

# ELLIOT G MITCHELL

New York, NY

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## EDUCATION

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<b>Columbia University</b> , New York, NY Doctor of Philosophy (PhD), Biomedical Informatics Dissertation: <i>Enabling Automated, Conversational Health Coaching with Human-Centered AI</i>	2016 - 2021
<b>Carleton College</b> , Northfield MN Bachelor of Arts (BA), Psychology (with Distinction) Concentration in Cognitive Science	2009 - 2013

## WORK EXPERIENCE

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<b>Geisinger</b> , Danville, PA (Remote from New York, NY) Senior Data Scientist, Steele Institute for Health Innovation	2021 - Present
<b>Columbia University</b> , New York, NY Graduate Research Assistant	2016 - 2021
<b>NourishedRx</b> (fka Project Well), Stamford, CT (Remote) Data Science and Product Management Consultant	2020 - 2021
<b>Columbia Technology Ventures</b> , New York, NY Technology Ventures Fellow	2019
<b>Epic</b> , Madison, WI Technical Coordinator	2015 - 2016
<b>Epic</b> , Madison, WI Technical Services	2013 - 2016
<b>Bon Appetit at Carleton College</b> , Northfield, MN Student Manager, Food Services	2010 - 2013

## HONORS and AWARDS

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<b>Second Place</b> NIH Long COVID Computational Challenge (L3C)	2023
<b>Honorable Mention (2nd place)</b> AMIA Doctoral Dissertation Award	2022
<b>Top 3 Finalist</b> Hearst Health Prize	2022
<b>Stage 1 Finalist</b> CMS AI Health Outcomes Challenge	2020
<b>First Place</b> AMIA Student Design Challenge	2017, 2018
<b>Third Place</b> HITLAB World Cup	2017
<b>Top 5 Finalist</b> Alexa Diabetes Challenge	2017
<b>Phi Beta Kappa</b> Carleton College	2013
<b>Magna Cum Laude</b> Carleton College	2013
<b>Sigma Xi</b> Carleton College	2013
<b>Dean's List</b> Carleton College	2011-2013

## PUBLICATIONS

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- Burgermaster M, Desai PM, Heitkemper EM, Juul F, **Mitchell EG**, Turchioe M, Albers DJ, Levine ME, Larson D, Mamykina L. Who Needs What (Features) When? Personalizing Engagement with Data-Driven Self-Management to Improve Health Equity. *Journal of Biomedical Informatics*. 2023 Jun 8:104419. doi:10.1016/j.jbi.2023.104419
- Bhattacharya B, DeLong G, **Mitchell EG**, Munia TT, Shetty G, Tariq A. A Long COVID Risk Predictor Focused on Clinical Workflow Integration. *medRxiv*. 2023:2023-05. doi:10.1101/2023.05.26.23290243
- Kocaballi AB, Sezgin E, Clark L, Carroll JM, Huang Y, Huh-Yoo J, Kim J, Kocielnik R, Lee YC, Mamykina L, **Mitchell EG**, Moore RJ, Murali P, Mynatt ED, Park SY, Pasta A, Richards D, Silva LM, Smriti D, Spillane B, Zhang Z, Zubatiy T. Design and Evaluation Challenges of Conversational Agents in Health Care and Well-being: Selective Review Study. *Journal of Medical Internet Research*. September 2022. doi:10.2196/38525
- Mitchell EG**, Elhadad N, Mamykina L. Examining AI Methods for Micro-Coaching Dialogs. *CHI 2022: Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. April 2022. doi:10.1145/3491102.3501886
- Liu LG, Grossman RH, **Mitchell EG**, Weng C, Natarajan K, Hripcsak G, Vawdrey DK. A deep database of medical abbreviations and acronyms for natural language processing. *Scientific Data*. 2021 Jun 2;8(1):1-9. doi:10.1038/s41597-021-00929-4
- Mitchell EG**, Maimone R, Tobin, JN, Cassells A, Davidson P, Smaldone AM, Mamykina L. Automated vs. Human Health Coaching: Exploring participant and practitioner experiences. *Proceedings of the ACM on Human-Computer Interaction*. *CSCW 2021* doi:10.1145/3449173
- Mitchell EG**, Heitkemper E, Burgermaster M, Levine M, Miao Y, Hwang M, Desai P, Cassells A, Tobin J, Tabak EG, Smaldone AM, Albers DJ, and Mamykina L. From Reflection to Action: Combining Machine Learning with Expert Knowledge for Nutrition Goal Recommendations. *CHI 2021: Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* doi:10.1145/3411764.3445555
- Mitchell EG**, Tabak E, Levine M, Mamykina L, Albers D. Enabling Personalized Decision Support with Patient-Generated Data and Attributable Components. *Journal of biomedical informatics*. (2021) 103639. doi:10.1016/j.jbi.2020.103639
- Turchioe MR, Burgermaster M, **Mitchell EG**, Desai PM, Mamykina L. Adapting the stage-based model of personal informatics for low-resource communities in the context of type 2 diabetes. *Journal of biomedical informatics*. 2020 Sep 20:103572. doi:10.1016/j.jbi.2020.103572
- Desai PM, **Mitchell EG**, Hwang ML, Levine ME, Albers DJ, Mamykina L. Personal Health Oracle: Explorations of Personalized Predictions in Diabetes Self-Management. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. doi:10.1145/3290605.3300600
- Mitchell EG\***, Grossman LV\*, Hripcsak G, Weng C, Vawdrey DK. A method for harmonization of clinical abbreviation and acronym sense inventories. *Journal of biomedical informatics*. 2018 Dec 1;88:62-9. doi:10.1016/j.jbi.2018.11.004
- Grossman LV, Feiner SK, **Mitchell EG**, Creber RM. Leveraging Patient-Reported Outcomes Using Data Visualization. *Applied clinical informatics*. 2018 Jul;9(03):565-75. doi:10.1055/s-0038-1667041

