

Krista Nicklaus

Curriculum Vitae

107 W. Dean Keeton, Austin, Texas 78712
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Education

The University of Texas at Austin, PhD Candidate, Biomedical Engineering Expected 2020
Master of Science in Engineering, 2018
Supervisor: Dr. Mia K. Markey, Co-Supervisor: Dr. Gregory P. Reece

Case Western Reserve University, BSE, Biomedical Engineering 2013

Honors and Awards

The University of Texas at Austin Cockrell School of Engineering Fellowship 2015-2020
Medical Image Perception Society XVII Conference Scholarship 2017
The University of Texas at Austin Professional Development Award 2017
J. Thomas Mortimer Cooperative Education Award 2013
Alpha Eta Mu Beta Biomedical Engineering Honor Society 2012-2013
Case Alumni Association Scholarship 2011-2013
Tau Beta Pi Engineering Honor Society 2010-2013
CWRU President's Scholarship 2009-2013

Research Experience

Graduate Research Assistant 2015-present
Dr. Mia K. Markey, Biomedical Informatics Lab, The University of Texas at Austin
Dr. Gregory P. Reece, Department of Plastic Surgery, The University of Texas MD Anderson Cancer Center

- Dissertation Title: Case-Based Reasoning Breast Reconstruction Decision Aid

Undergraduate Researcher 2011-2012

Dr. Dominique Durand, Neural Engineering Center, Case Western Reserve University

- Research title: *in vitro* model of epilepsy to support seizure reduction research

Publications

Refereed Journal Articles

In Print

1. J. P. Reddy, X. Lei, S.-C. Huang, **K. M. Nicklaus**, M. C. Fingeret, S. F. Shaitelman, K. K. Hunt, T. A. Buchholz, F. A. Merchant, M. K. Markey, B. D. Smith, "Quantitative assessment of breast cosmetic outcome following whole breast irradiation," International Journal of Radiation Oncology, Biology, Physics 97:894-902, April 2017.

2. I. Teo, G. P. Reece, S. Huang, K. Mahajan, J. Andon, P. Khanal, C. Sun, **K. M. Nicklaus**, F. A. Merchant, M. K. Markey, M. C. Fingeret. "Body image dissatisfaction in patients undergoing breast reconstruction: Examining the role of breast symmetry and appearance investment," *Psycho-Oncology*, vol. 27, no. 3, pp. 857-863, Mar. 2018.
3. A. L. Cheong, J. Liu, G. P. Reece, **K. M. Nicklaus**, M. Bordes, S. E. Hanson, M. K. Markey, F. A. Merchant, "Natural Breast Symmetry in Pre-Operative Breast Cancer Patients", *Plastic and Reconstructive Surgery Global Open*, 7(7):e2297, July 2019.

Accepted

1. **K. M. Nicklaus**, K. Bravo, C. Liu, D. Chopra, G. P. Reece, S. E. Hanson, M. K. Markey, "Undergarment Needs After Breast Cancer Surgery: A Key Survivorship Consideration," *Supportive Care in Cancer* (Accepted Mar. 2020).

In Review

2. B. V. Chapman, X. Lei, P. Patil, S. Tripathi, K. M. Nicklaus, A. J. Grossberg, S. Shaitelman, A. M. Thompson, K. Hunt, T. A. Buchholz, F. A. Merchant, M. K. Markey, B. J. Smith, J. P. Reddy, "Quantitative 3D Photographic Assessment of Breast Cosmesis after Whole Breast Irradiation for Early-Stage Breast Cancer: A Secondary Analysis of a Randomized Clinical Trial," *IJORBP* (Feb. 2020).

