VIPUL LUGADE, PHD 90/38 Suthepalai Village, Chiang Mai, Thailand 50200 +66-092-181-0914 vlugade@gmail.com

EXPERIENCE

Data Scientist

Control One LLC

- Mobile and remote monitoring of trunk activity and seating pressure for wheelchair users with spinal cord injury.
- Development of Android applications to acquire, analyze and record sensor data as well as to analyze dual-task gait and cognitive performance while walking.
- Data mining of large data sets for the Mind Research Network.
- Built automation tools to evaluate financial data in MATLAB and Python for Autumn Wind Asset Management.
- Creation of a Javascript-based site to read and display motion detection patterns from a residential environment for Gamers Digital.
- Using CGAL and MATLAB, developed software to produce caustic art for NearNow, Broadway.
- Identified the location, size, and depth of bruises in mangos using pulsed phase thermography in MATLAB for the University of Hohenheim.
- Development of weightlifting video analysis software to track barbell movement.
- Designed MATLAB-based shoulder movement visualization from CT scans for Mayo Clinic.
- Creator of a blog (matlabgeeks.com) on MATLAB programming which generates more than 40,000 visitors per month.

Research Collaborator

Mayo Clinic, *Rochester*, *MN* & Chiang Mai University, *Chiang Mai*, *Thailand*

- Development of Android application for measuring COM sway.
- Continued methodological means of assessing gait from accelerometer-based devices.
- Investigation of dual-task and single-task balance and cognitive training in elderly adults with balance impairment.

Graduate Teaching Fellow

University of Oregon, Eugene, OR

- Lab manager and lecturer for undergraduate Biomechanics, with 140 students.
- Lab instructor for undergraduate Biomechanics, Musculoskeletal Anatomy, and Internal Organs.
- Instructor for undergraduate and graduate level Human Anatomy Dissection course.
- Instructor and course developer for undergraduate and graduate level course: Advanced Techniques in Movement Science.

Aug 2010 - Present

Oct 2013 - Present

Sept 2005 - July 2011

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Systems Engineer

Cryptek Inc., San Diego, CA

- Development of ultra thin-client systems utilizing Java smartcard, Trusted Solaris, Solaris, and Citrix architecture.
- Test and integration of hardware based, IPSec VPN network security solutions.

Wireless Systems Intern

Texas Instruments, Wireless Division, San Diego, CA

• Development of wireless base station searcher algorithms in MATLAB.

Lab Assistant

Electron Scattering Lab, University of Nebraska, Lincoln, NE

• Designed test equipment and assisted in electron scattering data collections.

Lab Intern

Optical Physics Lab, University of Oregon, Eugene, OR

• Generated animated images using a helium-neon laser and a programmable acousto-optic modulator.

EDUCATION

Whitaker International Scholar

Chiang Mai University, Chiang Mai, Thailand Postdoctoral Research Fellow

- Evaluated differences in gait strategies among US and Thai elderly adults.
- Investigated effects of mindfulness meditation on gait and cognitive performance during dual-task walking.

Mayo Clinic

Rochester, MN

Postdoctoral Research Fellow

- Detected and validated free-living activity and posture using accelerometers.
- Defined dynamic measures of stability during gait.
- Assessed effect of marker misplacement at the knee on gait kinematics.
- Validated center of pressure using an instrumented treadmill.

University of Oregon

Eugene, OR

Ph.D. in Biomechanics

- Gait assessment of elderly adults.
- Defined interaction of center of mass and base of support during gait.

