., Klein, L.A., Townley, G., Snethen, G., McCormick, B., **Hiremath, S.V.**, Salzer, M.S. *Examining the relationship between community mobility and participation using GPS and self-report data*. Social Science & Medicine, 265, 113539, 2020.
7. Finley, M.A., Euiler, E., **Hiremath, S.V.**, and Sarver, J. *Movement coordination during humeral elevation in individuals with newly acquired spinal cord injury*. Journal of Applied Biomechanics, 36(5), 345-350, 2020.
8. Skrzat, J.M., Carp, S.J., Dai, T., Lauer, R., **Hiremath, S.V.**, Gaeckle, N., Tucker, C.A. *Use of surface electromyography to measure muscle fatigue in patients in an acute care hospital*, Physical Therapy, 100 (6) 897–906, 2020.
9. **Hiremath, S.V.**, <sup>ψ</sup> Amiri, A.M.\*, Chhetry, B.T., Snethen, G., Schmidt-Read, M., Lamboy, M.R., Coffman, D.L., Intille, S.S. *Mobile health-based physical activity intervention for individuals with spinal cord injury in the community: A pilot study*. PLOS ONE, 14(10), 2019.
  - The article was chosen as an Editor's pick for the Veterans Disability & Rehabilitation Research Channel in November 2019.
10. Amiri, A.M.\*, **Hiremath, S.V.** <sup>ψ</sup>, Salzer, M.S., Snethen, G. *Predicting physical activity levels in individuals with schizophrenia through integrated global positioning system and accelerometer data*. Schizophrenia Research, 212, 246-248, August 9, 2019.
11. Degenhart, A.D, **Hiremath, S.V.**, Yang, Y., Foldes, S.T., Collinger, J.L., Boninger, M.L., Tyler-Kabara, E.C., Wang W. *Remapping cortical modulation for electrocorticographic brain-computer interfaces: a somatotopy-based approach in individuals with upper-limb paralysis*. Journal of Neural Engineering. 15 (2), 026021, 2018.
  - A figure from this article was selected as the cover image for the 2<sup>nd</sup> issue of the Journal of Neural Engineering in 2018.
12. **Hiremath, S.V.**, Hogaboom, N.S., Roscher, M.R., Worobey, L.A., Oyster, M.L., Boninger, M.L. *Longitudinal prediction of quality of life scores and locomotion in individuals with traumatic spinal*

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- cord injury*. Archives of Physical Medicine and Rehabilitation. 98(12) 2385-92, 2017.
13. **Hiremath, S.V.**, Tyler-Kabara, E.C., Wheeler, J.J., Moran, D.W., Gaunt, R.A., Collinger, J.L., Foldes, S.T., Weber, D.J., Chen, W., Boninger, M.L., Wang, W. *Human perception of electrical stimulation on the surface of somatosensory cortex*. PloS ONE, 12(5), p.e0176020, 2017.
  14. Amiri, A.M., Peltier, N., Goldberg, C., Sun, Y., Nathan, A., **Hiremath, S.V.**, Mankodiya, K. *WearSense: Detecting autism stereotypic behaviors through smartwatches*. Healthcare, Multidisciplinary Digital Publishing Institute, 5 (1), 11, 2017.
  15. **Hiremath, S.V.**, Intille, S.S., Kelleher, A., Cooper, R.A., Ding D. *Estimation of energy expenditure for wheelchair users using a physical activity monitoring system*. Archives of Physical Medicine and Rehabilitation, 97(7) 1146-1153, 2016.
  16. Tsang, K., **Hiremath, S.V.**, Crytzer, T.M., Dicianno, B.E., and Ding, D., *Validity of activity monitors in wheelchair users: A systematic review*. Journal of Rehabilitation Research and Development, 53 (6) 641-658, 2016.
  17. **Hiremath, S.V.**, Chen, W., Wang, W., Foldes, S., Yang, Y., Tyler-Kabara, E.C, Collinger, J.L., Boninger, M.L. *Brain computer interface learning for systems based on electrocorticography and intracortical microelectrode arrays*. Frontiers in Integrative Neuroscience, 9:40. 2015.
  18. **Hiremath, S.V.**, Intille, S.S., Kelleher, A., Cooper, R.A., Ding D. *Detection of physical activities using a physical activity monitor system for wheelchair users*. Medical Engineering & Physics. 37(1) 68-76: 2015.
  19. Tsang, K., **Hiremath, S.V.**, Ding, D., *Evaluation of custom energy expenditure models for the SenseWear armband in manual wheelchair users*. Journal of Rehabilitation Research and Development, 52 (7), 793-804, 2015.
  20. Sindall P., Lenton J.P., Malone L., Douglas S., Cooper R.A., **Hiremath S.**, Tolfrey K., Goosey-Tolfrey V. *Effect of low-compression balls on wheelchair tennis match-play*. International Journal of Sports Medicine, 35 (5), 424-431: 2014.
  21. **Hiremath, S.V.**, Ding, D., Cooper, R.A. *Development and evaluation of a gyroscope based wheel rotation monitor for manual wheelchair users*. Journal of Spinal Cord Medicine, 36 (4), 347-356: 2013.
  22. **Hiremath, S.V.**, Ding, D., Farrington, J., Vyas, N., and Cooper, R.A. *Physical activity classification utilizing SenseWear activity monitor in manual wheelchair users with spinal cord injury*. Journal of Spinal Cord, 51 (9), 705-709: 2013.
  23. **Hiremath, S.V.**, Ding, D., Farrington, J., Cooper, R.A. *Predicting energy expenditure of manual wheelchair users with spinal cord injury using a multi-sensor based activity monitor*. Archives of Physical Medicine and Rehabilitation, 93 (11), 1937-1943: 2012.
  24. **Hiremath, S.V.** and Ding, D., *Evaluation of activity monitors in manual wheelchair users with paraplegia*. Journal of Spinal Cord Medicine. 34(1), 110-117: 2011.

