# Brandon **Oubre**
PH.D. CANDIDATE

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## Education

**University of Massachusetts Amherst**                          *Amherst, Massachusetts*
PH.D. COMPUTER SCIENCE                                                   *In Progress*
Advisor: Prof. Sunghoon Ivan Lee

**University of Massachusetts Amherst**                          *Amherst, Massachusetts*
M.S. COMPUTER SCIENCE                                                      *May 2020*
Advisor: Prof. Sunghoon Ivan Lee

**Louisiana State University**                                    *Baton Rouge, Louisiana*
B.S. COMPUTER SCIENCE AND B.S. MATHEMATICS                                 *May 2015*
4.0 GPA with Honors

## Experience

**Advanced Human Health Analytics Lab (Prof. Sunghoon Ivan Lee)**   *Amherst, Massachusetts*
PHD CANDIDATE                                                       *Sept. 2017 – Present*

**Biogen Digital Health**                                         *Cambridge, Massachusetts*
INTERN: MOVEMENT RESEARCH DATA ANALYST                              *June 2021 – Aug. 2021*

**CenturyLink**                                                          *Monroe, Louisiana*
SOFTWARE DEVELOPER II                                               *June 2015 – Aug. 2017*

**LSU Robotics Research Lab (Prof. Supratik Mukhopadhyay)**        *Baton Rouge, Louisiana*
UNDERGRADUATE RESEARCHER                                             *May 2012 – May 2015*

**NASA Johnson Space Center (Wearable Electronics Applications Research Lab)**   *Houston, Texas*
SOFTWARE ENGINEERING INTERN                                         *May 2014 – July 2014*

**NASA Ames Research Center**                                       *Mountain View, California*
SOFTWARE ENGINEERING INTERN                                         *June 2013 – Aug. 2013*

## Honors and Awards

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|---|---|---|
| 2019 | **NSF GRFP Honorable Mention**, NSF Graduate Research Fellowship Program | *United States* |
| 2019 | **NSF Student Registration Award**, BHI/BSN '19 | *Conference* |
| 2017 | **Graduate School Fellowship**, UMass Amherst College of Information and Computer Sciences | *UMass* |
| 2017 | **James Kurose Scholar**, UMass Amherst College of Information and Computer Sciences | *UMass* |
| 2015 | **Outstanding Thesis Award**, LSU Honors College | *LSU* |
| 2015 | **University Medalist**, Louisiana State University | *LSU* |
| 2014 | **Barry M. Goldwater Scholar**, Barry Goldwater Scholarship and Excellence in Education Foundation | *United States* |
| 2014 | **Official State Commendation**, Louisiana Senate Resolution SR39 | *Louisiana* |
| 2013 | **Clayton Engineering Excellence Award**, LSU College of Engineering | *LSU* |
| 2011 | **LA-STEM Research Scholarship**, LSU Office of Strategic Initiatives | *LSU* |

# Publications

## Journal Publications

[J1]  **B. Oubre** and S. I. Lee, "Towards estimating upper-limb impairment in stroke survivors using a single wrist-worn sensor," *IEEE J. Transl. Eng. Health Med*, Nov. 2021, [In Preparation].

[J2]  J. Lee, **B. Oubre**, J.-F. Daneault, C. D. Stephen, J. D. Schmahmann, A. S. Gupta, and S. I. Lee, "Analysis of gait sub-movements to estimate ataxia severity using ankle inertial data," *IEEE Trans. Biomed. Eng.*, Oct. 2021, [Minor Revisions].

[J3]  Y. Liu, **B. Oubre**, C. Duval, S. I. Lee, and J.-F. Daneault, "A kinematic data-driven approach to differentiate involuntary choreic movements in individuals with neurological conditions," *IEEE Trans. Biomed. Eng.*, Oct. 2021, [Submitted].

[J4]  **B. Oubre**, S. Lane, S. Holmes, K. Boyer, and S. I. Lee, "Estimating ground reaction force and center of pressure using low-cost wearable devices," *IEEE Trans. Biomed. Eng.*, Oct. 2021, [Accepted].

[J5]  **B. Oubre**, J.-F. Daneault, K. Whritenour, N. C. Khan, C. D. Stephen, J. D. Schmahmann, S. I. Lee, and A. S. Gupta, "Decomposition of reaching movements enables detection and measurement of ataxia," *Cerebellum*, Mar. 2021. DOI: 10.1007/s12311-021-01247-6.

[J6]  **B. Oubre**, J.-F. Daneault, K. Boyer, J. H. Kim, M. Jasim, P. Bonato, and S. I. Lee, "A simple low-cost wearable sensor for long-term ambulatory monitoring of knee joint kinematics," *IEEE Trans. Biomed. Eng.*, vol. 67, no. 12, pp. 3483–3490, Dec. 2020.