Sept 2002 - Aug 2005

June 2001 - Sept 2001

June 1998/99 - Aug 1998/99

Sept 2011 - Sept 2013

Dec 2007 - July 2011

Oct 2013 - Oct 2015

June 1997 - Aug 1997

• Use of k-means clustering, Gaussian mixture models, and art discriminate healthy and balance impaired older adults.	ificial neural networks to
• Dual-task evaluation of elderly adults with balance impairme	ent.
 University of Oregon <i>Eugene, OR</i> M.S. in Biomechanics Assessed longitudinal performance of adults undergoing tota Evaluated balance control, gait asymmetry and gait kinematic following an anterior or lateral approach total hip arthroplast 	Sept 2005 - Dec 2007 l hip arthroplasty. cs of adults prior to and y.
Harvey Mudd College Claremont, CA B.S. in Engineering RESEARCH SUPPORT	Sept 1998 - May 2002
Whitaker International Scholar Principal Investigator: Vipul Lugade, Ph.D.	Oct 2013 - Oct 2015
5 T32 HD007447 20, NICHD Mayo Rehabilitation Research Training Center Principal Investigator: Jeffrey R. Basford, M.D., Ph.D. Role: Postdoctoral Research Fellow	Sept 2011 - Sept 2013
Betty Foster McCue Graduate Scholarship University of Oregon Graduate School Principal Investigator: Vipul Lugade	2010
Jan Broekhoff Graduate Scholarship Dept of Human Physiology, University of Oregon Principal Investigator: Vipul Lugade	2009
Student Dissertation Award International Society of Biomechanics Principal Investigator: Vipul Lugade	2009
1 R01 AG021598-01 National Institutes of Health Principal Investigator: Marjorie Woollacott, Ph.D. Role: Graduate Teaching Fellow	2005-2010

AWARDS AND HONORS

2016 Outstanding reviewer – Archives of Physical Medicine and Rehabilitation

2016	Recognized reviewer – Gait and Posture
2015	Recognized reviewer – Journal of Biomechanics
2013	Whitaker International Scholar, Whitaker International Program
2012	Kelly Award Nominee, Motion Analysis Laboratory, Mayo Clinic
2012	Mayo Clinic Biomechanics Research Fellows Coordinator
2011 - 2012	NIH T32 Training Grant Fellowship
2007	Excellence in Clinical Research. Slocum Center for Orthopedics and
	Sports Medicine
2004	Citrix Certified Sales Professional
2002	Who's Who among Students in American Universities and Colleges
2002	Graduation with Honors from Harvey Mudd College
1998 - 2002	Dean's List, Harvey Mudd College
1998 - 2002	Robert C. Byrd Scholarship

PROFFESIONAL SERVICE

Reviewer: Peer-reviewed articles submitted to the following journals.

Archives of Physical Medicine and	Journal of Biomechanics
Rehabilitation	Journal of Engineering in Medicine
Biomedical Physics and Engineering	Journal of Musculoskeletal Research
Current Aging Science	Medical Engineering and Physics
Gait and Posture	Physiological Measurement
IEEE Journal of Biomedical and Health	PLOS One
Informatics	Sensors

Invited Lecturer

Nov 2016

Biomechanics of Locomotion.

Department of Physical Therapy, Chiang Mai University, *Chiang Mai, Thailand* Feb 2015, Jan 2016, Feb 2017

Instrumentation and Biomechanical Assessment of Elderly Fallers Department of Physical Therapy, Chiang Mai University, *Chiang Mai, Thailand*

PEER-REVIEWED PUBLICATIONS

- Howell D, <u>Lugade V</u>, Taksir M, Meehan W. *The validity and reliability of a smartphone-based gait evaluation for concussion management.* J Biomech (In Review).
- Silsupadol P, Teja K, <u>Lugade V</u>. *Reliability and validity of a smartphone-based assessment of gait parameters across walking speed and smartphone locations: body, bag, belt, hand, and pocket*. Gait Posture, 2017, 58: 516-522.
- Simon A-L, <u>Lugade V</u>, Bernhardt K, Larson A N, Kaufman K. *Assessment of stability during* gait in patients with spinal deformity - A preliminary analysis using the dynamic stability margin. Gait Posture, 2017, 55:37-42.
- Fortune E, <u>Lugade V</u>, Crenshaw J, Kaufman K. *Dynamic assessment of center of pressure measurements from an instrumented treadmill with controlled precision*. Med Eng Phys, 2017, 42:99-104.

