AI in Manufacturing
Bridging Human Expertise and Technological Innovation

*Join the Educational Programs Committee for **THREE** presentations on AI in the BioPharma world!*

ISPE. | Boston Area Chapter
Serving All of New England

WHEN: Thursday, May 16th, 2024 | 5:00 pm – 8:00 pm

WHERE: Takeda
650 Kendall Square
Cambridge, MA 02141

PROGRAM DETAILS:
AI in Manufacturing: Bridging Human Expertise and Technological Innovation
Join the Educational Programs Committee for three expert panels on AI in the BioPharma world!

AGENDA:
5:00 pm Arrival & Networking
- Includes food and beverages (*two drink tickets will be provided to each attendee*)

6:00 pm Presentations with Q+A
- How Generative AI is Changing the Way We Think About Manufacturing
  - Paul Hanson (Takeda)
- Generative AI and its application to the exploration of pharmaceutical data sets
  - Andrew Fiordalis (Takeda)
- Adapting to Technological Change: Integrating AI into Science and Engineering Curricula at WPI
  - Dr. Robert Dempski (Worcester Polytechnic Institute)

7:30 pm Networking

REGISTRATION FEES:

Registration by Thursday, May 9, 2024	Registration after Thursday, May 9, 2024
Members (Early Bird): $50	Members: $60
Non-Members (Early Bird): $95	Non-Members: $115
Emerging Leaders Members (Early Bird): $20	Emerging Leaders Members: $30
Student Members: FREE	Student Members: FREE

PLEASE NOTE: CANCELLATIONS RECEIVED AFTER MAY 9 ARE SUBJECT TO BILLING

REGISTRATION IS NOW OPEN ONLINE AT:
www.ISPEBoston.org/Events.

How Generative AI Is Changing The Way We Think About Manufacturing (Paul Hanson)

GxP manufacturing has historically relied on the application of tribal and systemic knowledge to ensure the safety, purity, and efficacy of a product. Floor personnel apply these knowledge domains to resolve deviations and investigations or to expand their process understanding (e.g. continuous process verification). Recent advances in the application of large language models such as GPT are poised to create a human-AI interface that significantly increases the efficiency of operators and subject matter experts as they execute CMC lifecycle management activities such as process scale-up and technical transfers. This talk will illustrate some of the ways large language models are being developed within Global Manufacturing Sciences to create human-AI partnerships that integrate GxP expectations.

Generative AI and its application to the exploration of pharmaceutical data sets (Andrew Fiordalis)

Join us for an immersive exploration of GenAI's transformative potential in revolutionizing the global investigations workflow. Delve into the depths of this innovative technology with Andrew as he elaborates on Paul's insightful examples. Discover the intricacies of prompt engineering, the seamless automation of ETL tasks, and the power of GenAI in conducting exploratory data analysis and modeling. Don't miss this opportunity to unlock the full spectrum of GenAI's capabilities.

Adapting to Technological Change: Integrating AI into Science and Engineering Curricula at WPI (Dr. Robert Dempski)

In today's rapidly evolving technological landscape, seamlessly integrating artificial intelligence (AI) approaches into university curriculum has become more important than ever. By seamlessly integrating AI into curricula, universities can better prepare students for the demands of an AI-driven workforce, fostering innovation and equipping graduates with the necessary skills to tackle real-world challenges. However, implementing AI in education poses various challenges, including the need for faculty expertise, access to resources, and the development of appropriate pedagogical approaches. This presentation is intended to focus on ongoing efforts to better integrate AI tools into some of WPI's ongoing research and teaching efforts.

SPEAKER BIOS:

Paul Hanson, Head of Lifecycle Management, Innovation, and Strategy, Takeda

Paul Hanson has worked at Takeda Pharmaceuticals for 15 years. Paul started in the R&D bioprocess development group working on a couple of late-phase assets that successfully transitioned into commercial products. Paul moved with those products to lead a newly formed biologics group in commercial technical operations. In this role he grew an organization with capabilities in the application of first principles and multivariate statistical process control to manufacturing data for streamlining post-approval commercial lifecycle management timelines. With Takeda's purchase of Shire in 2019, Paul took on a new role as Head of Lifecycle Management, Innovation, and Strategy within the recently created Global Manufacturing Sciences organization. In this role Paul has been leading a diverse group of individuals working in global knowledge management domains such as material qualification, dedicated manufacturing investigators, and more recently, the qualification and application of artificial intelligence in manufacturing business processes.

Andrew Fiordalis, Associate Director of Process Dynamics and Control, Takeda

Andrew Fiordalis is Associate Director of Process Dynamics and Control within the Advanced Process Modeling and Control group at Takeda. He has an accomplished history as a process/production engineer with 15 years of industrial experience interacting with stake holders at all levels from R&D to process development to manufacturing. Dr. Fiordalis thrives when approaching seemingly insurmountable complexities – solving them with applied mathematical modelling, machine learning, and a deep understanding of the physical processes – for impact-driven solutions and understandings. He holds a PhD in Chemical Engineering from Tufts University.

Dr. Robert E. Dempski, Professor, Worcester Polytechnic Institute

Dr. Dempski is a Professor of Chemistry and Biochemistry at Worcester Polytechnic Institute (Worcester, MA). Supported by federal grants, foundations and corporate sponsorships, Dr. Dempski maintains an active research group focused on the molecular basis of high incidence neuropathologies. At the same time, Dr. Dempski is a member of WPI's Interactive Media and Game Development Program. In ongoing efforts to improve learning outcomes, integrate emerging technologies and leveraging his life science expertise, Dr. Dempski brings together artists and developers to build, implement and assess AI-infused programs in AR, VR, and mobile app development. Notable projects have focused on laboratory safety, protein structure visualization and laboratory concepts.

Dr. Dempski received his B.S. in Biochemistry/Cell Biology from Bucknell University. He was conferred his Ph.D. in Biological Chemistry from the Massachusetts Institute of Technology under the direction of Professor Barbara Imperiali. Here, he studied the molecular mechanism of oligosaccharyltransferase, the enzyme which catalyzes N-linked glycosylation. Dr. Dempski continued his career as a postdoctoral fellow at the Max Planck Institute of Biophysics in Frankfurt am Main, Germany conducting research with Professor Ernst Bamberg. In this position, he focused on linking the conformational dynamics of the Na+,K+-ATPase to ion transport. Since 2009, Dr. Dempski has been on the faculty at WPI, rising to Professor in 2021.