

Emma Ricci-DeLucca

✉ emmaricci.th@dartmouth.edu | 🌐 emmaricci.org | 🔗 LinkedIn | 🎓 Google Scholar

I seek to understand how predictions from wearable-based AI systems can be translated into clinical action, and to use those insights to design human-AI collaborations that better support providers and patients.

EDUCATION

Dartmouth College

2023 – Present

PhD Candidate, Human Computer Interaction & Innovation Fellow, *GPA: 3.9*

Duke University

2021 – 2023

MEng in Biomedical Engineering & Medical Device Design, *GPA: 3.8*

Swarthmore College

2017 – 2021

BS Engineering, *GPA: 3.7*

RESEARCH IN PROGRESS (2023 - Present)

DoulaConnect: AI-Enabled Health Platform

- 1st place among 8 teams and 40 participants at the 2026 Dartmouth Innovation Accelerator for Digital Health pitch competition (\$40,000 award), judged by top investors and executives
- Preliminary results indicate DoulaConnect is feasible and acceptable, with a medium favorable effect on postpartum depression symptoms in women in rural areas
- Co-founder, leading front-end UX/UI co-design and testing of an AI-enabled platform with 60+ stakeholders (administrators, clinicians, doulas, patients)

Wearable Sensing ML Pipeline

- Built Random Forest classifiers achieving a mean AUC of 0.916 for individual-level depression detection, using SHAP analysis to identify daily activity level as the strongest predictive signal
- Designed an ML pipeline combining wearable Fitbit sensor data (heart rate, sleep, activity) with clinical records (EHR) to detect postpartum depression at scale
- Applied statistical modeling (regression, mixed-effects models) to identify which wearable signals differ significantly between depressed and non-depressed patients

Human-Centered Qualitative User Research

- Led 14 semi-structured interviews with pregnant and postpartum individuals, investigating symptom recognition, care-seeking behavior, and provider communication in the perinatal period
- Applied inductive thematic analysis (Atlas.ti), iteratively coding transcripts to surface themes and synthesized findings into design implications for sensing and intervention systems

PROFESSIONAL EXPERIENCE

NSF Innovation PhD Trainee, Dartmouth College

Sep 2023 - Present

- Selected for Innovation Program, a selective fellowship supporting translation of dissertation research into a commercial venture through funded entrepreneurship training and startup support

Global Business Development Intern, Siemens Healthineers

Feb 2022 – Nov 2022

- Managed Agile portfolios for 9 products in Azure DevOps, modeled 5 business plans, and built 2 Excel dashboards to support SaaS customer acquisition strategy and expansion into 15 new markets

Digital Health Design Fellow, Duke University

Aug 2021 – May 2023

- 1 of 20 fellows chosen from 91 applicants to lead ethnographic research with clinicians, translating insights into prototypes and a GTM strategy to reduce overcrowding and improve patient safety

SKILLS

Research & UX: Mixed-Methods, Qualitative Research (Interviews, Surveys, Focus Groups), Thematic Analysis, Quantitative Empirical Study, Usability Testing, Participatory Design, Ethnographic Research

AI & ML: scikit-learn, PyTorch, Wearable Sensing & Prediction, Time-Series Modeling, Human-Centered ML/NLP, Data Analysis

Programming: Python, R, HTML, d3.JS, Pandas, C/C++, NumPy

Design: Figma, Adobe Creative Cloud, Canva, Rapid Prototyping

PUBLICATIONS

Making Doula Coordination Breakdowns Visible: A Participatory Case Study

Ricci-DeLucca, Chilakapati, Berch, Emerson, Medikondla, Kim, Rastogi, Murnane, & Fortuna

2026, CSCW Workshop Paper (Women's Health as Cooperative Work: Participatory AI Across Care, Community and Policy)

Understanding Consumer Wearable Experiences and Design Opportunities for Perinatal Mental Health Monitoring

Ricci-DeLucca, Batool, Jarsve, Moore, Heavey, & Murnane

Under Review, IMWUT (Interactive, Mobile, Wearable and Ubiquitous Technologies)

Digital Phenotyping of Perinatal Mental Health: A Systematic Review of Machine Learning and Wearable Sensor Approaches

Ricci-DeLucca, Heavey, & Murnane

2026, Journal of Affective Disorders Reports

Family In The Loop: Enabling Family Involvement in Dementia Care at Long-term Facilities with Person-centered AI Tools

Moore, Tao, **Ricci-DeLucca**, Tadin, Tadin, Morgan, Nottelmann, & Murnane

2025, CSCW

Wearable Biosensors for Early Detection and Continuous Monitoring of Postpartum Depression: A Human-Centered Approach

Ricci-DeLucca, & Murnane

2024, CHI Workshop Paper (PhysioCHI: Towards Best Practices for Integrating Physiological Signals in HCI)

Review of In-Vivo Behavior of Porous Titanium Implants for Orthopedic Applications

Ricci-DeLucca, Kelly, & Gall

2023, Journal of Medical Implants and Surgery

Gaussian curvature dilutes the nuclear lamina, favoring nuclear rupture, especially at high strain rate

Pfeifer, Tobin, Cho, Vashisth, Dooling, Vazquez, **Ricci-De Lucca**, Simon, & Discher

2022, Nucleus

MANUSCRIPTS IN PROGRESS

Predicting Postpartum Mental Health Deterioration Using Wearable Sensor Data: A Machine Learning Approach