- Wongcharoen S, Sungkarat S, Munkhetvit P, Lugade V, Silsupadol P. Home-based interventions improve trained, but not novel, dual-task balance performance in older adults: A randomized controlled trial. Gait Posture, 2017, 52:147-152.
- Wongcharoen S, Munkhetvit P, Sungkarat S, <u>Lugade V</u>, Silsupadol P. *The effect of walking task contexts on dual-task walking performance among older adults*. Thai J Phys Ther, 2017: 103-113.
- Jensen E, Lugade V, Crenshaw J, Kaufman K. *A principal component analysis approach to correcting the knee flexion axis during gait.* J Biomech, 2016. 49(9): 1698-1704.
- Fortune E, Lugade V, Amin S, Kaufman K. Step detection using multi-versus single tri-axial accelerometer-based systems. Phys Meas, 2015, 36(12):2519.
- Lugade V, Chen T, Erickson C, Fujimoto M, San Juan J, Karduna A, Chou L-S. *Comparison of an Electromagnetic and Optical System during Dynamic Motion*. Biomedical Engineering, 2015, 25(5): 1550041.
- Lugade V, Kaufman K. Center of pressure trajectory during gait: a comparison of four foot positions Short Communication. Gait Posture, 2014. 40(4): 719-722.
- Fortune E, Lugade V, Kaufman K. Posture and Movement Classification: The Comparison of Tri-Axial Accelerometer Numbers and Anatomical Placement. J Biomech Eng-T ASME, 2014. 136(5): 051003.
- Lugade V, Farley A, Lin V, Chou L-S. An Artificial Neural Network Estimation of Gait Balance Control in the Elderly using Clinical Evaluations. PLOS One, 2014. 9(5).
- Morrow M, Hurd W, Fortune E, Lugade V, Kaufman K. Accelerations of the Waist and Lower Extremities Over a Range of Gait Velocities to Aid in Activity Monitor Selection for Field-Based Studies. J Appl Biomech, 2014, 30(4): 581-585.
- Lugade V, Kaufman K. Dynamic stability margin using a marker based system and Tekscan: A comparison of four foot positions during gait Short Communication. Gait Posture, 2014. 40: 252-254.
- Fortune E, <u>Lugade V</u>, Morrow M, Kaufman K. Validity of using tri-axial accelerometers to measure human movement - Part II: Step Count Validation during Walking and Jogging. Med Eng Phys, 2014. 36:659-669.
- Lugade V, Fortune E, Morrow M, Kaufman K. Validity of using tri-axial accelerometers to measure human movement Part I: Posture and Movement Detection. Med Eng Phys, 2014. 36:169-176.
- Lugade V, Lin V, Chou L-S. *Center of mass motion and base of support interaction during gait.* Gait Posture, 2011. 33(3): 406-411.
- Lugade V, Wu A, Jewett B, Collis D, Chou L-S. *Gait Asymmetry following an Anterior and Anterolateral Approach to Total Hip Arthroplasty*. Clin Biomech, 2010. 25(7): 675-680.
- Klausmeier V, Lugade V, Collis D, Jewett B, Chou L-S. *Is There Faster Recovery with an Anterior or Anterolateral THA? A Pilot Stody*. Clin Orthop Relat Res, 2010. 468(2):533-541.
- Silsupadol P, Lugade V, Shumway-Cook A, van Donkelaar P, Chou L-S, Mayr U, Woolacott M. Training-related Changes in Dual-task Walking Performance of Elderly Persons with Balance Impairment: A Double-blind, Randomized Controlled Trial. Gait Posture, 2009. 29(4):634-639.
- Silsupadol P, Shumway-Cook A, <u>Lugade V</u>, van Donkelaar P, Chou L-S, Mayr U, Woolacott M. *Effects of Single- vs. Dual-task training on Balance Performance in Older Adults: A Double-blind, Randomized Controlled Trial.* Arch Phys Med Rehab, 2009. 90(3):381-387.