## PRESENTATIONS

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### CONFERENCE and WORKSHOP PRESENTATIONS

- Elliot G Mitchell**, Satish Kalepalli, Grant DeLong, Meg Horgan, Vishal Mehra, David K. Vawdrey, Karen Murphy, Abdul Tariq. Towards Intuitive Features for Useful Explanations of Predictive Models. *American Medical Informatics Association (AMIA) Annual Symposium*. November 2022. Washington, D.C.
- Mitchell EG**, Mamykina L. “There For You Every Day”: Pilot Study of an Automated Conversational Health Coach *American Medical Informatics Association (AMIA) Annual Symposium*. November 2021. San Diego, CA.
- Chen R, Averitt A, Bear Don’t Walk O, Bhave S, Grossman Liu L, **Mitchell EG**, Rodriguez V, Thangaraj P, Sun T. The CLinically Explainable Actionable Risk (CLEAR) Model. *American Medical Informatics Association (AMIA) Annual Symposium*. November 2020. (Virtual)
- Mitchell EG**, Mamykina L. Computational Approaches to Support Automated Conversational Health Coaching. *International Conference on AI in Medicine – Doctoral Consortium*, August, 2020. Minneapolis, MN (Virtual)
- Mitchell EG**, Mamykina L. Automated Conversational Health Coaching. Plenary Presentation *National Library of Medicine Informatics Training Conference*, June, 2020. Virtual.
- Mitchell EG**, Mamykina L. The Coach with the Most: Towards Conversational Health Coaching. *Conversational Agents for Health Workshop (CHI 2020)*, April, 2020. Virtual.
- Mitchell EG**, Burgermaster M, Heitkemper E, Levine M, Miao Y, Tabak E, Albers D, Smaldone A, and Mamykina L. Feasibility of a machine learning based method to generate personalized nutrition goals for diabetes self-management. *AMIA Annual Symposium*, November, 2019. Washington, DC.
- Grossman LV, **Mitchell EG**, Hripcsak G, Weng C, Vawdrey DK. A method for harmonization of clinical abbreviation and acronym sense inventories. *National Library of Medicine Informatics Training Conference*, June, 2019. Indianapolis, IN. **Best Presentation Award**
- Mitchell EG**, Burgermaster M, Heitkemper E, Levine M, Miao Y, Desai P, Hwang M, Tabak E, Albers D, Smaldone A, and Mamykina L. 2019. Personalized, data-driven recommendations for diabetes self-management with GlucoGoalie. *Workshop on Interactive Systems in Healthcare (WISH)* May, 2019. Glasgow, UK.
- Mitchell EG**, Burgermaster M, Heitkemper E, Reading M, Levine ME, Miao Y, Desai P, Mamykina L. An Intelligent Voice Assistant for Diabetes Self-Management: T2D2 – Taming Type 2 Diabetes, Together. *AMIA Annual Symposium*, November, 2018. San Francisco, CA.
- Mitchell EG**, Burgermaster M, Heitkemper E, Mamykina L. Designing Conversational Interfaces for Diabetes Self-Management. *American Association of Diabetes Educators*, August, 2018. Baltimore, MD.
- Mitchell EG**, Opportunities for Conversational Voice Assistants in Chronic Disease Self-Management. *National Library of Medicine Informatics Training Conference*, June, 2018. Nashville, TN.

