

# **New York Scientific Data Summit 2024: Addressing Data Challenges in Digital Twins**

## **Report of Contributions**

Contribution ID: 1

Type: **not specified**

## Opening and Plan of the Day

*Monday, 16 September 2024 08:45 (10 minutes)*

**Presenter:** LIN, Meifeng (Brookhaven National Laboratory)

**Session Classification:** Motivating Applications of Digital Twins and Challenges

Contribution ID: 2

Type: **not specified**

## Welcome Remarks

*Monday, 16 September 2024 08:55 (5 minutes)*

**Presenter:** D'IMPERIO, Nicholas (Brookhaven National Laboratory)

**Session Classification:** Motivating Applications of Digital Twins and Challenges

Contribution ID: 3

Type: **not specified**

## **Informing Medical Digital Twins: Highlights from the Virtual Human Global Summit**

*Monday, 16 September 2024 09:00 (20 minutes)*

**Presenter:** STAHLBERG, Eric (Frederick National Laboratory for Cancer Research)

**Session Classification:** Motivating Applications of Digital Twins and Challenges

Contribution ID: 4

Type: **not specified**

## **Multiscale Digital Twins for Precision Modeling and Predictive Cell Survival Outcomes**

*Monday, 16 September 2024 09:20 (20 minutes)*

**Presenter:** KAPADIA, Anuj (Oak Ridge National Laboratory)

**Session Classification:** Motivating Applications of Digital Twins and Challenges

Contribution ID: 5

Type: **not specified**

## Digital Twins for Wind Energy and Leading-Edge Erosion Detection

*Monday, 16 September 2024 09:40 (20 minutes)*

**Presenter:** MINKOFF, Susan (Brookhaven National Laboratory)

**Session Classification:** Motivating Applications of Digital Twins and Challenges

Contribution ID: 6

Type: **not specified**

## **FAIR Data Management at the Joint Genome Institute**

*Monday, 16 September 2024 10:30 (20 minutes)*

**Presenter:** FAGNAN, Kjiersten (Lawrence Berkeley National Laboratory)

**Session Classification:** Data Acquisition and Management

Contribution ID: 7

Type: **not specified**

## **Curating Carbon Storage Data for Reuse: Enabling Research and Modeling from Earth's Surface to Subsurface**

*Monday, 16 September 2024 10:50 (20 minutes)*

**Presenter:** MORKNER, Paige (National Energy Technology Laboratory)

**Session Classification:** Data Acquisition and Management



Contribution ID: 8

Type: **not specified**

## **Data Privacy, Provenance and Context: Challenges and Perspectives**

*Tuesday, 17 September 2024 14:10 (20 minutes)*

**Presenter:** QURESHI, Nabeel (OpenHealth)

**Session Classification:** Data Safety, Security, Privacy and Beyond

Contribution ID: 9

Type: **not specified**

## Frontier AI for Science, Security and Technology (FASST)

*Monday, 16 September 2024 13:30 (20 minutes)*

**Presenter:** ALEXANDER, Frank (Argonne National Laboratory)

**Session Classification:** Machine Learning and Data Quality - Part I

Contribution ID: 10

Type: **not specified**

## **(Remote) AuroraGPT: Rationale, Data Challenges and Development of an AI Research Assistant**

*Monday, 16 September 2024 14:50 (20 minutes)*

**Presenter:** CAPELLO, Franck (Argonne National Laboratory)

**Session Classification:** Machine Learning and Data Quality - Part I

Contribution ID: 11

Type: **not specified**

# On Training Foundation Models on Frontier

*Monday, 16 September 2024 13:50 (20 minutes)*

**Presenter:** DASH, Sajal (Oak Ridge National Laboratory)

**Session Classification:** Machine Learning and Data Quality - Part I

Contribution ID: 12

Type: **not specified**

## **Data aggregation and integration for energy infrastructure modeling**

*Monday, 16 September 2024 14:10 (20 minutes)*

