# TIM YANG

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Siebel School of Computing and Data Science
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## EDUCATION

**University of Illinois Urbana-Champaign (UIUC)**

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|---|---|---|
| PhD, Kinesiology | Computational Rehab for Power Wheelchair Users | ≈2025 |
| Certificate | Information Accessibility, Design, and Policy | 2019 |
| Certificate | Foundations in Teaching | 2017 |

**University of Central Oklahoma**

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|---|---|---|
| BS, Computer Science | | 2012 |

## POSITIONS

**Siebel School of Computing and Data Science, UIUC**

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|---|---|
| Senior Instructional Designer | 2023+ |
| Instructional Designer | 2020–2023 |

**Microsoft Lighthouse Program, UIUC**

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| Doctoral Fellow | 2018–2020 |

**Department of Health and Kinesiology, UIUC**

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|---|---|
| Teaching Assistant | 2015–2017 |
| Research Assistant | 2012–2017 |

**Department of Rehab Sciences, University of Oklahoma**

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|---|---|
| Research Assistant | 2011–2012 |

## HONORS

**Fellowships**

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|---|---|---|
| Doctoral Fellowship | Microsoft Lighthouse Program, UIUC | 2018–2020 |
| Research Scholarship | NIH INBRE Program, University of Oklahoma | Su 2011 |

**Awards**

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|---|---|---|
| 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 | ⋮ |
| 2nd Place | Computational Science and Engineering Competition, UIUC | 2014 |
| Honorable Mention | Student Paper Competition, RESNA Conference | ⋮ |
| Outstanding Research | Department of Computer Science, UCO | 2012 |

## RESEARCH

### Power Wheelchair Mobility

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|---|---|
| Risk model | Predicted wheelchair driving risk via probabilistic AI/ML |
| Joystick model | Modeled muscle synergies for power wheelchair driving via AI/ML |
| Cloud monitor | Monitored power mobility usage via custom cloud dashboard |
| Wheelchair tracker | Tracked free-living wheelchair usage via accelerometry |

### Power Wheelchair Seating

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|---|---|
| Risk model | Predicted pressure ulcer risk from seat pressure via AI/ML |
| Personalized cushion | Assessed inflation patterns via custom programmable cushion |
| Tilt/recline | Assessed seat pressure vs tilt/recline via ANOVA |

### Pressure Ulcer Pathophysiology

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| Skin blood flow dynamics | Assessed reactive hyperemia in spinal injury via laser Doppler |
| Soft tissue mechanics | Assessed skin blood flow response vs mechanical indentation in spinal injury |
| Biomarker profiles | Tested cytokine response vs ulceration in rats via ELISA |

## PUBLICATIONS

### Journals

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

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

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

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)

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

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)

Yang TD, Hutchinson SA, 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)

### Proceedings

Yang TD, Rice LA, Hutchinson SA, Jan YK. Robotic Individualized Driving Evaluation (RIDE): design and preliminary evaluation. *Proceedings of the 19th IEEE International Conference on Rehab Robotics (ICORR).* 2025;2025:1693–1698

Yang TD, Rice LA, Jan YK. Typifying power wheelchair joystick control using EMG feature engineering and visualization. *Proceedings of the 39th Rehab Engineering and Assistive Technology Society of North America (RESNA) Conference*. 2018;2018:1–4

Yang TD, Rice LA, David A, Hutchinson SA, Jan YK. Myoelectric modeling of joystick control for adaptive smart wheelchairs. *Proceedings of the 36th Rehab Engineering and Assistive Technology Society of North America (RESNA) Conference*. 2015;2015:1–4

- Award: Best Paper

Yang TD, Kibler K, Lung CW, Jan YK. Development and evaluation of a programmable alternating pressure seat cushion. *Proceedings of the 36th Rehab Engineering and Assistive Technology Society of North America (RESNA) Conference*. 2015;2015:1–4

- Award: Honorable Mention Paper

Yang TD, Patil A, Jan YK. Individualized performance quantification of power wheelchair driving. *Proceedings of the 35th Rehab Engineering and Assistive Technology Society of North America (RESNA) Conference*. 2014;2014:1–4

- Award: Honorable Mention Paper

## PRESENTATIONS

### Talks

Yang TD. On the road to self-driving ... drivers? Presented at: *Research Live Competition*; October 2018; Urbana, IL