### Peer Reviewed Conference Proceedings

Rehabilitation Engineering conference papers are typically full-length (4-8 pages), double-blind peer-reviewed, archival research contributions. Some of these papers are not listed in PubMed.

\* indicates Mentee or Advisee, <sup>ψ</sup> indicates Senior Author

25. Campbell, C., Ahmad, F., **Hiremath, S.V.** *Accelerometer-based body-plus-assistive-device sensor network for mobility tracking in individuals with stroke*. In Big Data II: Learning, Analytics, and Applications. SPIE: International Society for Optics and Photonics. Vol. 11395, p. 113950H, 2020.
26. Islam, N. \*, Amiri, A.M., Forlizzi, J., **Hiremath, S.V.** <sup>ψ</sup> *Automatic mouth detection for self-feeding*. 2018 IEEE Signal Processing in Medicine and Biology Symposium (SPMB) (2018): 01-03. Web.
27. Shoaib, N. \*, Amiri, A.M., Thapa-Chhetry, B., Snethen, G., Schmidt-Read, M., Lamboy, M.R., Intille, S.S., **Hiremath, S.V.** <sup>ψ</sup> *Improving physical activity levels of individuals with spinal cord injury in the community*. Rehabilitation Engineering and Assistive Technology Society of North America, Arlington, VA, 2018.
28. Amiri, A.M. \*, Shoaib, N., **Hiremath, S.V.** <sup>ψ</sup> *A framework to enhance assistive technology based mobility tracking in individuals with spinal cord injury*, 5<sup>th</sup> IEEE Global Conference on Signal and

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- Information Processing: Montreal, Canada, 467-471: 2017.
29. James, K., Wongsirikul, N., **Hiremath, S.**, Tsang, K., and Ding, D., *Usability of physical activity monitoring and sharing system for manual wheelchair users*. Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) Annual Conference, Washington, DC, 2016.
  30. Tsang, K., **Hiremath, S.V.**, and Ding, D., *Measuring energy expenditure in manual wheelchair users with an ActiGraph based activity monitor*. RESNA Annual Conference, Denver, CO, 2015.
  31. **Hiremath, S.V.**, Yang, G., Mankodiya, K. *Wearable Internet of Things: concept, architectural components and promises for person-centered healthcare*. MOBIHEALTH, Athens, Greece, 304-307: 2014.
  32. Tsang, K., **Hiremath, S.V.**, and Ding, D., *Evaluating the energy expenditure prediction models for manual wheelchair users with spinal cord injuries*. RESNA Annual Conference, Indianapolis, IN, 2014.
  33. **Hiremath, S.V.**, Ding, D., Okonkwo, C., Hannan, M., and Cooper, R.A., *Validation of a gyroscope based wheel rotation monitor for manual wheelchair users*. RESNA Annual Conference, Seattle, WA, 2013.
  34. Ding, D., Soleh, A., **Hiremath, S.V.**, and Parmanto, B., *Physical activity monitoring and sharing platform for manual wheelchair users*. 2012 Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC), San Diego, CA, 5833-5836: 2012.
  35. **Hiremath, S.V.** and Ding, D., *Quantifying physical activity using an ActiGraph in manual wheelchair users with spinal cord injury*. RESNA Annual Conference, Baltimore, MD, 2012.
  36. **Hiremath, S.V.** and Ding, D., *Regression equations for RT3 activity monitors to estimate energy expenditure in manual wheelchair users*. IEEE EMBC Annual Conference, Boston, MA, 7348-7351: 2011.
  37. Ding, D., **Hiremath, S.V.**, Chung, Y., and Cooper, R.A., *Detection of wheelchair user activities using wearable sensors*. Proceedings of the 6<sup>th</sup> International Conference on Universal access in human-computer interaction: context diversity, Orlando, FL, 145-152: 2011.
  38. **Hiremath, S.V.** and Ding, D., *Predicting energy expenditure of manual wheelchair users using a wearable device*. RESNA Annual Conference, Toronto, Canada, 2011.
  39. Lin, J.T., Ding, D., **Hiremath, S.V.**, Koontz, A., and Cooper, R., *Cross-slope and surface type influence on manual wheelchair propulsion symmetry*. RESNA Annual Conference, Toronto, Canada, 2011.
  40. **Hiremath, S.V.** and Ding, D., *Physical activity classification utilizing activity monitors in manual wheelchair users with SCI*. Biomedical Engineering Society Annual Meeting, Austin, TX, 2010.
  41. **Hiremath, S.V.** and Ding, D., *Evaluation of activity monitors in estimating energy expenditure in manual wheelchair users*. RESNA Annual Conference, Las Vegas, NV, 2010.
  42. Chung, Y., **Hiremath, S.V.** and Ding, D., *Activity classification of manual wheelchair users with wearable sensors*. RESNA Annual Conference, Las Vegas, NV, 2010.
  43. Chacon, A., **Hiremath, S.V.** and Ding, D., *Evaluation of the RT3 tri-axial accelerometer to measure physical activity in manual wheelchair users with spinal cord injury*. RESNA Annual Conference, Las Vegas, NV, 2010.
  44. Lin, J.T., Ding, D., **Hiremath, S.V.**, Koontz, A., and Cooper, R., *Impact of cross slope and surface type on wheelchair propulsion*. RESNA Annual Conference, Las Vegas, NV, 2010.
  45. **Hiremath, S.V.** and Ding, D., *Evaluation of activity monitors to estimate energy expenditure in manual wheelchair users*. IEEE EMBC Annual Conference, Minneapolis, 835-838: 2009.
  46. Ding, D., **Hiremath, S.V.** and Kelleher, A., *Using SenseWear armband to evaluate energy expenditure in manual wheelchair users*. 4<sup>th</sup> International State-of-the-art Congress Rehabilitation: Mobility, Exercise & Sports, Amsterdam, 2009.
  47. **Hiremath, S.V.**, Ding, D. and Koontz, A., *Estimating temporal parameters of wheelchair propulsion based on hand acceleration*. RESNA Annual Conference, Washington, DC, 2008.