In Preparation

1. **K. M. Nicklaus**, A. Cheong, U. Sampathkumar, J. Liu, D. Chopra, A. Hoffman, G.P. Reece, S. E. Hanson, F.A. Merchant, M.K. Markey, "Patient-specific Retrieval of Prior Cases for Enhanced Consultation about Breast Reconstruction". (In Prep)
2. **K. M. Nicklaus**, J. Chu, C. Liu, G. P. Reece, M. C. Fingeret, M. K. Markey, "The Impact of Breast Reconstruction on Bra Fit". (In Prep)
3. C. Liu*, **K. M. Nicklaus***, K. Bravo, G. P. Reece, M. C. Fingeret, M. K. Markey, "Bra Preferences After Breast Reconstruction"(*equal contribution). (In Prep)
4. K. M. Nicklaus, H. Wang, MC. Bordes, A. Zaharan, U. Sampathkumar, A. Cheong, G. P. Reece, S. E. Hanson, F. A. Merchant, M. K. Markey, "Potential of Intraoperative 3D Photography and 3D Visualization in Breast Reconstruction". (In Prep)

Conference Proceedings

In print

1. **K. M. Nicklaus**, J. Chu, C. Liu, G. P. Reece, F.A. Merchant, M. C. Fingeret, M. K. Markey, "Correspondence of breast measurements for bra design after reconstruction surgery," pp 106-112 in *Proceedings of the 8th International Conference and Exhibition on 3D Body Scanning and Processing Technologies (3DBODY.TECH)*, Montreal Canada (2017). doi:10.15221/17.106
2. **K. M. Nicklaus**, E. Jewett, C. Liu, J. Liu, G. P. Reece, S. E. Hanson, F. A. Merchant, M. K. Markey, "Trends in breast measurements of unilateral breast reconstruction patients to inform bra design," pp 272-279 in *Proceedings of the 10th International Conference and Exhibition on 3D Body Scanning and Processing Technologies (3DBODY.TECH)*, Lugano Switzerland (2019). doi: 10.15221/19.272.

Accepted

1. **K. M. Nicklaus**, D. Puperi, P. Clayton, "Perspectives on a Mentored Engineering Graduate Student Teaching Practicum for Faculty Teaching Preparation," American Society of Engineering Education Gulf-Southwest Annual Conference, 2020.

Abstracts and Presentations

Accepted Abstracts

1. J. Reddy, X. Lei, S.C. Huang, **K. M. Nicklaus**, M. C. Fingeret, S.F. Shaitelman, K. K. Hunt, T. A. Buchholz, F. Merchant, M. K. Markey, and B. D. Smith, "Using quantitative metrics of breast cosmesis to compare fractionation regimens for whole-breast irradiation," ASTRO 2016.
2. E. Loera†, **K. M. Nicklaus**, MC. Bordes, J. Lee, A. Cheong, M. C. Fingeret, F. A. Merchant, G. P. Reece, M. K. Markey, "Design of stereoscopic visualization of mastectomy specimens for augmented reality glasses," Biomedical Engineering Society Annual Meeting 2016 (†undergraduate mentee).
3. **K. M. Nicklaus**, J. Cho, A. Cheong, J. Liu, F. A. Merchant, M. C. Fingeret, G. P. Reece, M. K. Markey, "Effects of breast volume change on breast cancer patients' satisfaction with breast reconstruction outcomes," IEEE Engineering in Medicine and Biology Conference 2017.
4. **K. M. Nicklaus**, G. Wen, J. Cho, A. Cheong, G. P. Reece, F. A. Merchant, M. C. Fingeret, S. Cantor, M. K. Markey, "Developing a Retrieval Method for a Case-Based Reasoning System for Predicting Appearance after Breast Reconstruction," Biomedical Engineering Society Annual Meeting 2017.
5. **K. M. Nicklaus**, I. Teo, G.P. Reece, S. Huang, K. Mahajan, J. Andon, P. Khanal, C. Sun, F. Merchant, M. K. Markey, M. C. Fingeret, "Relationships Among Breast Symmetry, Appearance Investment, and Body Image Dissatisfaction in Breast Cancer Patients Undergoing Reconstruction," San Antonio Breast Cancer Symposium 2017.
6. **K. M. Nicklaus***, A. Naqvi†, MC. Bordes, G. P. Reece, M. K. Markey, "Towards augmented reality visualization of mastectomy specimens for breast reconstruction surgery," Medical Image Perception Society Conference XVII 2017 (*presenting author, †undergraduate mentee).
7. G. Wen, **K. M. Nicklaus***, T. Haygood, M. K. Markey, "A human observer study of multi-lesion detection in digital breast tomosynthesis," Medical Image Perception Society Conference XVII 2017 (*presenting author).
8. **K. M. Nicklaus**, J. Chu†, C. Liu, G. P. Reece, F. A. Merchant, M. C. Fingeret, M. K. Markey*, "Correspondence of Breast Measurements for Bra Design After Reconstruction Surgery", 3D Body Tech Conference Proceedings 2017 (*presenting author, †undergraduate mentee).
9. Y. Garay†, **K. M. Nicklaus**, G. Wen, J. Cho, A. Cheong, G. P. Reece, F. Merchant, M. K. Markey, "Exploration of Variables for Use in a Retrieval Method for a Case-Based Reasoning System for Predicting Appearance after Breast Reconstruction," Biomedical Engineering Society Annual Meeting 2017 (†undergraduate mentee).
10. T. Lewis†, **K. M. Nicklaus**, A. Naqvi, MC. Bordes, A. Cheong, M. C. Fingeret, F. Merchant, G. P. Reece, M. K. Markey, "Design of Intraoperative Visualizations of Mastectomy Specimens for Breast Reconstruction Surgery," Biomedical Engineering Society Annual Meeting 2017 (†undergraduate mentee).

