

## EDUCATION

### **Ph.D. Student, Department of Biomedical Informatics, Columbia University Irving Medical Center**

General Focus: Machine Learning and Human-Centered AI for Chronic Disease Management

Advisor: Dr. Lena Mamykina, Projected Graduation: 2025

### **M.A., Department of Biomedical Informatics, Columbia University Irving Medical Center (2022)**

### **B.A., Barnard College of Columbia University, Cum Laude**

Cellular and Molecular Neuroscience, Class of 2018

**Skills:** Quantitative Skills (data analysis, statistical methods), Statistical Modeling, Data Visualization, Qualitative Methods (Interviews, Thematic Analysis, Grounded Theory), Prototype Development (frontend + backend), User-Centered Design, Python (PyTorch, TensorFlow), R, SQL, MATLAB

## RESEARCH EXPERIENCE

### **Department of Biomedical Informatics, Columbia University Irving Medical Center**

*Ph.D. Student, Action Research and Collective Health (ARCH) Lab, PI: Dr. Lena Mamykina (2020 – present)*

*Research Assistant, ARCH Lab, PI: Dr. Lena Mamykina (2016 – 2019)*

- Experienced user-evaluation research and prototype development (both back and front-end). Past projects include small-scale feasibility trials and large pilot studies.
- Seasoned qualitative researcher (thematic analysis, grounded theory). Project themes included: perceptions towards self-tracking technologies (diabetes, maternal health), health-related problem solving, AI trust and data sharing.
- ML algorithm development (using NLP) to support assessment and generation of health behavior recommendations.

### **Department of Population Health Sciences, Weill Cornell Medical Center**

*Graduate Research Assistant, Project Leads: Dr. Natalie Benda, Dr. Meghan Turchioe (2022 – present)*

- User-centered design research to visualize an explainable post-partum depression (PPD) risk model to patients.
- Conducting user evaluation of a prototype PPD risk prediction model in OB care settings throughout pregnancy.

### **Department of Biobehavioral Sciences, Teachers College Columbia University**

*Project Implementation Specialist - EEG, Baby's First Years Study, Supervising PI: Dr. Kimberly G. Noble (2019 – 2020)*

*Lab Manager, Neurocognition, Early Experience and Development Lab, PI: Dr. Kimberly G. Noble (2018 – 2020)*

*Undergraduate Research Assistant PI: Dr. Kimberly G. Noble (2017 – 2018)*

- Developed protocols and trained field-based researchers to collect infant EEG data for \$20 million national RCT.
- Led data quality monitoring and data pipeline management for large participant cohort (N=1,000).
- Processed and analyzed infant EEG data (via MATLAB) to assess developmental patterns in brain activity.

## PEER REVIEWED CONFERENCE PROCEEDINGS

- [c.1] Mamykina L, Smaldone AM, Bakken S, Elhadad N, Mitchell EG, **Desai PM**, Levine ME, Tobin JN, Cassells A, Davidson PJ, Albers DJ, Hripcsak G. "Scaling Up HCI Research: from Clinical Trials to Deployment". *CHI Conference on Human Factors in Computing Systems, CHI 2021*.
- [c.2] Mitchell EG, Heitkemper EM, Burgermaster M, Levine ME, Miao Y, Hwang M, **Desai PM**, Cassells A, Tobin JN, Tabak EG, Albers DJ, Smaldone AM, Mamykina L. "From Reflection to Action: Combining Machine Learning with Expert Knowledge for Nutrition Goal Recommendations". *CHI Conference on Human Factors in Computing Systems, CHI 2021*.
- [c.3] **Desai, P. M.**, Mitchell, E. G., Hwang, M., Levine, M., Albers, D., Mamykina, L. "Personal Health Oracle: Explorations of Personalized Predictions in Diabetes Self-Management". *Proceedings of the ACM Conference on Human-Factors in Computing Systems, CHI 2019*.
- [c.4] **Desai, P. M.**, Levine, M.E., Albers, D. A., Mamykina, L. "Pictures Worth a Thousand Words: Understanding elements of effective health visualizations for low numeracy patients with Diabetes Mellitus". *Proceedings of the ACM Conference on Human-Factors in Computing Systems, CHI 2018*.