## Curriculum Vitae

### Book Chapters

1. **Hiremath, S.V.**, Cooper, R.A., Pelleschi, T.L., and Cooper, R., *Wheeled mobility devices*. In P.A. Smith, F. Rauch, and G.F. Harris (Eds.). *Transitional Care in Osteogenesis Imperfecta: Advances in Biology, Technology, and Clinical Practice*. Chicago: Shriners Hospitals for Children; 2015, 301-326.
2. Cooper, R.A., McCue, M., Schein, R.M., Cooper, R., Sporer, M.L., Dodson, M.B., Reinsfelder, A.M., Yeager, A.F., Jinks, A., LoPresti, E., McClure, L., Wang, H., Collinger, J.L., **Hiremath, S.**, Ding, D., Lewis, A., *Assistive technology for people with traumatic brain injuries*. In Nathan Zasler, Douglas Katz, Ross Zafonte, David B. Arciniegas, M. Ross Bullock, Jeffrey S. Kreutzer (Eds.). *Brain Injury Medicine: Principles and Practice*, 2<sup>nd</sup> edition. New York: Demos Medical Publishing; 2012, 1178-1201.

### Consumer Magazine

1. **Hiremath, S.V.** *How much physical activity do you do?* Paraplegia News, October 2012, Paralyzed Veterans of America, 66 (10), 20-21: 2012.

### Peer Reviewed Abstracts

\* indicates Mentee or Advisee, <sup>ψ</sup> indicates Senior Author

1. Finley, M., Euler, E., **Hiremath, S.V.**, Sarver, J. *Movement coordination during humeral elevation in individuals with newly acquired spinal cord injury*. Virtual 44<sup>th</sup> Meeting of the American Society of Biomechanics, 2020.
2. Goodwin, B.M., Jahanian, O. Madansingh, S.I, Cloud-Biebl, B.A., Zhao, K.D., **Hiremath, S.V.**, Morrow, M.M.B, Fortune, E. *The accuracy of machine learning models for detecting propulsion from an inertial measurement unit worn on the arm of manual wheelchair users*. Virtual 44<sup>th</sup> Meeting of the American Society of Biomechanics, 2020.
3. Canori, A.\* , Kumar, A., **Hiremath, S.V.** <sup>ψ</sup> *Multidimensional clinical and psychosocial factors associated with one-year hospital readmissions for individuals with spinal cord injury*. American Public Health Association (APHA) Annual Meeting, Philadelphia, PA, 2019.
  - *Dr. Canori won APHA Disability Section's Career enhancement student scholarship award.*
4. Canori, A.\* , Reudiger, M., **Hiremath, S.V.** <sup>ψ</sup> *Patterns of health conditions associated with multiple hospital readmissions for individuals with spinal cord injury*. American Congress of Rehabilitation Medicine, Dallas, TX, 2018.
  - *Dr. Canori won a student travel award from the Center for Large Data Research and Data Sharing in Rehabilitation, University of Texas Medical Branch Galveston.*
5. **Hiremath, S.V.**, Amiri, A.M., Thapa-Chhetry, B., Shoaib, N., Sneath, G., Schmidt-Read, M., Lamboy, M.R., Intille, S.S. *Mobile-health based physical activity intervention for individuals with spinal cord injury in the community*. American Congress of Rehabilitation Medicine, Dallas, TX, 2018.
6. **Hiremath, S.V.**, Amiri, A.M., Chhetry, B.T., Intille, S.S. *m-Health physical activity intervention system for individuals with disability*. mHealth Technology Showcase, National Institutes of Health, Bethesda, MD, 2018.
7. **Hiremath, S.V.**, Chhetry, B.T., Amiri, A.M., Intille, S.S. *A Just-In-Time-Adaptive-Intervention system for improving physical activity levels of individuals with spinal cord injury*. International Conference on Ambulatory Monitoring of Physical Activity and Movement, Bethesda, MD, 2017.
8. Brusilovskiy, E., Klein, L., Townley, G., Sneath, G., **Hiremath, S.**, Salzer M. *Using Global Positioning Systems to measure community mobility and participation among individuals with disability: A validity study*. American Public Health Association, Atlanta, GA, 2017.
9. **Hiremath, S.V.**, Wang, W., Richardson, R.M., Alhourani, A., Lipski, W., Tyler-Kabara, E.C., Boninger, M.L., *Motor and pre-motor cortical activity during attempted, observed, passive and overt movements*. Neuroscience 2017, Washington, DC, 2017.
10. Skrzat, J., Carp, S., Lauer, R., **Hiremath, S.**, Tucker, C. *A Pilot Study of Muscle fatigue and recovery in patients who are critically ill*. American Thoracic Society's 2017 International Conference, Washington, DC, 2017.