Lugade V, Klausmeier V, Jewett B, Collis D, Chou L-S. *Short-term Recovery of Balance Control after Total Hip Arthroplasty*. Clin Orthop Relat Res, 2008. 466(12):3051-3058.

Siu K, Lugade V, Chou L-S, van Donkelaar P, Woollacott M. Dual-task Interference During Obstacle Clearance in Healthy and Balance-impaired Older Adults. Aging Clin Exp Res, 2008. 20(4): p. 349-354.

SELECTED CONFERENCE PRESENTATIONS

- Lugade, V., Silsupadol, P., Wongcharoen, S., (2015). *Effect of Mindfulness Meditation on Gait and Cognitive Performance in the Elderly*. Annual Whitaker International Enrichment Seminar. Budapest, Hungary.
- Lugade, V., Silsupadol, P.,(2014). Effect of Mindfulness Meditation on Cognitive Performance and Gait: Differences between Thai and US older adults. Annual Whitaker International Enrichment Seminar. Rome, Italy.
- Lugade, V., Kaufman, K., (2013). Center of Pressure Trajectory during Gait: A Comparison of Four Walking Conditions. American Society of Biomechanics. Omaha, NE.
- Lugade, V., Fortune, E., Morrow, M., Kaufman, K., (2012). *Validation of Static and Dynamic Activity Detection using a Tri-Axial Accelerometer and Video*. Proceedings of the American Society of Mechanical Engineering. Fajardo, Puerto Rico.
- Lugade, V., Farley, A., Chou, L-S., (2011). *Fall Risk Analysis using K-Means Clustering on Gait Balance Measures*. International Society of Biomechanics, XXIII Congress. Brussels, Belgium.
- Lugade, V., Chou, L-S., (2011). Balance control characteristics during gait of older adults and fallers. Gait and Clinical Movement Analysis Society. Bethesda, MD.
- Lugade, V., Erickson, C., Fujimoto, M., Chen, C-J., San Juan, J., Karduna, A., Chou, L-S., (2009). *Accuracy of Optical and Electromagnetic Tracking Systems during Dynamic Motion*. Proceedings of the 2009 Northwest Biomechanics Symposium. Pullman, WA.
- Lugade, V., Wu, A., Chou, L-S. (2009), *Gait Asymmetry Following THA Anterior vs Lateral Approach*. Gait and Clinical Movement Analysis Society. Denver, CO.
- Lugade, V., Ewers, S., Chen, C-J., Boonyong, S., Silsupadol, P., Chou, L-S (2008), *Stability margin during gait: identifying balance impairment in the elderly*. North American Congress on Biomechanics. University of Michigan, Ann Arbor, MI.
- Lugade, V., Ewers, S., Chen, C-J., Boonyong, S., Silsupadol, P., Chou, L-S. (2008), *Quantifying the Base of Support in Adults during Gait*. Proceedings of the 2008 Northwest Biomechanics Symposium. Boise State University, Boise, ID.
- Lugade, V., Chou, L-S., Klausmeier, V., Jewett, B., Collis, D. (2007), *Gait Stability following Total Hip Replacement*. International Society Biomechanics, XXI Congress. Taipei, Taiwan.
- Siu, K-C., <u>Lugade, V.</u>, Chou, L-S., van Donkelaar, P., Woollacott, M.(2006), *Secondary Task Effect on Gait Stability during Obstacle Clearance in Older Adults*. Proceedings of the American Society of Biomechanics. Virginia Polytechnic Institute, Blacksburg, VA.
- Lugade, V., Siu, K-C., Chou, L-S., van Donkelaar, P., Woollacott, M.(2006), *Dual-task Effect on Gait Stability during Obstacle Clearance in Aging*. 2006 Northwest Biomechanics Symposium. University of British Columbia, Vancouver, British Columbia. Canada.