## JOURNAL PUBLICATIONS

- [j.1] Reading, M.T., Harkins, S., **Desai, P.M.**, Kumar, S., Kim, J., Hermann, A., Joly, R., Zhang, Y., Pathak, J., Benda, N.C. (2023) Women's perspectives on the use of artificial intelligence (AI)-based technologies in mental healthcare. *JAMIA Open*.
- [j.2] Burgermaster M, **Desai P.M.**, Heitkemper EM, Juul F, Mitchell EG, Turchioe M, Albers DJ, Levine ME, Larson D, Mamykina L. (2023) Who needs what (features) when? Personalizing engagement with data-driven self-management to improve health equity. *Journal of Biomedical Informatics*.
- [j.3] Cho, S., Ensari, I., Elhadad, N., Weng, C., Radin, J. M., Bent, B., **Desai, P.**, Natarajan, K. (2022) An interactive fitness-for-use data completeness tool to assess activity tracker data. *Journal of the American Medical Informatics Association*.
- [j.4] Simon, K.R., Merz, E.C., He, X., **Desai, P. M.**, Meyer, J.S., & Noble, K.G. (2021) Socioeconomic Factors, Stress, Hair Cortisol, and White Matter Microstructure in Children. *Developmental Psychobiology*.
- [j.5] Lichtin, R. D., Merz, E. C., He, X., **Desai, P. M.**, Simon, K. R., Melvin, S. A., ... & Noble, K. G. (2021). Material hardship, prefrontal cortex–amygdala structure, and internalizing symptoms in children. *Developmental Psychobiology*, 63(2), 364-377.
- [j.6] Troller-Renfree, S.V., Brito, N.H., **Desai, P. M.**, Meyer, J.S., Isler, J., Fifer, W.P., & Noble, K.G. (2021) Infants of High-Stress Mothers Show a maturational lag in brain function. *Developmental Science*.
- [j.7] Turchioe, M. R., Burgermaster, M., Mitchell, E. G., **Desai, P. M.**, & Mamykina, L. (2020). Adapting the stage-based model of personal informatics for low-resource communities in the context of type 2 diabetes. *Journal of Biomedical Informatics*, 110, 103572.
- [j.8] Merz, E.C., **Desai, P.**, Maskus, E.A., Melvin, S., Rehman, R., Torres, S., Meyer, J., He, X., and Noble, K.G. (2019) Socioeconomic Disparities in Chronic Physiologic Stress Are Associated with Brain Structure in Children. *Biological Psychiatry*.

## PEER REVIEWED EXTENDED ABSTRACTS, PANELS AND POSTER PRESENTATIONS

- [p.1] **Desai P.M.**, Raj A., Albers D., Mamykina L. "Towards Human-Centered Recommendations for Nutrition". 2023 *National Library of Medicine Informatics Training Conference*. (Plenary Talk)
- [p.2] **Desai P.M.**, Raj A., Albers D., Mamykina L. "Towards Informatics Tools for Human-Centered Nutrition Management". *WISH 2023, 2023 Conference on Human Factors in Computing Systems (CHI)*. (poster)
- [p.3] \***Desai P.M.**, Anand T.V., Mamykina L. "Towards Personalized Meal Recommendations for Type II Diabetes Self-Management". 2022 *National Library of Medicine Informatics Training Conference*. (Poster)
- [p.4] **Desai P.M.**, Albers D.J. (2022) "From Prediction to Action: Grand Challenges in Personal Informatics and AI in Diabetes Self-Management". *Workshop: 2022 CHI Workshop on Grand Challenges in Personal Informatics and AI. CHI Conference on Human Factors in Computing Systems (CHI '22)*. (Extended Abstract)
- [p.5] **Desai P.M.**, Ostropelets A, Richter L.R., Reyes Nieva H., Spotnitz M., Rodriguez V.A., Sun T.Y., Natarajan K. (2021) Phenotype Development and Evaluation of Heart Failure: A Case Study in using Patient Level Prediction to Improve Phenotype Validity. 2021 *Global OHDSI Symposium*. (Poster, Extended Abstract)
- [p.6] **Desai P.M.**, Mamykina L. (2021) "Navigating the Diabetes Jungle: AI for Daily Self-Management in the Wild". *Workshop: Realizing AI in Healthcare – Challenges Appearing in the Wild. CHI Conference on Human Factors in Computing Systems (CHI '21)*. (Extended Abstract)
- [p.7] Olinsky S, **Desai P.M.**, Turkay S, Heitkemper E, Mitchell EG, Mamykina L, Hwang M. (2021) Meals for Monsters: A Mobile Application for the Feasibility of Gaming and Social Mechanisms. *Extended Abstracts CHI Conference on Human Factors in Computing Systems (CHI '21)*. (Poster, Extended Abstract)
- [p.8] **Desai, P.M.**, Troller-Renfree, S.V., Brito, N.H., Meyer, J.S., & Noble, K.G (2019). "Chronic Environmental Stress

is related to a Maturational Lag in Infant Brain Activity by 9 Months of Age”. Symposium presented at the annual meeting for the *International Society for Developmental Psychobiology*, Chicago, IL. (Talk, Panel)

