

Michael L. Rivera

Carnegie Mellon University
Human-Computer Interaction Institute
5000 Forbes Avenue, Pittsburgh, PA 15213

Website: <http://mikeriv.com>
Email: mlrivera@cs.cmu.edu
Github: [mrivalee](#)

EDUCATION

Carnegie Mellon University, *School of Computer Science*

Fifth year Ph.D. in Human-Computer Interaction

M.S.E. in Human-Computer Interaction

Advisor: Scott E. Hudson

Sep 2015 - Present

May 2019

University of Pennsylvania, *School of Engineering & Applied Science*

M.S.E. in Computer Graphics and Game Technology, GPA: 3.94 / 4.00

Thesis: From Image to Device – A Case Study on 3D Printing for Patient-Specific Care

B.S.E. in Digital Media Design, GPA: 3.54 / 4.00, *cum laude*

Advisor: Norman I. Badler

May 2014

AWARDS AND HONORS

Snap Research Fellowship , <i>Semi-finalist</i>	2018
Bose Audio Augmented Reality Design Challenge , <i>Winner</i>	2018
Adobe Research Fellowship , <i>Honorable Mention</i> (\$2000)	2017
Xerox Technical Minority Scholarship , <i>Recipient</i> (\$1000)	2017
Carnegie Mellon University Sansom Endowed Presidential Fellowship , <i>Recipient</i> (\$60,000)	2017
DreamIt Health Open Canvas Accelerator , <i>Finalist</i>	2014
Society for Technology in Anesthesia 2014 Engineering Challenge , <i>1st Place</i>	2014
Penn Interdisciplinary Talks , <i>Finalist</i>	2014
PennHacks Hardware Hackathon , <i>3rd Place (of 40 teams)</i>	2013
LinkedIn Company Hackday , <i>1st Place</i>	2012
University College London , <i>Affiliate Computer Science Student</i>	2012
PennApps Hackathon 2012 , <i>Best Use of the Tumblr API sponsored by Tumblr</i>	2012

PEER-REVIEWED PUBLICATIONS

- [P6] Guo, A., Kong, J., **Rivera, M.L.**, Xu, F., Bigham, J.P. 2019. StateLens: A Reverse Engineering Solution to Making Existing Dynamic Touchscreens Accessible. *To Appear in Proceedings of the 32nd Annual ACM Symposium on User Interface Software and Technology* (New Orleans, LA, October 21 - 24, 2019). UIST '19. ACM, New York, NY. DOI: <https://doi.org/10.1145/3332165.3347873>
- [P5] **Rivera, M.L.**, Hudson, S.E. 2019. Desktop Electrospinning: A Single Extruder 3D Printer for Producing Rigid Plastic and Electrospun Textiles. *In Proceedings of the 37th Annual SIGCHI Conference on Human Factors in Computing Systems* (Glasgow, UK, May 4 - 9, 2019). CHI '19. ACM, New York, NY. DOI: <https://doi.org/10.1145/3290605.3300434>
- [P4] Swaminathan, S., **Rivera, M.L.**, Kang, R., Luo, Z., Ozutemiz, K.B., and Hudson, S.E. 2018. Input, Output and Construction Methods for Custom Fabrication of Room-Scale Deployable Pneumatic Structures. *To Appear in*

Proc. ACM Interact. Mob. Wearable Ubiquitous Technol. 3, 2, Article 62 (June 2019), 17 pages. DOI: <https://doi.org/10.1145/3328933>