11. **K. M. Nicklaus**, J. Liu, G. P. Reece, F. A. Merchant, M. C. Fingeret, Mia K. Markey, "Investigation of Missing Data Strategies for Clinical Data of Breast Reconstruction Patients", American Society for Engineering Education Gulf-Southwest Section Annual Meeting April 2018.
12. **K. M. Nicklaus**, K. Ali, F. A. Merchant, S. E. Hanson, G. P. Reece, M. K. Markey, "Development of an Expert Surgeon Validation Tool for Breast Reconstruction Decision-Making", Biomedical Engineering Society Annual Meeting 2018.
13. A. Zaharan†, **K. M. Nicklaus**, MC. Bordes, G. P. Reece, S. E. Hanson, F. A. Merchant, M. K. Markey, "Developing a Microsoft HoloLens application for Mastectomy Specimen Visualizations", Biomedical Engineering Society Annual Meeting 2018 (†undergraduate mentee).
14. **K. M. Nicklaus**, B. Tsang†, MC. Bordes, F. A. Merchant, S.E. Hanson, G. P. Reece, M. K. Markey, "Preliminary Evaluation of a Microsoft HoloLens Augmented Reality Visualization of Mastectomy Specimens for Breast Reconstruction", American Medical Informatics Association Symposium 2018 (†undergraduate mentee).
15. **K. M. Nicklaus**, A. L. Cheong, J. Liu, G. P. Reece, MC. Bordes, S. E. Hanson, M. K. Markey, and F. A. Merchant, "3D Symmetry of Pre-operative Breasts in Cancer Patients," San Antonio Breast Cancer Symposium 2018.
16. **K. M. Nicklaus***, E. Callado†, J. Cho, J. Liu, MC. Bordes, G.P. Reece, S.E. Hanson, J.M. Engelmann, M.K. Markey, "Investigating Observer Gaze Patterns on Facial Disfigurements from Head and Neck Cancer," Medical Image Perception Society XVIII Conference, 2019 (*presenting author, †undergraduate mentee).
17. **K. M. Nicklaus**, MC. Bordes, D. Chopra, G.P. Reece, S.E. Hanson, M.K. Markey, "Appearance Counseling Needs of Breast Reconstruction Patients," Biomedical Engineering Society Annual Meeting, 2019.
18. **K. M. Nicklaus**, M.C. Bordes, J. Liu, D. Chopra, G.P. Reece, S.E. Hanson, M.K. Markey, "Longitudinal satisfaction with information for breast reconstruction patients," American Medical Informatics Association Annual Symposium 2019.
19. M. Cook†, **K. M. Nicklaus**, MC. Bordes, J. Liu, J. Engelmann, D. Chopra, G. P. Reece, S. E. Hanson, M. K. Markey, "Saliency Map Algorithms for Images of Facial Disfigurements from Head and Neck Cancer", Biomedical Engineering Society Annual Meeting, 2019 (†undergraduate mentee).
20. B.V. Chapman, X. Lei, P. Patil, S. Tripathi, **K. M. Nicklaus**, M.C. Fingeret, S.F. Shaitelman, K. Hunt, T. Buchholz, F.A. Merchant, M.K. Markey, B. Smith, J.P. Reddy, "Quantitative 3D assessment of breast cosmesis after conventional (CF-WBI) versus hypofractionated whole breast radiation (HF-WBI): Results of a randomized clinical trial," American Radium Society Annual Meeting (2019).
21. **K. M. Nicklaus**, K. Sachdev, J. Liu, D. Chopra, A. Hoffman, G. P. Reece, S. E. Hanson, M. K. Markey, "What Is "Dr. Google" Showing Patients About Breast Reconstruction?", 65th Annual Meeting of Plastic Surgery Research Council, 2020 (to appear).