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11. Skrzat, J., Carp, S., Gong, N., Tosto, J., Lauer, R., **Hiremath, S.**, Tucker, C. *Muscle fatigue and recovery in healthy younger and older adults*. American Physical Therapy Association's 2017 Combined Sections Meeting, San Antonio, TX, 2017.
12. **Hiremath, S.V.**, Intille, S.S., Kelleher, A., Cooper, R.A., Ding D. *Physical activity monitor system to quantify wheelchair-based activities in individuals with spinal cord injury*. NIH, Rehabilitation Research: Moving the Field Forward, Bethesda, MD, 2016.
13. **Hiremath, S.V.**, Tyler-Kabara, E.C., Wheeler, J.J., Moran, D.W., Gaunt, R.A., Collinger, J.L., Foldes, S. T., Weber, D. J., Chen, W., Boninger, M. L., Wang, W. *Human perception of electrical stimulation on the cortical surface of somatosensory cortex*, Neuroscience 2015, Chicago, IL.
14. **Hiremath, S.V.**, Tyler-Kabara, E.C., Wheeler, J.J., Moran, D.W., Gaunt, R.A., Collinger, J.L., Foldes, S. T., Weber, D. J., Chen, W., Boninger, M. L., Wang, W. *Use of cortical surface stimulation toward restoration of reliable sensation in human*, 2015 American Congress of Rehabilitation Medicine Annual Conference, Dallas, TX.
15. **Hiremath, S.V.**, Intille, S.S., Cooper, R.A., and Ding, D. *Quantifying energy expenditure of wheelchair-based physical activities in free-living environments*. Wireless Health, Bethesda, MD, 2014.
16. **Hiremath, S.V.**, Degenhart, A., Yang, Y., Collinger, J.L., Foldes, S., Tyler-Kabara, E.C., Weber, D.J., Gaunt, R., Boninger, M.L., and Wang. W. *Activation of the human primary motor cortex by sensory inputs in individuals with limb paralysis and implications for brain computer interfaces*. Neuroscience, Washington, DC, 2014.
17. **Hiremath, S.V.**, Degenhart, A., Yang, Y., Collinger, J.L., Foldes, S., Tyler-Kabara, E.C., Weber, D.J., Gaunt, R., Boninger, M.L., Wang, W. *Use of sensory inputs to train brain computer interface decoders in individuals with limb paralysis*. Neural Interfaces Conference, Dallas, TX, 2014.
18. Degenhart, A., **Hiremath, S.V.**, Yang, Y., Foldes, S., Collinger, J.L., Boninger, M.L., Weber, D.J., Schwartz, A., Tyler-Kabara, E.C., and Wang. W. *Remapping cortical modulation for brain-machine interfaces: a somatotopy-based approach in individuals with upper-limb paralysis*. Neural Interfaces Conference, Dallas, TX, 2014.
19. **Hiremath, S.V.**, Ding, D. *Evaluation of a physical activity monitoring system for manual wheelchair users*. International Seating Symposium, Nashville, TN, 2013.
20. **Hiremath, S.V.**, Ding, D., Goosey-Tolfrey, V., Malone, L.A., Lenton, J., Sindall, P. and Cooper, R.A. *Validation and testing of a wheel rotation datalogger for quantifying activity in manual wheelchair users*, North American Federation of Adapted Physical Activity Conference, Birmingham, AL, 2012.

### Peer Reviewed Journal Proceedings [Under Review]

\* indicates Mentee or Advisee <sup>ψ</sup> indicates Senior Author

1. Bernal V.C.E.\*, **Hiremath S.V.**<sup>ψ</sup>, Wolf B., Riley B., Mendonca R.J., Johnson M.J. *Classifying and tracking rehabilitation interventions through machine-learning algorithms in individuals with stroke*. Journal of Rehabilitation and Assistive Technologies Engineering (resubmitted in Dec. 2020).