- [P3] McDonald, J., Zhao, S., Liu, J. **Rivera, M.L.** 2018. MaxiFab: Applied Fabrication to Advance Period Technologies. In *Proceedings of the 2018 Conference on Designing Interactive Systems* (Hong Kong, June 9 - 13, 2018). DIS '18. ACM, New York, NY. 13-19. DOI: <https://doi.org/10.1145/3197391.3205405>
- [P2] **Rivera, M.L.**, Moukperian, M., Ashbrook, D., Mankoff, J., Hudson, S.E. 2017. Stretching the Bounds of 3D Printing with Embedded Textiles. In *Proceedings of the 35th Annual SIGCHI Conference on Human Factors in Computing Systems* (Denver, Colorado, USA, May 6 - 11, 2017). CHI '17. ACM, New York, NY. 497-508. DOI: <https://doi.org/10.1145/3025453.3025460>
- [P1] Galvez, J.A., Simpao, A.F., Dori, Y., Gralewski, K., McGill, N.H., **Rivera M.L.**, Delsco, N., Khan, H., Rehman, M.A., Fiadjoe, J.E. 2016. Not Just a Pretty Face: Three-Dimensional Printed Custom Airway Management Devices. *3D Printing and Additive Manufacturing*. September 2016, 3(3): 160-165. DOI: <https://doi.org/10.1089/3dp.2016.0025>

BOOK CHAPTERS

- [B1] **Rivera, M.L.**, Mankoff, J., Hudson S.E. 2018. Embedded and Printed: Approaches to 3D Printing with Textiles. *Trendbook Technical Textiles / Technishce Textilien* (July 2018). 16-19.

POSTERS AND DEMONSTRATIONS

- [D2] **Rivera, M.L.**, Moukperian, M., Ashbrook, D., Mankoff, J., Hudson, S.E. 2017. Stretching the Bounds of 3D Printing with Embedded Textiles. Carnegie Mellon University's 3D Printing Summit. Pittsburgh, PA.
- [D1] **Rivera, M.L.**, Moukperian, M., Ashbrook, D., Mankoff, J., Hudson, S.E. 2016. Stretching the Bounds of 3D Printing with Embedded Textiles. Carnegie Mellon University's DIY Assistive Technology Summit. Pittsburgh, PA.

INVITED TALKS

- University of Pennsylvania**, Penn-Interdisciplinary Talks, Philadelphia, PA Apr 2014
Tracheal Aire – a step towards patient-specific medical instruments
- Society for Technology in Anesthesia**, Engineering Challenge 2014, Orlando, FL Jan 2014
Tracheal Aire: Patient-specific 3D Printable Williams Airway Intubators
- University of Maryland, Baltimore County**, McNair Scholars Conference, Baltimore, MD Sept 2013
Project PAALM: Phalangeal Angle Approximation through the Leap Motion Controller
- University of Pennsylvania**, Big Think Innovation Conference, Philadelphia, PA Mar 2013
Hacking New Frontiers: 3D Gesture Recognition

EMPLOYMENT EXPERIENCE

- Carnegie Mellon University**, Graduate Student Researcher, Pittsburgh, PA Aug 2014 - Present
Human-Computer Interaction Institute. Exploring novel fabrication methods for rapid prototyping, sensor development and interaction techniques.
- HP Labs**, Research Intern, Palo Alto, CA May 2017 - Aug 2017
Immersive Experiences Lab. Research 3D printing with piezoresistive materials to create interactive devices.

Facebook , Software Engineer, New York, NY iOS and Android Product Engineer on the Places Team. Implemented modular result cards for Nearby Places on Facebook for iOS. Built the redesigned Nearby Places for Facebook for Android. Developed an edit flow for Places Home Creation on Facebook for iOS.	Jul 2014 - Aug 2015
Facebook , Software Engineer Intern, Menlo Park, CA Android Engineer on the Facebook Home Team. Built a scalable viewpager with spring animations for the application launcher of Facebook Home on Android.	May 2013 - Aug 2013
LinkedIn , Software Engineer Intern, Mountain View, CA iOS and Mobile Web Engineer for the Mobile Team. Developed event bubble display items and an internal settings module for an iOS calendar widget library. Implemented the 'Send Congrats' feature for the LinkedIn mobile web application.	May 2012 - Aug 2012