Ricci-DeLucca, Batool, Wang, Gonzalez, & Murnane

In preparation for ML4H 2026

Usability Evaluation of a Co-Designed AI-Enabled Doula Dashboard for Postpartum Mental Health Support

Ricci-DeLucca, Chilakapati, Berch, Emerson, Medikondla, Kim, Rastogi, Murnane & Fortuna

In preparation for CHI 2027

Using Community-Based Participatory Methods to Co-Develop AI-Assisted Technology for Doulas Supporting Women With Postpartum Mental Health

Chilakapati, **Ricci-DeLucca**, Berch, Emerson, Murnane & Fortuna

In preparation for CSCW 2027

Effectiveness of an evidence-based doula program delivered through text for moms experiencing postpartum depression in rural New England

Berch, Chilakapati, **Ricci-DeLucca**, Emerson, Rastogi, Murnane & Fortuna

Venue TBD

Examining the Time to Implementation Across Models of Community Engagement

Tapiavala, Kumaran, **Ricci-DeLucca**, & Fortuna

Venue TBD

LEADERSHIP

Graduate Student Mentor, Dartmouth College

Sep 2024 - Present

- Mentored 7 undergraduate students on maternal and perinatal mental health research, recognized with Outstanding Graduate Research Mentorship Award
- Secured a combined \$40,000 in competitive research funding across multiple scholarships and fellowships to fund undergraduate researchers

HONORS & AWARDS (selection)

Outstanding Graduate Student Mentor, Dartmouth College

2026

Best Rural Healthcare Innovation, New England MedTech Conference

2025

Graduate Student Council Student Award, Dartmouth College

2025

Grad Cohort for Women, Computing Research Association	2025
Travel Grant, Neukom Institute for Computational Science	2024
Sensor Science, Technology and Innovation Research Traineeship, NSF	2023

PRESENTATIONS

E. Ricci-De Lucca, S. Chilakapati, J. Berch, M. Emerson, K. Heavey, A. Kim, S. Medikondla, E. Murnane, K. Fortuna. Bridging the Postpartum Cliff: Designing an AI-Enabled Doula-Facing Dashboard for Rural Maternal Mental Health. Poster presentation, UbiComp and Health Symposium. NYU Tandon School of Engineering, June 2026.

E. Ricci-De Lucca, S. Chilakapati, J. Berch, M. Emerson, K. Heavey, A. Kim, S. Medikondla, E. Murnane, K. Fortuna. DoulaConnect: Human-Centered Mobile App for Remote Maternal Mental Health Support . Poster presentation, Wetterhanh Symposium. Dartmouth College, May 2026.

E. Ricci-De Lucca, S. Chilakapati, J. Berch, M. Emerson, K. Heavey, A. Kim, S. Medikondla, E. Murnane, K. Fortuna. DoulaConnect. Poster presentation, The Future of Digital Health Panel. Dartmouth College, April 2026.

E. Ricci-De Lucca, V. Batool, R. Gonzalez, E. Murnane. From Population to Person: Individualized Wearable Biomarker Detection of Postpartum Depression. Presentation, Biomedical Engineering Research in Progress Workshop. Dartmouth College, March 2026.

E. Ricci-De Lucca, V. Batool, R. Gonzalez, E. Murnane. Predicting Postpartum Depression Using Wearable Sensors and Machine Learning. Presentation, NSF Research Traineeship Luncheon. Dartmouth College, February 2026.

E. Ricci-De Lucca, E. Murnane. Wearables for Rural Maternal Mental Health Monitoring. Poster presentation, Northern New England MedTech Conference. The Roux Institute, November 2025.

E. Ricci-De Lucca, V. Batool, C. Moore, E. Murnane. Perinatal Mental Health Tracking: Adoption Determinants and Design Strategies. Poster presentation, Implementation Science Symposium. Dartmouth College, September 2025.

E. Ricci-De Lucca, V. Batool, E. Murnane. Personalized postpartum mental health care through wearable multimodal sensing. Poster presentation, Biomedical Engineering Research in Progress Workshop. Dartmouth College, March 2025.

E. Ricci-De Lucca, E. Murnane. Wearable Biosensors for Maternal Health Monitoring. Poster presentation, Biomedical Engineering Research in Progress Workshop. Dartmouth College, March 2024.

C. Pfeifer, M. Tobin, S. Cho, M. Vashisth, L. Dooling, L. Vazquez, E. Ricci-De Lucca, K. Simon, D. Discher. Hypoosmotic Versus Hyperosmotic Microenvironments Respectively Suppress or Enhance Nuclear Rupture During Cell Migration Through Micropores. Poster presentation, Biomedical Engineering Society National Conference. Philadelphia, October 2019.

C. Pfeifer, M. Tobin, S. Cho, M. Vashisth, L. Dooling, L. Vazquez, E. Ricci-De Lucca, K. Simon, D. Discher. Hypoosmotic Versus Hyperosmotic Microenvironments Respectively Suppress or Enhance Nuclear Rupture During Cell Migration Through Micropores. Presentation, Center for Engineering Mechanobiology REU Summer Research Symposium. University of Pennsylvania, August 2019.

SERVICE

Student Volunteer

CHI 2026 | FemTechnology Summit 2023

Evaluator for Peer-Reviewed Journals

IMWUT 2026 | CHI 2026 | CHI 2024

Mental Health & Wellness Student Leader, Dartmouth College

2023 - 2025

Good Beginnings Volunteer, NH

2025 - Present

Animal Welfare Volunteer & Advocate, PA, NC, NH & Italy

2020 - Present