

MIT Industrial Liaison Program Faculty Knowledgebase Report

Technology from MIT Lincoln Laboratory - Portable Medical Devices and Algorithms

December 8, 2021 10:00 am - 12:00
pm

10:00 AM - 10:05 AM

Welcome & Opening Remarks

Peter Lohse

Program Director, MIT Corporate Relations

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Dr. Peter Lohse joined the Office of Corporate Relations (OCR) in October 2018 as Program Director.

Lohse comes to OCR with deep and broad knowledge and expertise in the pharma, biotech, and other life sciences-driven industries including agro, nutrition, chemical, and consumer products. As a scientist and entrepreneur, he has an extensive background developing business and managing partnerships with large corporations, early-stage companies, academia, and non-profit organizations. Most recently, Lohse was V.P., Operations and Business Development for InnovaTID Pharmaceuticals in Cambridge. Before that, he was a Strategy Consultant for Eutropics Pharmaceuticals, an emerging biotech company in Cambridge.

Prior to this, Dr. Lohse was Director, Scientific Operations & Innovation Program Director for Eli-Lilly's open innovation platform, InnoCentive, Inc. in Waltham. Earlier in his career, he held positions with increasing responsibility at ArQule of Woburn, Phyllos in Lexington, and Novartis Pharma in Switzerland.

Lohse earned his M.S., Chemistry & Applied Sciences and his Ph.D., Organic Chemistry at Federal Institute of Technology (ETH) in Switzerland. He earned his M.B.A., Strategy, Finance, Marketing as a Sloan Fellow at MIT. He also held the position Research Fellow, Molecular Biology at Harvard Medical School - Massachusetts General Hospital, Boston (with Professor J. Szostak, Nobel Prize 2009), This was a Swiss National Science Foundation Postdoctoral Fellowship -- In vitro selection of functional RNAs.

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10:05 AM – 10:15 AM

Working with MIT Lincoln Laboratory
Bernadette Johnson

Chief Technology Ventures Officer, MIT Lincoln Laboratory



Bernadette Johnson

Chief Technology Ventures Officer, MIT Lincoln Laboratory

Dr. Bernadette Johnson is the Chief Technology Ventures Officer at MIT Lincoln Laboratory, an office established in 2018 to support access to and development of commercial technologies of relevance to national security. Prior to that, she served as the Chief Science Officer of Defense Innovation Unit Experimental (DIUx, now DIU), which focuses on accelerating commercial innovation for the Department of Defense. Before joining DIUx in 2016, she was the Chief Technology Officer at MIT Lincoln Laboratory. Her responsibilities included the development of the Laboratory's long-term technology strategy and the coordination of collaborative research with MIT campus. In prior years, her technical foci were in chemical and biological defense, as well as laser-based remote sensing and adaptive optics. She remains actively involved in technology innovation initiatives. Dr. Johnson holds a BS in physics from Dickinson College, a MS in condensed matter theory from Georgetown University, and a PhD in plasma physics from Dartmouth College. She attended the Harvard Kennedy School's Senior Executives in National and International Security Program in 2015, and is an active member of the Naval Studies Board.

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10:15 AM – 10:50 AM

AI-guided Ultrasound Algorithms and Robotics for Automated Needle Insertion
Lars Gjestebj
Technical Staff Member in the Human Health & Performance Systems Group, [Lincoln Laboratory](#)



Lars Gjestebj
Technical Staff Member in the Human Health & Performance Systems Group
[Lincoln Laboratory](#)

Dr. Lars Gjestebj is a Technical Staff Member in the Human Health & Performance Systems Group. Lars leads the AI algorithm and software development team.

Matthew Johnson
Technical Staff Member in the Human Health & Performance Systems Group, [Lincoln Laboratory](#)



Matthew Johnson
Technical Staff Member in the Human Health & Performance Systems Group
[Lincoln Laboratory](#)

Mr. Matt Johnson is a Technical Staff Member in the Human Health & Performance Systems Group. Matt leads the hardware design team for clinical and pre-hospital medical imaging and interventions.

Anthony Samir
Service Chief for Body Ultrasound Imaging Services, Massachusetts General Hospital

Theodore Pierce
Diagnostic Radiologist, Massachusetts General Hospital

The handheld robotic device enables life-saving intervention for uncontrolled blood loss by guiding a non-expert user through rapid cannulation of deep blood vessels at the point of injury, a procedure that is typically reserved for highly trained personnel in hospital settings.

10:50 AM – 11:25 AM

Neurocognitive Health and Performance Insights from Electro-oculography (EOG) Algorithms

Hrishikesh Rao
Technical Staff Member in the Human Health & Performance Systems Group
[Lincoln Laboratory](#)

This wearable eye-movement measurement technology provides insight into neurological function and physiological state by enabling continuous, long-duration eye tracking in free-living or operational settings. The system includes low-profile surface electrodes, adhered to the side of the eye, and an embedded gyroscope. Ongoing efforts include the use of the system for assessing fatigue and brain injuries.

11:25AM – 12:00 PM

Neuromotor Incoordination Index (NII) Algorithms for Acute and Chronic Health Status Monitoring

Brian Telfer

Senior Staff Member in the Human Health & Performance Systems Group

[Lincoln Laboratory](#)

Using simple accelerometers found in all phones and wearable devices, we derive a measure of NII that correlates well with neuromotor disruption that can be caused by physical or cognitive factors such as heat strain, physical fatigue, or brain injury.

12:05 PM – 1:00 PM

Zoom Meeting – One on One Discussion with Speakers in Break Out Rooms