### Research Presentations at Temple University

\* indicates Mentee or Advisee

1. Canori, A.\*, Amiri, A.M.\*, Thapa-Chhetry, B., Finley, M.A., Schmidt-Read, M., Lamboy, M.R., Intille, S.S., **Hiremath, S.V.** *Relationship between pain, fatigue, and physical activity levels during a technology-based physical activity*. College of Public Health Research and Evidence Based Practice Day 2020.
2. Hanna, K.\*, Yerger, D., **Hiremath, S.V.** *Usability testing of a new computer access technology*. College of Public Health Research and Evidence Based Practice Day 2020.
3. Canori, A.\*, Kumar, A., **Hiremath, S.V.** *Multidimensional clinical and psychosocial factors associated with one-year rehospitalization for individuals with spinal cord injury*. College of Public Health Research Day 2019.
4. Shoaib, N.\*, Amiri, A.M., **Hiremath, S.V.** *The improvement of physical activity levels in individuals*

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*with spinal cord injury*. College of Public Health Research Day 2018.

5. Islam, N. \*, Amiri, A.M., **Hiremath, S.V.** *Meal assistance robot with camera-based automatic mouth open detection*. College of Public Health Research Day 2018.

### Honors/Awards/Special Recognition:

- Educators Delegation from Temple University to Zhejiang Normal University, 2019.
- NIH mHealth Training Institute, University of California Los Angeles, Los Angeles, 2017.
- NSF Smart and Connected Health Aspiring Investigators workshop, 2015.
- Training in Grantsmanship for Rehabilitation Research Workshop. Chapel Hill, NC, 2014.
- **Winning Papers** in Rehabilitation Engineering and Assistive Technology Society of North America's Annual Conferences, Student Scientific Paper Competition (2013, 2011, 2010).
- **Honorable Mentions** in Rehabilitation Engineering and Assistive Technology Society of North America Annual Conferences, Student Scientific Paper Competition (2015, 2014, 2010, 2008).
- **Thomas O'Connor PhD Student Award** for 2012, Dept. of Rehabilitation Science and Technology, University of Pittsburgh.
- **First Place**, Perfect Pitch Competition, Quality of Life Technology Engineering Research Center, National Science Foundation Engineering Research Center, 2012.
- The **Ernest Bors Award** for Scientific Development awarded by the American Paraplegia Society, USA, 2011.
- **First Place**, Elevator Pitch Competition along with Soleh Udin Al Ayubi, Research Symposium, Quality of Life Technology Engineering Research Center, 2011.
- **Best Achiever** for the year 2005 from Electrical and Electronics Department, M. S. Ramaiah Institute of Technology, Bangalore, India, 2005.
- Awarded **Second Place** in Student Scientific Paper Competition in "INFLUX 2005" conducted by M. S. Ramaiah Institute of Technology, Bangalore, India, 2005.
- **Best Paper** in SYNCHRO 2003, National Level Technical Symposium conducted by Sri Muthukumaran Institute of Technology, Chennai, India, 2003.

### Presentations:

#### Refereed Conferences

\* indicates Mentee or Advisee

- Canori, A\*. *Patterns of health conditions associated with multiple hospital readmissions for individuals with spinal cord injury*. American Congress of Rehabilitation Medicine, Dallas, TX, 2018.
- *Mobile-health based physical activity intervention for individuals with spinal cord injury in the community*. American Congress of Rehabilitation Medicine, Dallas, TX, 2018.
- *A framework to enhance assistive technology based mobility tracking in individuals with spinal cord injury*, 5<sup>th</sup> IEEE Global Conference on Signal and Information Processing: Montreal, Canada, 2017.
- *Evaluating the energy expenditure prediction models for manual wheelchair users with spinal cord injuries*. RESNA Annual Conference, Indianapolis, IN, 2014.
- *Validation of a gyroscope based wheel rotation monitor for manual wheelchair users*. RESNA Annual Conference, Seattle, WA, 2013.
- *Predicting energy expenditure of manual wheelchair users using a wearable device*. RESNA Annual Conference, Toronto, Canada, 2011.
- *Evaluation of activity monitors in manual wheelchair users with paraplegia*. Annual Meeting of the Academy of Spinal Cord Injury Professionals, Las Vegas, NV, 2011.
- *Evaluation of activity monitors in estimating energy expenditure in manual wheelchair users*. RESNA Annual Conference, Las Vegas, NV, 2010.
- *Physical activity classification utilizing activity monitors in manual wheelchair users with SCI*.



## Curriculum Vitae

Biomedical Engineering Society Annual Meeting, Austin, TX, 2010.