**Presenter:** ROSE, Kelly (National Energy Technology Laboratory)

**Session Classification:** Machine Learning and Data Quality - Part I

Contribution ID: 13

Type: **not specified**

# Physics-Informed Machine Learning and Generative AI for Surrogate Modeling in Science and Industry

*Monday, 16 September 2024 14:30 (20 minutes)*

**Presenter:** O'KEEFFE, Mike (NVIDIA)

**Session Classification:** Machine Learning and Data Quality - Part I

Contribution ID: 14

Type: **not specified**

## Responsible AI in the US Banking Industry

*Monday, 16 September 2024 15:40 (20 minutes)*

**Presenter:** RATZAN, John (Accenture)

**Session Classification:** Machine Learning and Data Quality - Part II

Contribution ID: 15

Type: **not specified**

## **Synthetic Teammates: Leveraging Digital Twins to Optimize Human-AI Performance in Critical Missions**

*Monday, 16 September 2024 16:00 (20 minutes)*

**Presenter:** VOLKOVA, Svitlana (Aptima)

**Session Classification:** Machine Learning and Data Quality - Part II



Contribution ID: 16

Type: **not specified**

## **Creating trustworthy open data for scientific discovery**

*Monday, 16 September 2024 16:20 (20 minutes)*

**Presenter:** PENG, Grace (NIH)

**Session Classification:** Machine Learning and Data Quality - Part II

Contribution ID: 17

Type: **not specified**

## **Operationalizing Biomedical Digital Twins compliant with the National Academies Report: issues regarding machine learning and data quality**

*Monday, 16 September 2024 16:40 (20 minutes)*

**Presenter:** AN, Gary (University of Vermont)

**Session Classification:** Machine Learning and Data Quality - Part II

Contribution ID: **18**

Type: **not specified**

## **Fusion Energy Digital Twins - from Experiment to Power Plant**

*Tuesday, 17 September 2024 08:40 (20 minutes)*

**Presenter:** CHURCHILL, Michael (Princeton Plasma Physics Laboratory)

**Session Classification:** Validation, Verification and Uncertainty Quantification (VVUQ)

Contribution ID: **19**

Type: **not specified**

# Uncertainty in Digital Twins from Imperfect System Information

*Tuesday, 17 September 2024 09:20 (20 minutes)*

**Presenter:** URBAN, Nathan (Brookhaven National Laboratory)

**Session Classification:** Validation, Verification and Uncertainty Quantification (VVUQ)

Contribution ID: 20

Type: **not specified**

## **Recent developments in uncertainty quantification and model validation for complex systems**

*Tuesday, 17 September 2024 09:00 (20 minutes)*

**Presenter:** GHANEM, Roger (University of Southern California)

**Session Classification:** Validation, Verification and Uncertainty Quantification (VVUQ)

Contribution ID: 21

Type: **not specified**

## Navigating uncertainty to build trust in digital twins

*Tuesday, 17 September 2024 09:40 (20 minutes)*

**Presenter:** CHAUDHURI, Anirban (University of Texas Austin)

**Session Classification:** Validation, Verification and Uncertainty Quantification (VVUQ)

Contribution ID: 22

Type: **not specified**

# **Towards Efficient Neural Representation of Visual Computing Data**

*Tuesday, 17 September 2024 10:30 (20 minutes)*

**Presenter:** SUN, Qi (New York University)

**Session Classification:** Data Visualization and Virtual Reality

Contribution ID: 23

Type: **not specified**

## **Towards the creation of digital twins for scientific simulations using visualization surrogates**

*Tuesday, 17 September 2024 10:50 (20 minutes)*

**Presenter:** SHEN, Han-Wei (The Ohio State University)

**Session Classification:** Data Visualization and Virtual Reality



Contribution ID: 24

Type: **not specified**

## Digital Twins for Science

*Tuesday, 17 September 2024 11:10 (20 minutes)*

**Presenter:** FISKE, Barton (NVIDIA)

**Session Classification:** