Tim Yang

Siebel Center for Computer Science, University of Illinois
Room 2318, MC 258
201 N Goodwin Ave, Urbana, IL 61801
tyang15@illinois.edu

EDUCATION

University of Illinois Urbana-Champaign (UIUC)

PhD, Kinesiology,	Computational Rehabilitation for Power Wheelchair Users	~2024
Certificate,	Information Accessibility, Design, Policy (IADP)	2019
Certificate,	Foundations in Teaching	2017

University of Central Oklahoma

BS, Computer Science	2012

POSITIONS

Department of Computer Science, UIUC

Senior Instructional Designer	2023+
Instructional Designer	2020–2023

Microsoft Lighthouse Program, UIUC

Doctoral Fellow	2018–2020

Department of Kinesiology and Community Health, UIUC

Research Assistant	2012–2018
Teaching Assistant	2015–2017

HONORS

Fellowships

Doctoral Fellowship,	Microsoft Lighthouse Program, UIUC	2018–2020
Research Scholarship,	NIH INBRE Program, OU Health Sciences Center	Su 2011

Awards

Finalist,	Image of Research Competition, UIUC	2019
1st Place,	Research Live Competition, UIUC	2018
Best Paper,	Student Paper Competition, RESNA Conference	2015
Honorable Mention,	Student Paper Competition, RESNA Conference	2015
2nd Place,	Computational Science and Engineering Competition, UIUC	2014
Honorable Mention,	Student Paper Competition, RESNA Conference	2014
Outstanding Research,	Department of Computer Science, UCO	2012

RESEARCH

Rehabilitation Engineering Lab, UIUC 2012–2018

Pressure ulcer risk:	To predict pressure ulcer risk from seat pressure via AI/ML
Personalized mobility:	To assess power wheelchair driving via probabilistic AI/ML
Personalized seating:	To assess inflation patterns via custom programmable cushion
Joystick control:	To extract muscle synergies for power wheelchair driving via AI/ML
Cloud monitoring:	To track power mobility usage via custom cloud dashboard
Blood flow response:	To assess reactive hyperemia in spinal injury via laser Doppler

Rehabilitation Biomechanics Lab, OU Health Sciences Center 2011–2012

Wheelchair tilt/recline:	To assess seat pressure vs tilt and recline via ANOVA
Wheelchair tracking:	To assess free-living wheelchair usage via accelerometry

NIH Summer Research Program, OU Health Sciences Center Su 2011

Soft issue indentation:	To assess blood flow response vs mechanical indentation
Ulcer-cytokine model:	To test cytokine response vs ulceration in rats via ELISA

PUBLICATIONS

Peer-Reviewed

7 Ren S, Chen Z, Qin X, Zhao X, **Yang TD,** Zhu W. Measurement and evaluation of bone loading in physical activity: a systematic review. Meas Phys Educ Exerc Sci. 2021;25(2):149–162

6 **Yang TD,** Jan YK. Predicting pressure ulcer risk from seating interface pressure using nonnegative matrix factorization. Med Biol Eng Comput. 2020;58:227–237

5 Lung CW, **Yang TD,** Liau BY, Cheung WC, Jain S, Jan YK. Dynamic changes in seating pressure gradients in people with spinal cord injury. Assist Technol. 2020;32(5):277–286

4 Liao F, **Yang TD,** Wu FL, Cao CM, Mohamed A, Jan YK. Using multiscale entropy to assess the efficacy of local cooling on reactive hyperemia in people with spinal cord injury. Entropy. 2019;21(1):90 (12 pages)

3 Chen Y, Wang J, Lung CW, **Yang TD,** Crane B, Jan YK. Effect of wheelchair tilt and recline on ischial and coccygeal interface pressure in people with spinal cord injury. Am J Phys Med Rehabil. 2015;93(12):1019–1030

2 Lung CW, **Yang TD,** Crane B, Elliott J, Dicianno BE, Jan YK. Investigation of peak pressure index parameters for people with spinal cord injury using wheelchair tilt and recline: methodology and preliminary report. Biomed Res Int. 2014;2014:508583 (9 pages)

1 **Yang TD,** Hutchinson S, Rice LA, Watkin KL, Jan YK. Development of a scalable wireless monitoring system for wheelchair tilt usage. Int J Phys Med Rehabil. 2013;1(4):129 (6 pages)

PRESENTATIONS

Talks

6 Yang TD. On the road to self-driving … drivers? Presented at: Research Live Competition; October 2018; Urbana, IL
- Award: 1st Place

5 Yang TD. Decoding pressure ulcer risk from seating interface pressure using matrix factorization. Presented at: Rehabilitation Science Seminar; February 2018; UIUC, Champaign, IL

4 Yang TD, Rice LA, David A, Hutchinson S, Jan YK. Myoelectric modeling of joystick control for adaptive smart wheelchairs. Presented at: 36th Annual RESNA Conference; June 2015; Denver, CO
- Award: Best Paper

3 Yang TD, Patil A, Jan YK. Individualized performance quantification of power wheelchair driving. Presented at: 35th Annual RESNA Conference; June 2014; Indianapolis, IN
- Award: Honorable Mention Paper