### Invited Presentations

- *Telerehabilitation Webinar: Mobile Health based Physical Activity Intervention for Individuals with Spinal Cord Injury*, The University of Tennessee Health Science Center, Memphis, Tennessee, 06/2020, Host: Dr. Sajeesh Kumar KR.
- *Intelligent and Expert Systems to Monitor Activity*, University of Pennsylvania, Philadelphia, PA, 09/2019, Host: Dr. Michelle J. Johnson.
- *Mobile-health based physical activity intervention for individuals with spinal cord injury*, Paralyzed Veterans of America Healthcare Summit, Orlando FL, 08/2019.
- *Mobile-health based physical activity intervention for individuals with spinal cord*, Zhejiang University, Hangzhou, China, 06/2019, Host: Dr. Weidong Chen.
- *mHealth based Physical Activity Intervention for Individuals with Spinal Cord Injury in the Community*, Moss Rehab Research Institute's Topics in Rehabilitation Science, MossRehab, Philadelphia, PA, 09/2018, Host: Shailesh Kantak.
- *Mobile-health based physical activity intervention for individuals with spinal cord injury in the community*, Paralyzed Veterans of America Healthcare Summit, Dallas TX, 08/2018.
- *m-Health physical activity intervention system for individuals with disability*. mHealth Technology Showcase, National Institutes of Health, Bethesda, MD, 05/2018.
- *Just-In-Time-Adaptive-Intervention System (JITAI) for Improving Physical Activity in Individuals with Disabilities*. Mini Research Symposium, College of Engineering, Temple University, 05/2018.
- *Mobile-health based Physical Activity Intervention System (PAIS) for individuals with spinal cord injury*. CPH National Public Health Week, College of Public Health, Temple University, 4/2018, Host: Dr. Gina Tripicchio.
- *Mobile Health (mHealth) based Physical Activity Intervention System (PAIS) for Individuals with Spinal Cord Injury* at the College of Nursing and Health Professions, Drexel University, 12/2017, Host: Dr. Margaret Finley.
- *Physical activity intervention system for individuals with spinal cord injury* at Magee Rehabilitation Outpatient Therapy Center – Riverfront clinic. 11/2017, Host: Dr. Carol Owens.
- *Quantifying physical activity towards improving quality of life in individuals with disabilities* at Moss Rehabilitation Hospital, 04/2017, Host: Dr. Wesley Chay.
- *Quantifying physical activity and neural basis of movement towards improving quality of life in individuals with disabilities* at Department of Electrical & Computer Engineering, ECE Department Seminar Series, Temple University, 01/2017, Host: Dr. Fauzia Ahmad.
- *Quantifying physical activity and neural basis of movement towards improving quality of life in individuals with disabilities* at Temple Movement Science Club, Temple University, 02/2016, Host: Dr. Andrew Spence.
- *Quantifying physical activity and neural basis of movement towards improving quality of life in individuals with disabilities* at Department of Physical Therapy, Temple University, 01/2015, Host: Dr. Emily Keshner.
- *Physical Activity Monitor System for Manual Wheelchair Users* at IEEE Engineering in Medicine & Biology Society of Pittsburgh Lecture, 12/2014.
- *Quantifying intentional and actual movements towards improving quality of life of individuals with disabilities* at Personal Robotics Laboratory, Carnegie Mellon University, 07/2014, Host: Dr. Siddhartha Srinivasa.
- *Development and Evaluation of Physical Activity Monitors for Manual Wheelchair Users* in Human Rehabilitation and Neural Engineering Laboratory, University of Pittsburgh, 02/2013, Host: Dr. Wei Wang.

### Other presentations

- **Hiremath, S.V.** and Biradar, A.B., *Gas detection using fuzzy logic for TGS-823*, in INFLUX 2005

## Curriculum Vitae

conducted by M. S. Ramaiah Institute of Technology, Bangalore, India, 2005.

- **Hiremath, S.V.** and Biradar, A.B., *Fuzzy logic motor control to minimize reactive power intake in a synchronous motor*, in SYNCHRO 2003, National Level Technical Symposium conducted by Sri Muthukumaran Institute of Technology, Chennai, India, 2003.

### Teaching and Mentoring:

*Instructor: Neuromotor Science Program, Department of Physical Therapy, Temple University*

- NMS9623: Programming; Spring 2017, Spring 2018, Spring 2019, Spring 2020, Spring 2021.
- NMS9622: Instrumentation; Fall 2017 (co-taught with Dr. Richard Lauer); Fall 2018 (with Drs. Richard Lauer and Carole Tucker), Fall 2019 (with Drs. Richard Lauer and Carole Tucker), Fall 2020 (with Dr. Richard Lauer).
- PHTH 8137: Evidence Based Practice II; Fall 2018 (with Dr. Elizabeth Thompson), Fall 2019, Fall 2020.

*Teaching Assistant: Department of Rehabilitation Science and Technology, University of Pittsburgh*

- HRS2704: Fundamentals of Rehabilitation Engineering and Assistive Technology; Fall 2008.
- HRS2901: Introduction to Research Methodology; Spring 2009 and Fall 2010.

*Guest Lecturer*

- Department of Bioengineering, University of Pittsburgh, *Wheelchair biomechanics* in BIOENG 1630: Biomechanics 1; Spring 2013, 14, Fall 2015.
- Dept. of Electrical, Computer, & Biomedical Engineering, University of Rhode Island, Kingston, RI, *Clinical Brain-Computer Interfaces* in BME468: Neural Engineering; Spring 2015, 2016, 2017.