- Award: 1st Place

Yang TD, Rice LA, David A, Hutchinson SA, Jan YK. Myoelectric modeling of joystick control for adaptive smart wheelchairs. Presented at: *36th Rehab Engineering and Assistive Technology Society of North America (RESNA) Conference*; June 2015; Denver, CO

Yang TD, Patil A, Jan YK. Individualized performance quantification of power wheelchair driving. Presented at: *35th Rehab Engineering and Assistive Technology Society of North America (RESNA) Conference*; June 2014; Indianapolis, IN

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 Southern Biomedical Engineering Conference (SBEC)*; May 2012; Houston, TX

### Posters

Yang TD, Rice LA, Hutchinson SA, Jan YK. Robotic Individualized Driving Evaluation (RIDE): design and preliminary evaluation. Presented at: *19th IEEE International Conference on Rehab Robotics (ICORR)*; May 2025; Chicago, IL

Yang TD, Rice LA, Jan YK. Typifying power wheelchair joystick control using EMG feature engineering and visualization. Presented at: *39th Rehab Engineering and Assistive Technology Society of North America (RESNA) Conference*; July 2018; Arlington, VA

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 American Congress on*

*Rehab Medicine (ACRM)*; November 2016; Chicago, IL

Yang TD, Kibler K, Lung CW, Jan YK. Development and evaluation of a programmable alternating pressure seat cushion. Presented at: *36th Rehab Engineering and Assistive Technology Society of North America (RESNA) Conference*; June 2015; Denver, CO

Yang TD, Hutchinson SA, Jan YK. Markov framework for power wheelchair driving. Presented at: *3rd Computational Science and Engineering (CSE) Meeting*; April 2014; Urbana, IL

- Award: 2nd Place

Yang TD, Hutchinson SA, Rice LA, Watkin KL, Jan YK. Pressure ulcer prevention via Raspberry Pi. Presented at: *Center on Health, Aging, and Disability Symposium*; March 2013; Champaign, IL

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 IDeA Networks of Biomedical Research Excellence (INBRE) Symposium*; July 2012; Oklahoma City, OK

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; Oklahoma City, OK

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; Oklahoma City, OK

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

## TEACHING

**Center for Innovation in Teaching and Learning, UIUC**

| | | |
|---|---|---|
| Guest Lecturer | Title II Accessibility Workshop Series | 2025 |
| Guest Lecturer | Graduate Academy for College Teaching | 2020 |
| Guest Lecturer | Teaching Professionals Program (TPRO2) | 2018 |

**Department of Health and Kinesiology, UIUC**

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|---|---|---|
| Lab Instructor | Rehab Biomechanics (KIN494) | 2015–2017 |
| Teaching Assistant | Drug Use and Abuse (CHLH243) | 2015 |

**International Graduate Mentor Program, UIUC**

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| Mentor | 6 grad students (Rehab Science) | 2018–2019 |

**Independent Study, UIUC**

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

**MoST Scholars Program, UIUC**

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|---|---|---|
| Mentor | 6 undergrad students (Biomedical Engineering) | 2014–2016 |

**Khorana Scholars Program, UIUC**

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|---|---|---|
| Mentor | 1 grad student (Bioengineering) | Su 2014 |

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|---|---|---|
| Mentor | 1 undergrad student (Electrical Engineering) | Su 2013 |

## GRANTS

### Completed

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)

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

D2 NIDILRR Rehab Engineering Research Center. Development of a pervasive power seating framework. PI: Hutchinson SA, Jan YK; 2013

- Role: Research Assistant (drafted complete proposal)

D1 NIDILRR Rehab Engineering Research Center. Development of a pervasive power mobility framework. PI: Hutchinson SA, Jan YK; 2013

- Role: Research Assistant (drafted complete proposal)

## SERVICE

### Professional

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|---|---|---|
| Member | IEEE (Institute of Electrical and Electronics Engineers) | 2024+ |
| Member | EMBS (IEEE Engineering in Medicine and Biology Society) | 2024+ |
| Member | ICORR (IEEE International Consortium of Rehab Robotics) | 2024+ |
| Member | RESNA (Rehab Engineering Society of North America) | 2013–2019 |

### Intramural

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

### Extramural

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| Reviewer | ICORR Conference | 2024+ |
| Reviewer | PLOS ONE | 2018+ |
| Reviewer | RESNA Conference | 2015–2019 |