

Clinical and Engineering Program Manager – Health Technologies

PhD in Biomedical Engineering –former Harvard Medical School scholar – Assistant Professor at Johns Hopkins University

Medical Device Design – Mentoring & Training – Ultrasound Probes Hardware – Product Marketing – Business Development

World-renowned and award-winning R&D Scientist, Biomedical Engineer, Assistant Professor, Lab Director and an Entrepreneur with an all-embracing theoretical and practical experience leading groundbreaking research and development initiatives. Recognized in the academia, industry, and the government as an authority in the design and fabrication of wearables and implantable medical ultrasound devices. Inspirational team leader with motivational management style, dynamic communication and presentation skills, an excellent grasp of management of new product programs from inception of product concept through the R&D phase, product launch and on market support. Multilingual (English, Farsi, German, French) analyst with dynamic communication and presentation skills, strong problems solving and project management attributes. Business development specialist with a background in Biomedical, Mechanical, Electrical and Computer Engineering.

- Project & Program Management
- Revenue & Profit Growth
- Partner Ecosystem Development
- Product Development & Roadmaps
- Team Building & Leadership
- People & Culture Development
- Advanced Health Research
- Network/Relations Building
- Collaborations with Clinicians

HIGHLIGHTS

- **Senior director and a mentor with a ‘Customer First’ mindset and deep technical knowledge** – background in recruiting and managing world-class research and product teams from the industry and academic and clinical sectors.
- **Repeated success guiding cross-functional technical, product, sales, and business development teams** in the design, redesign, and launch of leading-edge medical device design solutions – grew two start-up ventures.
- **Academic honors: Post-Doctoral Scholarship**, Harvard Medical School | Ph.D., Biomedical Engineering, UToronto.
- **Notable awards: Baltimore Business Journal's 40 Under 40 award** | University of Toronto's Inventor of the Year Award | Ontario Brain Institute Fellowship | Whiting School of Engineering's Robert B. Pond Teaching Award.
- **Author of 4 books, 50+ research journal articles** and 20+ inventions.

PROFESSIONAL EXPERIENCE

ASSISTANT PROFESSOR (Neurosurgery and Biomedical Engineering)
Johns Hopkins University, Baltimore, MD

2019-present

Raised \$13.5M, started and directed ground-breaking research, created a number of functional prototypes, published in leading journals, and supervised graduate, undergraduate and medical students in the Departments of Neurosurgery, Biomedical Engineering, Electrical and Computer Engineering, Mechanical Engineering and Anaesthesiology & Critical Care Medicine.

- Co-founded and directed the HEPIUS (Holistic Electrical, Ultrasonic, and Physiological Interventions Unburdening Those with Spinal Cord Injury) Innovation Lab – with the mandate to identify major clinical needs for spinal cord injury patients and drive the development of new imaging modalities, drug delivery and minimally invasive therapeutic technologies.
- Recipient (HEPIUS Innovation Lab) of the Maryland INNOfire Award as a top innovation program in the state.
- Devised and directed experimental learning – developed, designed, and managed innovative learning content and programs.
- Recruited and directed a world-class team of 60 experts from the industry, and academic and clinical sectors.
- Led the design and filing of a patent portfolio of a dozen inventions. Spearheaded efforts to build a functional prototype of an implantable ultrasound device – obtained FDA’s breakthrough designation pathway for one of the devices.

ACHIEVEMENTS SNAPSHOT

- ★ Played an integral role in securing and serving as an Engineering Principal Investigator on \$13.5M contract from DARPA (Defense Advanced Research Projects Agency).
- ★ Recipient of the prestigious Baltimore Business Journal’s 40 under 40 Award.

Key Impact: created a patent portfolio and a lab from scratch, worked with a team of clinicians and clinical trainees to test our prototypes in animal studies, published in 40+ leading journals, 50+ conference proceedings and authored 3 books and 1 audiobook. Received outstanding student evaluations. Built and managed large and diverse engineering project teams.

OTHER RELEVANT EXPERIENCE

Lecturer (Associate Program Director) / Johns Hopkins University, Baltimore, MD

2016-2019

Instructed several undergraduate courses in engineering design, innovation, translation, and entrepreneurship in the Department of Biomedical Engineering and served as the Associate Director of the BME Undergraduate Design Program.

Trained and mentored students in scientific & critical thinking, generated curriculum, prepared lectures and taught the courses.

- Instructed capstone design to 140 Hopkins Biomedical Engineering undergraduate students, guiding their collaboration with clinicians, engineers & experienced industry advisors to design, build & test devices that solve significant health care needs.
- Presented complex quantitative and qualitative information in a technologically enhanced environment.
- Designed and developed curriculum; analyzed and presented latest academic research findings to diverse audiences.

Key Impact: recipient of the Whiting School of Engineering's Robert B. Pond Teaching Excellence Award.

Post-Doctoral Scholar / Harvard Medical School – Brigham and Women's Hospital, Boston, MS

2015-2016

Awarded a prestigious postdoctoral fellowship to conduct cutting-edge research in the field of medical device design at the Harvard Medical School, as well as Harvard-MIT Division of Health Sciences and Technology in affiliation with Brigham and Women's Hospital. Coordinated large research projects in the field of "Organs-on-a-chip" platform and medical devices

- Collaborated with world renowned experts in the field of biomedical engineering and led a research team of 12.
- Demonstrated superior oral and written communication skills, proficiency in documentation, analysis, and reporting, and expert facility at effective preparation, maintenance, interpretation, and communication of scientific data.