*Research Mentoring:*

*Mentoring a postdoctoral fellow and undergraduate students working on research projects at the Personal Health Informatics and Rehabilitation Engineering Laboratory, Temple University.*

- Postdoctoral Fellow: Amir Mohammad Amiri (2016-2018).
- Graduate students: Alexandra Canori (2018-present), Kirillos Hanna (2019-2020), Sabura Shiffrin (2016), Sara Snell (2016).
- Undergraduate students: Micaela Robalino (2018-2019), Jada-Nicole Goodson (Summer 2018), Najafa Islam (2017-2019), Noor Shoaib (2017-2019), Kimberly Le (2016), Zoe Bermudez (2016).
- High school students: Tigidankay Saccob (Summer 2017), Steven Ho (Summer 2018), Absalom Hobson (Summer 2019), Ramez Hamad (Summer 2019, Fall 2019), Ryan Lehrman (Summer 2019).
- Middle school students: Noelle Lehrman (Summer 2019).

*Research Mentoring:*

*Mentored graduate and undergraduate students working on research projects at the Human Rehabilitation and Neural Engineering Laboratory, University of Pittsburgh.*

- Physician Scientist Training Program: Dongning Zhang (2014).
- Undergraduate students: Zachary Wool (2014-15), Shivbaskar Rajesh (2015).

*Research Mentoring:*

*Mentored graduate and undergraduate students who were part of the American Student Placement in Rehabilitation Engineering and Quality of Life Technology research programs, University of Pittsburgh.*

- Graduate students: KaLai Tsang (2013-2015), Natthasit Wongsirikul (2012- 2014), Sasa Tripathy (2011), Megha Dhawan (2009).
- Undergraduate students: Matthew Hannan (2012-13), Christopher Okonkwo (2012), Josh Davis (2011), Alix Cave (2010), David Berlin (2010), Adriana Chacon (2009).

## Curriculum Vitae

### **Doctoral/Master's/Thesis Committees:**

#### Dissertation Committee

- Lindsay Meyer, Temple University (2019-present).
- Reem Algheryafi, Temple University (2019-present).
- Julie Skrzat, Temple University (2016-2019).

#### Master's Thesis Committee

- Sivan Zlotnikov, Temple University (2019-2020).
- Natthasit Wongsirikul, University of Pittsburgh (08/2012-07/2014).

#### Bachelor's (Honors) Thesis Committee

- Yousif J. Shwetar, University of Pittsburgh (2020).

### **Education and Outreach:**

#### Assistive Technology Development Workshop 2019

- In collaboration with GEAR UP, Temple University, and Dr. Rochelle Mendonca I organized a three-week 3D assistive technology development workshop for 15 high school students from Benjamin Franklin High School, Philadelphia.

#### Assistive Technology Development Workshops 2018

- In collaboration with GEAR UP, Temple University, and Dr. Amir Amiri, I organized a two-week assistive technology development workshop with mobile robots simulating power wheelchairs for 20 high school students from Benjamin Franklin and Thomas Alva Edison High Schools, Philadelphia.
- In collaboration with The Franklin Institute, I organized a four-week 3D assistive technology development workshop for 15 high school students who are part of the STEM Scholars program at Franklin Institute.

#### Assistive Technology and Biomechanics Lecture

- As part of the National Biomechanics Day 2017, I organized a lecture on assistive technology and biomechanics for 20 middle and high school girl students from North Philadelphia.

#### Assistive Technology Development Workshops 2017

- In collaboration with GEAR UP, Temple University, and Dr. Christopher K. Thompson, I organized a two-week assistive technology development workshop for 10 high school students.
- In collaboration with Franklin Institute, I organized a two-week assistive technology development workshop for 12 high school students from Science Leadership Academy.

#### Assistive Technology

- I organized a lecture to the volunteers of the Family Friends Program, Temple University, 2017.

#### Presentations

- Hiremath, S.V., Thompson, C.K. *STEM Education through assistive technology development workshop*, College of Public Health Teaching Symposium, Temple University, 2017.

### **Professional Societies Affiliation:**

#### Senior Member

- Institute of Electrical and Electronics Engineers (IEEE)
- IEEE Engineering in Medicine and Biology Society (IEEE-EMBS).

## Curriculum Vitae

### Member

- American Congress of Rehabilitation Medicine (ACRM)
- American Public Health Association.

### **Service:**

#### Grant Reviewer

- National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), Administration for Community Living, U.S. Department of Health and Human Services (2016, 2017, 2019, 2020)
- Maryland Industrial Partnerships Program, University of Maryland, College Park, MD (2020)
- Paralyzed Veterans of America: Fellowships, Clinical/Development pilot grants (2015, 2019)
- Center for Large Data Research and Data Sharing in Rehabilitation, University of Texas Medical Branch, Galveston (2019).

#### Program Committee

- Associate Editor, The 8<sup>th</sup> IEEE RAS/EMBS International Conference on Biomedical Robotics & Biomechanics (BioRob), New York, NY, 2020
- Technical Program Committee, Big Data Analytics for Internet-of-Things Healthcare, 5<sup>th</sup> IEEE Global Conference on Signal and Information Processing: Montreal, Canada, 2017.

#### Standards Committee

- Chair of the Institute of Electrical and Electronics Engineers (IEEE) P1752 *Physical Activity and Mobility Sub-Group*. The sub-group is working with international experts to create Open Mobile-Health Standards.