TEACHING EXPERIENCE

Teaching Assistant , Carnegie Mellon University, Pittsburgh, PA User-centered Research and Evaluation (05-610) Software Systems for User Interfaces (05-631)	Fall 2018 Fall 2016
Teaching Assistant , University of Pennsylvania, Philadelphia, PA Digital Media Design Capstone Project Course (CIS-497) Introduction to Java Programming (CIS-110) Software Design and Engineering (CIS-350)	Fall 2013, Spring 2014 Fall 2013 Spring 2013
Invited Guest Lectures <i>3D Modeling for 3D Printing</i> , Building User-Focused Sensing Systems, Carnegie Mellon University	Spring 2017
Research Mentoring Yiyuan Wang, <i>Mechanical Design of a 4D Hydrogel Printer</i> Nachiket Parulekar, <i>Mechanical Design of a 4D Hydrogel Printer</i> Yunzhi Li, <i>Understanding Human Relationships with Mobile Phone Sensing</i> Kayla Yew, <i>Sensing 3D Printed Mechanisms with Conductive Textiles</i> Shreya Bali, <i>Understanding Human Relationships with Mobile Phone Sensing</i>	Fall 2018 - Spring 2019 Fall 2018 Fall 2018 Fall 2017 - Spring 2018 Spring 2017

ACADEMIC SERVICE

Proceedings Chair , ACM UIST 2019	Nov 2018 - Oct 2019
Local Chair , ACM Symposium on Computational Fabrication (SCF) 2019	Nov 2018 - June 2019
Session Chair , ACM CHI 2019 - Fabricating Electronics	May 2019
Hiring Committee Student Representative , HCII, Carnegie Mellon University	Nov 2018 - May 2019
Dean's Student Advisory Council , HCII, Carnegie Mellon University	Oct 2017 - Dec 2018
Department Ombudsman , HCII, Carnegie Mellon University	May 2016 - Sept 2017
PhD Open House Organizer , HCII, Carnegie Mellon University	April 2017
Student Volunteer , ACM Human Factors in Computing Systems (CHI)	May 2017
Student Volunteer , 3D Printing Summit, Carnegie Mellon University	Jan 2017
Student Volunteer , DIY Assistive Tech. Summit, Carnegie Mellon University	April 2016

Academic Paper Reviewer

ACM CHI	2018, 2019
ACM TEI	2018, 2019
ACM DIS	2018
ACM UIST	2018, 2019
ACM SCF	2018
NIME	2018, 2019

SELECTED PRESS COVERAGE

Hackaday , " Use A 3D Printer To Electrospin Textiles "	April 2019
3D Printing Industry , " CMU researchers on the desktop 3D printer turning rigid plastics to fabrics "	April 2019
Carnegie Mellon , " HCI students win Bose Challenge, Designing for Augmented Reality with Sound "	Dec 2018
Real Industry , " Bose Challenge: Carnegie Mellon University "	Oct 2018
3Ders , " Carnegie Mellon research project combines 3D printing with embedded textiles "	July 2017
3D Printing Industry , " Research embeds textiles in 3D printing for functional, flexible parts "	July 2017
3DPrinting.com , " Researchers 3D Print Flexible Textiles For Development of Functional Objects "	July 2017
3D Shoes , " 3D Printing Combined with Textile Manufacturing "	June 2017
IEEE Spectrum , " Mechanical Metamaterials and Other 3D Printing Tech from CHI 2017 "	May 2017
MedCity News , " Pediatric hospital physicians form 3D printing 'think tank' "	Feb 2014
MAKE Magazine , " Hacking on the Frontier of Gestural Input "	Feb 2013

TECHNICAL SKILLS

Fabrication: 3D Modeling, 3D Printing, Laser Cutting, Metalsmithing, Paper Prototyping

Hardware Development: PCB Design, Hardware I/O

Programming Languages: Java, Javascript, Python, Objective-C, C++, C, Swift, Kotlin

Software Development: Android, iOS, Arduino, OpenCV, OpenGL, WebGL, Node.js, Flask, Django, JQuery

MISCELLANEOUS

Co-Captain , Intramural Flag Football, Carnegie Mellon University	Sept 2015 - Present
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REFERENCES

Scott E. Hudson, Professor, Human-Computer Interaction Institute, Carnegie Mellon University

Lining Yao, Professor, Human-Computer Interaction Institute, Carnegie Mellon University

Rafael 'Tico' Ballagas, Senior Manager, Immersive Experiences Lab, HP Labs

Norman I. Badler, Professor, Computer Science and Information Science, University of Pennsylvania