Invited Presentations

1. **K. M. Nicklaus**, "For the User: Focus in Engineering Design," Tau Beta Pi District 10 Conference 2016.

Teaching Experience

Graduate Certificate in Engineering Education

Expected 2020

Cockrell School of Engineering, The University of Texas at Austin

- Training in applying active learning and inclusive teaching practices in undergraduate engineering courses

Graduate Teaching Assistant

2015-2017 (3 semesters)

Engineering Communication, The University of Texas at Austin

- Independently developed topics and activities for weekly discussion sections

Graduate Mentor

2016-present

- Jevon Chu, 2016-2017
- Ali Naqvi, 2016-2017
- Hochang Chang, 2017-2018
- Brian Tsang, Spring 2018
- Sarah Bi, Fall 2018, Graduates Linked with Undergraduates in Engineering Program
- Eloise Jewett, 2019-2020, Graduates Linked with Undergraduates in Engineering Program
- Emilio Loera, Summer 2016, UT El Paso NIH BUILDing SCHOLARS program
- Yahir Garay, Summer 2017, UT El Paso NIH BUILDing SCHOLARS program
- Tiara Lewis, Summer 2017, Louis Stokes Alliance for Minority Participation (LSAMP) Summer Research Academy
- Alex Zaharan, Summer 2018, UT Austin NSF BME CuRES REU Program
- Margaret Cook, Summer 2019, UT Austin NSF BME CuRES REU Program
- Koushalya Sachdev, Summer 2019, Livestrong Cancer Institute Summer Undergraduate Research Fellowship Program

BME CUREs Cancer REU Graduate Instructor

2016-2018

The University of Texas at Austin

- Statistical methods instructor

Undergraduate Teaching Assistant

2013 (1 semester)

Physiology-Biophysics, Case Western Reserve University

- Assisted with creating homework and laboratory assignments, grading, and leading review sessions

Industry Experience

Computed Tomography (CT) Electrical Engineering Co-op

2012 (1 semester)

Philips Healthcare

- Mastered product management software to conduct audits on over 1000 CT scanner components to ensure compliance with new safety standards
- Communicated with engineers and manufacturers to obtain material and compliance information
- Applied engineering concepts from coursework into an industrial setting

Professional Service

Peer Reviewer

- International Journal of Computer Assisted Radiology and Surgery
- Computers in Biology and Medicine
- PLOS One
- American Medical Informatics Association Annual Symposium

Training

Summer Statistics Institute 2018

Department of Statistics, The University of Texas at Austin

- Training in missing data analysis using MPLUS

AIMBE Public Policy Institute for Rising Leaders 2017

American Institute for Medical and Biological Engineering, Washington, DC

- Understanding the current regulatory science framework and federal health policy initiatives
- Networking with regulatory science leaders

Visualizing and Interacting with Data Institute 2017

Texas Advanced Computing Center, The University of Texas at Austin

- Training in advanced data visualization techniques and tools
- Best practices for data, scientific, and informational visualizations

Research Mentoring Seminar 2016

Department of Biomedical Engineering, The University of Texas at Austin

- Strategies for effective mentoring in the academic setting

University Involvement

The University of Texas At Austin

Society of Women Engineers Graduate Planning Committee 2016-current

Biomedical Engineering New Graduate Student Recruitment Volunteer 2017-current

Graduate Engineering Council Department Representative 2017

Introduce a Girl to Engineering Day Optics Demonstration Volunteer

Explore UT Optics Demonstration Volunteer

Professional Memberships

Biomedical Engineering Society, Student Member

American Medical Informatics Association, Student Member