Key Impact: published research findings in the United States and internationally on various approaches in 3D bioprinting, organs-on-a-chip, localization of cells using acoustic approaches and smart wearable technologies.

Chief Executive Officer / Spinesonics Medical, Toronto, ON

2012-2015

Founded and managed medical technologies business start-up, including business planning, stakeholder management, investment, and product research, design, and development. Built the company from the ground up, created a functional prototype and recruited replacements prior to my departure, in 2015.

- Handled stakeholder relations, meeting with potential investors & partners and communicating business strategy.
- Recircuited, mentored, coached, and managed top talent, including a high-profile lab team with researchers and practitioners.
- Spearheaded a team of 6 industry professionals towards successful creation of an ultrasound surgical device prototype.
- Drove and implemented high-level strategic decisions across day-to-day operations, projects, and processes.

Key Impact: raised \$850K in funding and led the development and commercialization of innovative medical devices.

Identified lucrative opportunities for partnerships, built a functional prototype and recruited my replacement prior to exit.

EARLIER EXPERIENCE

Biomedical Engineer / Stryker Navigation, Germany

Biomedical Engineering Research Intern / Harvard Medical School, Boston, MA, USA

Musician and Sound Engineer / Chakavak Ensemble, Toronto, ON, Canada

AWARDS & RECOGNITION

40 Under 40 Award / Baltimore Business Journals, Baltimore, MD

Robert B. Pond Teaching Excellence Award / Whiting School of Engineering, Johns Hopkins University, Baltimore, MD

Inventor of the Year Award / University of Toronto, Toronto, ON

Fellowship / Ontario Brain Institute, Toronto, ON

Career Development Award / Johns Hopkins Institute for Clinical and Translational Research, Baltimore, MD

SELECTED LEADERSHIP/VOLUNTEER EXPERIENCE

Member of the Editorial Advisory Board / Elsevier's *Ultrasonics* Journal

Associate Editor / Medical and Biological Engineering & Computing Journal

Scientific Journal Reviewer / Annals of Biomedical Engineering

C-Organizer / John Hopkins CBID Shark Tank Event

SELECTED INVITED TALKS

Invited speaker (external), University of Maryland Baltimore (UMB)'s Institute for Clinical and Translational Research (ICTR) Enrichment Seminar, Baltimore, MD US (10 Jan 2023), invited by Florian Solzbacher, Department Chair

Invited speaker (external), Feng Chia University's Department of Chemical Engineering, Taichung, Taiwan (13 Jun 2022)

Invited speaker (external), University of Florida's department of Neurosurgery's Grand rounds, Gainesville, Florida (15 Sep 2022)

SELECTED PUBLICATIONS

Abramson HG, Curry EJ, Mess G, Thombre R, Kempksi-Leadingham KM, Mistry S, Somanathan S, Roy L, Abu-Bonsrah N, Coles G, Doloff JC, Brem H, Theodore N, Huang J and Manbachi A (2022) Automatic detection of foreign body objects in neurosurgery using a deep learning approach on intraoperative ultrasound images: From animal models to first in-human testing. *Frontiers in Surgery*. 9:1040066.

Kempksi-Leadingham KM, Abramson HG, Perdomo-Pantoja A, Thombre R, Liu J, Norman M, Chavez F, Morrison K, Suk I, Gordon C, Armand M and Manbachi A. "Design of a Custom Flexible Ultrasound Transducer as an Implantable Cranial Sensor for Long-Term Post-Operative Monitoring of Brain Tumor Regrowth," 2022 *IEEE International Ultrasonics Symposium (IUS)*

Manbachi A, Kempksi-Leadingham K, Curry EJ. The Abundant Promise of Ultrasound in Neurosurgery: A Broad Overview and Thoughts on Ethical Paths to Realizing its Benefits. United States, *SPIE Press*, 2022

Kim JJH, Um R, Iyer RR, Theodore N, Manbachi A. Design and Development of Smart Surgical Assistant Technologies: A Case Study for Transnational Sciences, *CRC Press*, 2022.

SELECTED MEDIA RELEASES & INTERVIEWS

"*Focused Ultrasound for Motor Neuron Modulation of the Spinal Cord*". Featured on Focused Foundation's Newsletter (23 Feb 2023)

"*John's Hopkins lab aiming to improve spinal cord injury care hits FDA milestone*". Featured on Baltimore Business Journal's Maryland INNO Stories (6 Feb 2023)

Introducing the BBJ's 2022 class of 40 under 40 honorees (November 2022)

\$13.48M – Johns Hopkins Scientists to Develop Implantable Ultrasound Devices for Patients with Spinal Cord Injury (Oct 2020)

SELECTED RESEARCH ACTIVITIES

Implantable Cranial Ultrasound sensor for post-operative monitoring of patients with spinal cord injury (2020-present)

Wearable Ultrasound sensors for early detection and monitoring of Deep Vein Thrombosis (2021-present)

Implantable Cranial Ultrasound sensor for post-operative monitoring of brain tumor patients (2021-present)

Pre-clinical Focused Ultrasound Research Program (2022-present)

PROFESSIONAL DEVELOPMENT

Harvard Medical School, Boston, MS

Post-Doctoral Scholarship

Institute of Biomaterials and Biomedical Engineering, University of Toronto, ON

Ph.D. in Biomedical Engineering

Institute of Biomaterials and Biomedical Engineering, University of Toronto, ON

Master of Applied Science & Engineering

University of Toronto, Toronto, ON

Bachelor of Applied Science & Engineering