[J7]  **B. Oubre**, J.-F. Daneault, H.-T. Jung, K. Whritenour, J. G. V. Miranda, J. Park, T. Ryu, Y. Kim, and S. I. Lee, "Estimating upper-limb impairment level in stroke survivors using wearable inertial sensors and a minimally-burdensome motor task," *IEEE Trans. Neural Syst. Rehabil. Eng.*, vol. 28, no. 3, pp. 601–611, Mar. 2020, **[Featured Article]**.

[J8]  P. Khaloo, **B. Oubre**, J. Yang, T. Rahman, and S. I. Lee, "Nose: A novel odor sensing engine for ambient monitoring of the frying cooking method in kitchen environments," *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.*, vol. 3, no. 2, 49:1–49:25, Jun. 2019, ISSN: 2474-9567.

## Conference Proceedings

[C1]  **B. Oubre**, J.-F. Daneault, H.-T. Jung, J. Park, T. Ryu, Y. Kim, and S. I. Lee, "Estimating quality of reaching movement using a wrist-worn inertial sensor," *42nd Annu. Int. Conf. IEEE Eng. Medicine Biol. Soc.*, Jul. 2020.

## Abstracts, Talks, and Posters

[A1]  **B. Oubre**, J.-F. Daneault, K. Whritenour, N. C. Khan, C. D. Stephen, J. D. Schmahmann, S. I. Lee, and A. S. Gupta, "Decomposition of reaching movements enables detection and measurement of ataxia," *2nd Annu. Massachusetts General Hospital Ataxia Center Symp.*, May 2021, [Invited Talk].

[A2]  **B. Oubre**, K. Whritenour, J.-F. Daneault, A. S. Gupta, and S. I. Lee, "Estimation of ataxia severity using wrist-worn sensors and the finger-to-nose test," *Nat. Ataxia Found. Ataxia Investigators Meeting*, Mar. 2020.

[A3]  **B. Oubre**, K. Whritenour, J.-F. Daneault, A. S. Gupta, and S. I. Lee, "Estimation of ataxia severity using wrist-worn sensors and the finger-to-nose test," *1st Annu. Massachusetts General Hospital Ataxia Center Symp.*, Mar. 2020, [Invited Talk].

[A4]  J. Yang, A. Varga, K. Tung, A. Chandra, **B. Oubre**, N. Ramasarma, E. K. Choe, P. Bonato, and S. I. Lee, "A finger-worn sensor network for monitoring the real-world performance of stroke survivors," *16th IEEE Int. Conf. Wearable Implantable Body Sensor Netw.*, May 2019.

# Grants

| 2020 | **C-STAR Pilot Project**, Wrote first draft and revised with principal investigator. | *Shirly Ryan AbilityLab* |

# Teaching

### CS 240: Reasoning Under Uncertainty
*UMass Amherst*

LEAD TEACHING ASSISTANT
*Fall 2021*

TEACHING ASSISTANT
*Fall 2020*

- Large (about 300 students), lower-division undergraduate course covering the fundamentals of counting, probability, and probabilistic reasoning.
- Held office hours, taught weekly discussion sections, and answered student questions
- As lead TA, managed many aspects of course administration and ensured consistent student experience across discussion sections.

### CS 590W: Health Informatics and Data Science
*UMass Amherst*

TEACHING ASSISTANT
*Spring 2021*

- Small (about 20 students), masters-level course tailored for students with both clinical and computational backgrounds.
- First offering of course. Worked with faculty from both the computer science department and medical school to develop course content.

# Outreach and Volunteer Activity

### Women in Engineering Day and Girls Inc. Workshops
*Amherst, Massachusetts*

CO-ORGANIZER, VOLUNTEER
*Oct. 2017 – Present*

- Organized (July 2019–Present) and participated in biannual educational outreach workshops for high school girls.
- Lead a workshop and a presented an introductory lecture on programming (Oct. 2019).
- Guided students in an educational programming activity, where they programmed LED light strips using Arduino and ArduBlock.
- Trained other volunteers and ensured that the workshops ran smoothly.

### FIRST FRC Team 4209
*Baton Rouge, Louisiana*

MENTOR
*Jan. 2012 – May 2015*

- Provided mentorship and guidance to high school students as they designed and built robots for competitions in various games.
- Participated in and led a variety of fund-raising and outreach efforts, such as teaching at a middle school summer robotics camp.
- Worked with other mentors to coordinate meetings and events, develop strategic plans, and ensure team financial stability.

### FIRST FTC Tournament
*Baton Rouge, Louisiana*

VOLUNTEER JUDGE
*Dec. 2014*

- Interviewed and encouraged middle and high school teams competing in a local robotics challenge.
- Rewarded dedication, perseverance, and success by helping to decide award allocation for the competition.