- [p.9] **Desai, P.M.**, Merz, E.C., Maskus, E.A., Melvin, S., He, X., and Noble, K.G. (2019) Material Deprivation, Amygdala Volume and Children’s Internalizing and Externalizing Symptoms. *Society for Research in Child Development Biennial Meeting 2019*; Baltimore, MD. (Poster)
- [p.10] **Desai P.M.**, E., Merz, E.C., Maskus, E., He, X., Noble, K.G. (2018) Socioeconomic Disadvantage, Prefrontal Cortical Structure and Executive Function in School Aged Children. *Cognitive Neuroscience Society 2018*; Boston, MA. (Poster)
- [p.11] Maskus, E., Merz, E.C., **Desai, P.M.**, He, X., Noble, K.G., (2017) Exploring links among subjective social status, prefrontal cortex structure, and cognitive skills. *Cognitive Development Society 2017*; Portland, Oregon.

## WORKSHOPS ORGANIZED

- [w.1] Bear Don’t Walk IV, O. J., Pichon, A., Volpe, S. G., Liu L. G., **Desai, P. M.**, Anand T.V., Richter, L.R., Schiffer, K., Diamond, C. J., Massey, B., Bakken, S. (2022) “A Workshop to Build a Research Agenda for Justice Informatics”. *American Medical Informatics Association (AMIA) 2022 Annual Symposium*.

## HONORS AND AWARDS (\*)

Best Poster Finalist, 2022 National Library of Medicine T15 Training Conference	2022
Top 5 Finalist, AMIA Student Design Competition	2021
First Place, Health Tech Assembly 2019 Innovation Challenge	2019
Bachelor of Arts Cum Laude, Barnard College of Columbia University	2018
Third Place, HITLAB World Cup of Voice-Activated Technology in Diabetes	2017
Top 5 Finalist, Alexa Diabetes Challenge, Team T2D2	2017

## SPECIAL PROJECTS

- Finalist, 2021 AMIA Student Design Challenge** (*MedMessages: A chatbot for remote chemotherapy side-effect reporting*)
- First Place, 2019 Columbia Health Tech Assembly Challenge** (*CareController*)
- Top 5 Finalist, Amazon Alexa Diabetes Challenge** (*Team T2D2, Supervising PI: Dr. Lena Mamykina*)

## COMMUNITY SERVICE & MEMBERSHIPS

### Department Service

<i>Department of Biomedical Informatics Seminar Coordinator</i>	2022 – present
<i>Department of Biomedical Informatics, DEI Committee Member</i>	2022 – present
<i>Justice Informatics Student Working Group, Leading Member</i>	2020 – present

### Volunteer Reviewer

<i>Journal of Medical Internet Research</i>	2023 – present
<i>American Medical Informatics Association</i>	2022 – present
<i>Computer Supported Cooperative Work (CSCW)</i>	2021 – present
<i>Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)</i>	2021 – present
<i>Information Technology and People</i>	2019 – present
<i>ACM Computer Human Interaction (SIGCHI)</i>	2018 – present

### **Mentorship Experience**

Mentor, Columbia DBMI, Summer High School Scholars Program	2023
Mentor, Science Matter Research Internship Program, Columbia University	2022
Mentor, Barnard Bears Women in Computer Science Research Mentorship Program	2020-2021

### **Professional Memberships**

Member, American Medical Informatics Association (AMIA)	2020 – present
Member, Association for Computing Machinery (ACM)	2017 – present

### **VOLUNTEER EXPERIENCE**

Sexual Assault and Violence Intervention, Mount Sinai Hospital System <i>Emergency Room Advocate for SA and IPV, SAVI Program</i>	2017 – 2020
Freelance Graphic Designer, TED Inc.	2019 - 2020