

Ibrahim Mohedas

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Executive Summary

My prior experience (including my dissertation research) focused on using ethnographic techniques to design task-shifting medical devices. I have expertise in mixing qualitative and quantitative research methods to design products/services which better fit their context of use and engaging with diverse stakeholders to understand product requirements and problem definition. My current work involves commercializing a medical device I designed during my PhD, having obtained commercialization funding (~\$500k) to conduct pre-clinical trials, market assessment, regulatory analysis, and a clinical trial. I am interested in applying my prior experience in front-end design to helping clients develop human-centered products and services.

Education

PhD, MS Mechanical Engineering (August 2016)

University of Michigan

Dissertation Title: *Characterizing the application of design ethnography techniques to improve novice human-centered design processes*

Rackham Certificate in Engineering Education Research

BS, Mechanical Engineering (May 2011)

University of Texas at Austin

Graduated with Honors & Special Honors, Minor: Italian Language

Relevant Experience

University of Michigan

Design of task-shifting medical devices for the insertion and removal of subcutaneous contraceptive implants.

Post-doctoral researcher

Project lead for the design, development, and commercialization of a medical device to assist community healthcare workers in the insertion of subcutaneous contraceptive implants. Managing 8+ researchers and ~\$500,000 in commercialization grants.

May 2016 – present

University of Michigan

Design ethnography use in low-resource medical device design.

Advisors: Kathleen Sienko & Shanna Daly

Performed research into how design ethnography can be better utilized to design medical devices for low- and middle-income countries using case studies and novice/expert studies. Conducted 120+ interviews/focus groups and performed 400+ hours of clinical observations in USA, Ghana, Ethiopia, & Rwanda.

May 2011 – May 2016

Massachusetts Institute of Technology

Atomistic simulations of biomimetic materials.

Advisor: Markus Buehler

Developed atomistic simulations to determine the effect of structural characteristics on elasticity and strength of biologically inspired materials.

Summer 2010

Selected Awards, Fellowships, And Patents

National Science Foundation's Graduate Research Fellowship; **Rackham** Merit Fellow; **Provisional** patent: Assistive device for subcutaneous injections or implants; **Sole** mechanical engineering nominee for the Proquest Distinguished Dissertation Award; **ASEE** Annual Conference, DEED Best Paper Finalist

Selected Publications

[Google Scholar Profile](#); Publications: 7 first author journal publications (+2 in review); Conferences: 5 refereed publications; 20 conference poster presentations

Mohedas, I., Sienko, K. H., Daly, S. R., Cravens, G., (in review) "Student approaches to stakeholder interactions during design: factors affecting the utility of stakeholder interactions." *Journal of Engineering Education*.

Mohedas, I., Daly, S. R., & Sienko, K. H. (2015). Requirements development: approaches and behaviors of novice designers. *Journal of Mechanical Design*. 137(7), 071407-1 – 071407-10.

Mohedas, I., Anderson, F. W. J., Adomako, J., & Sienko, K. H. (2013). Discrepancies between clinicians and rural healthcare workers regarding referral procedures based on blood pressure measurements. *International Journal of Gynaecology and Obstetrics*, 123(3), 246–7.

Mohedas, I., Sabet Sarvestani, A., Daly, S. R., & Sienko, K. H. (2015). Applying design ethnography to product evaluation: A case example of a medical device in a low-resource setting. *International Conference on Engineering Design: Design for Life*. Milan, Italy, July 27 - 30.

Funded Grants & Awards

Saving Lives at Birth (\$273,000)

- Work to validate the design of a task-shifting device (SubQ Assist) for low- and middle-income countries.
- Led design team since project conception. Lead writer on grant application. Project lead.
- Sole presenter in Washington D.C. for final round of grant competition and pitch.

MiTRACK (\$81,192)

- Cadaver testing to assess efficacy after design changes.
- Clinical trial to evaluate the safety and efficacy of the SubQ Assist.

GCC Transition to Scale (\$113,333)

- Pursue regulatory approval of the SubQ Assist.
- Development of manufacturing capabilities for scaled distribution.

VentureWell E-Team: Stage I & II (\$5,000 & \$20,000)

- Developed commercialization plan, market analysis, and regulatory pathway.

NSF: Research Initiation Grant in Engineering Education (\$150,000)

- Assess how the use of design ethnography is learned by novice engineering students.

Other Grants: *Unite for Sight Global Health and Innovation Pitch Competition* (first prize, \$10,000), *Center for Research on Learning and Teaching: Investigating Student Learning Grant* (\$8,000). *Pilot Grant for Research Driven Student Design* (\$20,000)

Leadership & Mentorship

Global Health Design Internship Sponsor

May 2016 – August 2016

- Managed design team (3 students) and usability research team (4 students).
- Supervised teams both in Ann Arbor and during fieldwork in Ethiopia.

Capstone Design Team Sponsor

Fall 2011 – present

- Sponsoring and mentoring capstone design teams (10) working on various global health design projects.
- Providing critical feedback during design review presentations.

Multidisciplinary Design Team Mentor

December 2013 – May 2015

- Mentored a multidisciplinary design team (varying between 3 and 7 undergraduate/graduate students).
- Advised team with respect to design process, research fundamentals, and medical device development.

Undergraduate Research Supervisor

September 2012 – present

- Advised undergraduate and graduate students (12).
- Research related to design ethnography and design of medical devices for low- and middle-income countries.

Technology Transfer & Entrepreneurship

Sankalp Africa Summit [February 2018]

- Presented at a private investors showcase during Sankalp Summit and participated in a demo pavilion.

GE Healthymagination Accelerator [July 2017 – February 2018]

- GE sponsored six month accelerator run through the Miller Center to further develop business/financial model.

VentureWell E-Team: Stage I & II Workshop [March 2016 & January 2017]

- Workshop aimed at developing a business model canvas and assessing commercialization potential.

Other: *WHO Global Medical Devices Forum* [May 2017], *Africa Health Business Symposium* [November 2017], *Development XChange* [June 2015, 2016, & 2017], *VentureWell Open Minds Conference* [March 2016], *Xcelerator Training Workshop for Maternal and Newborn Health Innovators* [February 2016]