### CONFERENCE ABSTRACTS

- Mitchell EG**, Mamykina L. From the Curtain to Kansas: Conducting Wizard-of-Oz Studies in the Wild. *CHI Conference on Human Factors in Computing Systems Extended Abstracts (CHI '21 Extended Abstracts)* May 08-13, 2021, Yokohama, Japan. Case Study. doi:10.1145/3411763.3443446

- Lena Mamykina, Arlene M. Smaldone, Suzanne Bakken, Noemie Elhadad, **Elliot G. Mitchell**, Pooja M. Desai, Matthew E. Levine, Jonathan N. Tobin, Andrea Cassells, Patricia G. Davidson, David J. Albers and George Hripcsak. 2021. Scaling Up HCI Research: from Clinical Trials to Deployment in the Wild. *CHI Conference on Human Factors in Computing Systems Extended Abstracts (CHI '21 Extended Abstracts)*. May 08-13, 2021, Yokohama, Japan. Case Study. doi:10.1145/3411763.3443437
- Samantha Olinsky, Pooja M. Desai, Selen Turkay, Elizabeth M Heitkemper, **Elliot G Mitchell**, Lena Mamykina, and Maria L. Hwang. 2021. Meals for Monsters: a Mobile Application for the Feasibility of Gaming and Social Mechanisms. *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*. May 08-13, 2021, Yokohama, Japan. doi:10.1145/3411763.3451789
- Mitchell EG**, Maimone R, Mamykina L. Characterizing Human vs. Automated Coaching: Preliminary Results. *CHI EA '20: Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems*. May 2020. doi:10.1145/3334480.3383081
- Juul F, Mamykina L, Almonte A, Sepulveda J, Heitkemper E, **Mitchell EG**, Burgermaster M. User Experiences with Platano, a Dietary Self-Monitoring App for Underserved Patients with Type 2 Diabetes. *Journal of Nutrition Education and Behavior*. 2019 Jul 1;51(7):S44-5. doi:10.1016/j.jneb.2019.05.404
- Burgermaster M, Juul F, **Mitchell E**, Heitkemper E, Sepulveda J, Almonte A, Mamykina L. Personal Informatics Technology for Engagement in Community Health (PI-TECH): Mixed Methods Study of Platano, a Motivationally Tailored App for Dietary Diabetes Management. *Current Developments in Nutrition*, Vol. 3, Issue Supplement\_1, June 2019, nzz050. P16–051–19, doi:10.1093/cdn/nzz050.P16-051-19

## POSTERS

- Elliot G Mitchell**, Abdul Tariq, Casey Cauthorn, David K Vawdrey, Aalpen A Patel Implementing Advanced AI in Healthcare. *New York Academy of Sciences (NYAS): The New Wave of AI in Healthcare*. May 2023. New York, NY.
- Grant Delong, Henry K. Philofsky, James Elmore, Stacey Shriner, Sara Hunt, Casey Cauthorn, **Elliot G. Mitchell**, David K. Vawdrey, Abdul Tariq. SentenCy: An Open-source Tool for Improving Biomedical Named Entity Recognition. *American Medical Informatics Association (AMIA) Annual Symposium*. November 2022. Washington, D.C.
- Chen R, Rodriguez V, Grossman Liu LV, **Mitchell EG**, Averitt A, Bear Don't Walk O, Bhave S, Sun T, Thangaraj P, and the Columbia DBMI CMS AI Challenge Team. Engendering Trust and Usability in Clinical Prediction of Unplanned Admissions: The CLinically Explainable Actionable Risk (CLEAR) Model. *Machine Learning for Health (MLHC)*. August 2020.
- Mitchell EG**, Burgermaster M, Heitkemper E, Mamykina L. Perceptions of Conversational Voice Assistants Among Diabetes Care and Education Specialists. *Association of Diabetes Care and Education Specialists*. August 2020.
- Mitchell EG**, Mamykina L. T2Coach: A conversational agent health coach for diabetes self-management. *Data Science Day 2020: Virtual Preview*. March 2020.
- Mitchell EG**, Mamykina L. Towards automated conversational health coaching. *New York Academy of Sciences (NYAS) Natural Language, Dialog, and Speech (NDS) Symposium*, November 2019, New York, NY.
- Mitchell EG**, Levine M, Mamykina L, Tabak E, Albers D. Machine learning for personalized decision support with patient-generated health data. *AMIA Annual Symposium*, November 2019. Washington, DC.

**Mitchell EG**, Heitkemper E, Ensari I, Albers D, Smaldone A, Mamykina L. Data-Driven Personalization of Nutrition and Physical Activity Goals for Diabetes Self-Management. *Columbia Data Science Institute (DSI) Data Science Day*, 2019. New York, NY.

**Mitchell EG**, Levine ME, Miao Y, Burgermaster M, Hwang M, Heitkemper E, Smaldone A, Albers DJ, Mamykina L. Automated Generation of Personalized Nutrition Goals for Diabetes Self-Management with Platano. *Columbia Data Science Institute (DSI) Data Science Day*, 2018. New York, NY.