2 Yang TD. Markov modeling of power wheelchair driving. Presented at: Rehabilitation Science Seminar; October 2013; UIUC, Champaign, IL

1 Yang TD, Liao F, Jones MA, Jan YK. Effect of wheelchair tilt and recline on peak seating pressure in people with spinal cord injury. Presented at: 28th Annual Southern Biomedical Engineering Conference; May 2012; University of Texas MD Anderson Cancer Center, Houston, TX

Posters

9 Yang TD, Rice LA, Jan YK. Typifying power wheelchair joystick control using EMG feature engineering and visualization. Presented at: 39th Annual RESNA Conference; July 2018; Arlington, VA

8 Jan YK, Lung CW, Yang TD, Cheung W, Jain S. Seating pressure gradient vectors in response to wheelchair tilt and recline in people with spinal cord injury. Presented at: 93rd Annual American Congress on Rehabilitation Medicine; November 2016; Chicago, IL

7 Yang TD, Kibler K, Lung CW, Jan YK. Development and evaluation of a programmable alternating pressure seat cushion. Presented at: 36th Annual RESNA Conference; June 2015; Denver, CO
- Award: Honorable Mention Paper

6 Yang TD, Hutchinson S, Jan YK. Markov framework for power wheelchair driving. Presented at: 3rd Annual Computational Science and Engineering Meeting; April 2014; UIUC, Urbana, IL
- Award: 2nd Place

5 Yang TD, Hutchinson S, Rice LA, Watkin KL, Jan YK. Pressure ulcer prevention with the Raspberry Pi and Python. Presented at: Center on Health, Aging, and Disability Symposium; March 2013; UIUC, Champaign, IL

4 Yang TD, Liao F, Jones MA, Jan YK. Sitting-induced pressure ulcer risks may be reduced at specific tilt and recline angles. Presented at: NIH INBRE Symposium; July 2012; OUHSC, Oklahoma City, OK

3 Yang TD, Liao F, Jones MA, Jan YK. Effect of wheelchair tilt and recline on peak seating pressure in people with spinal cord injury. Presented at: Allied Health Research Day; April 2012; OUHSC, Oklahoma City, OK

2 Yang TD, Liao F, Jones MA, Jan YK. Effect of wheelchair tilt and recline on peak seating pressure in people with spinal cord injury. Presented at: Graduate Research Education and Technology Symposium; April 2012; OUHSC, Oklahoma City, OK

1 Yang TD, Fu J, Jones MA, Jan YK. Quantifying free-living power wheelchair usage using accelerometry. Presented at: Oklahoma Research Day; November 2011; Cameron University, Lawton, OK

TEACHING

Department of Kinesiology and Community Health, UIUC

Guest Lecturer,	Graduate Academy for College Teaching	2020
	Physical Activity Research Methods (KIN201)	2018
	Teaching Professionals Program (TPRO2)	2018
Lab Instructor,	Rehabilitation Biomechanics (KIN494)	2015–2017
Teaching Assistant,	Drug Use and Abuse (CHLH243)	2015

International Graduate Mentor Program, UIUC

Mentor,	6 grad students (Rehabilitation Science)	2018–2019

Independent Study, UIUC

Mentor,	2 undergrad students (Kinesiology)	2018
Mentor,	1 undergrad student (Mechanical Engineering)	2014

MoST Scholars Program, UIUC

Mentor,	6 undergrad students (Biomedical Engineering)	2014–2016

Khorana Scholars Program, UIUC

Mentor,	1 grad student (Bioengineering)	Su 2014
Mentor,	1 undergrad student (Electrical Engineering)	Su 2013

GRANTS

Completed

2 13288 UIUC Campus Research Board. Wheelchair tilt and recline for preventing pressure ulcers in people with spinal cord injury. Cost: $25,000. PI: Jan YK; 2013–2014

- Role: Research Assistant (first/co-authored 2 peer-reviewed publications)

1 R03HD060751 NIH Eunice Kennedy Shriver National Institute of Child Health and Human Development. Effect of power seating on tissue viability in wheelchair users with spinal cord injury. Cost: $165,500. PI: Jan YK; 2011–2012
- Role: Research Assistant (co-authored 2 peer-reviewed publications)

Unfunded

2 D2 NIDILRR Rehabilitation Engineering Research Center. Development of a pervasive power seating framework. PI: Hutchinson SA, Jan YK; 2013
- Role: Research Assistant (drafted complete proposal)

1 D1 NIDILRR Rehabilitation Engineering Research Center. Development of a pervasive power mobility framework. PI: Hutchinson SA, Jan YK; 2013
- Role: Research Assistant (drafted complete proposal)

SERVICE

Intramural

Accessibility Liaison,	Illinois Accessibility Liaison Program, UIUC	2019+
Judging Committee,	Research Live Competition, UIUC	2018
English Tutor,	Gies College of Business, UIUC	2018
Grader,	Illinois Math Finals, Department of Mathematics, UIUC	2014–2016

Extramural

Reviewer,	PLOS ONE	2018+
Reviewer,	RESNA Conference	2015–2019

Professional

Member,	RESNA	2013–2019
Member,	IEEE Engineering in Medicine and Biology Society	2013–2015