#### Professional Organizations

- Senior Member Review Panel (2016), IEEE Admission & Advancement, Philadelphia.
- Vice-Chairman, IEEE Engineering in Medicine and Biology Society, Pittsburgh Section, 2013-15.
- Vice-Chairman, M. S. Ramaiah Institute of Technology IEEE Student Branch, 2004-05.

#### Editorial Boards

- Associate Editor, The eighth IEEE International Conference on Biomedical Robotics and Biomechanics (BioRob), New York, NY, 2020.

#### Journal and Conference Reviewer

- Journal of Rehabilitation and Assistive Technologies Engineering (2020).
- Rehabilitation Psychology (2020).
- Topics in Spinal Cord Injury Rehabilitation (2020).
- Spinal Cord (2020).
- Burns & Trauma (2020).
- Archives of Physical Medicine and Rehabilitation (2012-Present).
- Assistive Technology Journal (2010-11, 20).
- PLOS One (2019).
- Journal of Biomedical and Health Informatics (2018).
- IEEE Transactions on Neural Networks and Learning Systems (2018).
- Neuroscience Letters (2017-18).
- Journal of Medical Internet Research (2017).
- IEEE Transactions on Neural Systems & Rehabilitation Engineering (2012-13, 15, 17, 20).
- Sensors, MDPI (2016-17).
- Sports Medicine Open (2016-17).

## Curriculum Vitae

- ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (2017).
- 5th IEEE Global Conference on Signal and Information Processing (2017).
- Journal of Medical Internet Research (2017).
- Medicine & Science in Sports & Exercise (2013, 16, 17).
- IEEE Engineering in Medicine and Biology Conference (2013, 17).
- Human Robot Interaction (2014, 17).
- Future Generation Computer Systems (2016).
- Medical Engineering & Physics (2015-16).
- IEEE International Conference on Smart Computing (SMARTCOMP 2016).
- ACM/IEEE International Conference on Human-Robot Interaction (2015).
- BioMed Research International (2014).
- Journal of Neuroengineering and Rehabilitation (2014).
- Journal of Sports Sciences (2013-15).
- Journal of Rehabilitation Research & Development (2011-12).
- Advances in Physiotherapy (2010-11).
- IEEE Transactions on Signal Processing (2009-10).
- IEEE International Symposium on Robot and Human Interactive Communication (2013).
- Annual RESNA Conference (2009, 2010, 2012).

### Science Fairs

- Science Fair Judge, Delaware Valley Science Fairs (2020).

### Temple University Service

- University Marshall, Temple University (2017-present).

### College of Public Health, Temple University

- Steering committee, Office of Community Engaged Research and Practice, College of Public Health, Temple University (2019-Present).
- Faculty Search Committee
  - Department of Kinesiology (Fall 2020 for two faculty candidates).

### Department of Health and Rehabilitation Sciences, College of Public Health, Temple University

- Faculty Search Committee
  - Department of Health and Rehabilitation Sciences (2018-19, 19-20: for Chair position)
  - Physical Therapy Program, Department of Health and Rehabilitation Sciences (Fall 2019: for two faculty candidates)
- Organized Human Movement Day 2016 and 2017 to recruit graduate students for Neuromotor Science and Doctoral of Physical Therapy Programs.
- Committees
  - Neuromotor Science Program Committee (2016-Present)
  - Diversity, Equity, and Inclusion (2020-Present)
  - Marketing, Rankings and Visibility work group, Department of Physical Therapy, Temple University (2017-2019).

### University of Pittsburgh, Pittsburgh, PA

- Graduate student recruitment, Dept. of Bioengineering, University of Pittsburgh (2014).
- Quality of Life Technology Engineering Research Center Student Leadership Council, University of Pittsburgh and Carnegie Mellon University:
  - Co-chair (2011-13)
  - Industry Chair (2008-10)

## Curriculum Vitae

- Education, Outreach, and Diversity Chair (2010-11).
- President, ANKUR Indian Graduate Student Association, University of Pittsburgh, 2008-09.

### **Media:**

November 2020

Connecting early spinal cord injury treatment with long-term outcomes

Link: <https://cph.temple.edu/about/news-events/news/connecting-early-spinal-cord-injury-treatment-long-term-outcomes>

March 2020

Faculty Interview Series, Online Physical Therapy Programs

Link: <https://onlinephysicaltherapyprograms.com/faculty-research/shivayogi-hiremath/>

August 2018

NIH Hosts mHealth Technology Showcase for Health Researchers, Device Developers, NIH Record Newsletter, Vol. LXX, No. 16, pg 3.

Link: [https://nihrecord.nih.gov/newsletters/2018/08\\_10\\_2018/story4.htm](https://nihrecord.nih.gov/newsletters/2018/08_10_2018/story4.htm)

July 2018

Video: Philadelphia high school students get an early start in robotics

Link: <https://cph.temple.edu/news/video-philadelphia-high-school-students-get-early-start-robotics>

June 2018

Video: Adapting fitness technology to help wheelchair users stay active

Link: <https://cph.temple.edu/news/video-adapting-fitness-technology-help-wheelchair-users-stay-active>

May 2017

PT Faculty Selected for NIH Mobile Health Institute

Link: <https://cph.temple.edu/news/pt-faculty-selected-nih-mobile-health-institute>