**Mitchell EG**, Levine ME, Albers DJ, Mamykina L. Reflecting on Diabetes Self-Management Logs with Simulated, Continuous Blood Glucose Curves: A Pilot Study. *AMIA Annual Symposium*, November 2017. Chicago, IL.

## CHALLENGES and COMPETITIONS

**Mitchell EG**, Grossman LV. A Multimodal Conversational Agent to Support Diabetes Self-Management. *AMIA Annual Symposium Student Design Challenge*, 2018 (**First place**)

Grossman LV, **Mitchell EG**. Visualizing the Patient-Reported Outcomes Measurement Information System (PROMIS) Measures for Clinicians and Patients. *AMIA Annual Symposium Student Design Challenge*, 2017 (**First place**)

**Mitchell EG**, Burgermaster M, Heitkemper E, Reading M, Levine ME, Miao Y, Desai P, Mamykina L. Presenting T2D2: Taming Type 2 Diabetes, Together. *Alexa Diabetes Challenge Demo Day*, 2017 (**Top 5 finalist**)

**Mitchell EG**, Burgermaster M, Heitkemper E, Reading M, Levine ME, Miao Y, Desai P, Mamykina L. Presenting T2D2: Taming Type 2 Diabetes, Together. *HITLAB World Cup Demo Day*, 2017 (**Third place**)

## INVITED TALKS

Human-Centered Design for AI in Healthcare: Applications to diabetes self-management and explainable (re)admission predictions. *Geisinger Informatics Education Seminar*. Virtual. February 2023.

Human-Centered AI for Health Coaching. *American Medical Informatics Association (AMIA) Annual Symposium*. Washington, D.C. November 2022.

Best Practices for AI Implementation in Healthcare (Discussion Group). *RE•WORK AI in Healthcare Summit*, Boston, MA. October 2022.

Deep Natural Language Processing *Geisinger Machine Learning Reading Group*. Virtual. July 2022.

From Messy Data to Useful Tools. *Columbia Data Science Institute Scholars Program*. Virtual. June 2022.

Personalizing Health Goals with Data Science. *Columbia Data Science Institute Health Analytics Center Workshop*. New York, NY. February 2020.

Voice Technology. *Society for Nutrition Education and Behavior (SNEB) Digital Tech for Nutrition Education Roundup*. Webinar. April 2019.

## SERVICE and MENTORSHIP

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**Mentor**, AMIA High School Scholars Program 2019  
*Attend conference with high school students pursuing informatics research*

**Student Planning Committee (SPC)**, NLM Informatics Training Conference 2019  
*SPC member for National Library of Medicine Informatics Training Conference in Indianapolis, IN*

<b>Assistant Editor</b> , MedInfo2019 <i>Member of the MedInfo2019 Congress Proceedings Editorial Team</i>	2019
<b>Student Representative</b> , Columbia University DBMI, New York, NY <i>Elected by peers for two-year term</i>	2018 - 2020
<b>Co-Teaching Volunteer</b> , TEALS, New York, NY <i>Introduction to Computer Science at Inwood Academy for Leadership</i>	2018 - 2019

## REVIEW ACTIVITY

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<i>American Medical Informatics Association (AMIA) Annual Symposium</i>	2017 - Present
<i>CHI Conference on Human Factors in Computing Systems</i>	2018 - Present
<i>Information Technology &amp; People</i>	2019 - Present
<i>Journal of Biomedical Informatics (JBI)</i>	2020 - Present
<i>Journal of the American Medical Informatics Association (JAMIA)</i>	2020 - Present
<i>Transactions on Interactive Intelligent Systems (TiiS)</i>	2021 - Present
<i>Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)</i>	2022 - Present
<i>AI and Ethics</i>	2022 - Present

## PROFESSIONAL MEMBERSHIPS

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<b>Association of Computing and Machinery</b> , Special Interest Group on Human-Computer Interaction (SIGCHI)	2018 - Present
<b>American Medical Informatics Association</b>	2016 - Present
<b>The New York Academy of Sciences</b>	2016 - Present

## TEACHING EXPERIENCE

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<b>Teaching Assistant</b> , Columbia University, New York, NY BINF G4008 - Intelligent Decision Support: History, Paradigms, and Applications	Fall 2019
<b>Workshop Organizer</b> , The Chapin School Senior Intern Week Program Workshop: Evaluating the impact of interactive prototypes and systems	June 2019
<b>Co-Teaching Volunteer</b> , TEALS, New York, NY Introduction to Computer Science at Inwood Academy for Leadership	2018 - 2019
<b>Teaching Assistant</b> , Columbia University, New York, NY BINF G6001 — Research Methods	Spring 2019
<b>Teaching Assistant</b> , Columbia University, New York, NY BINF G4003 — Symbolic Methods	Spring 2018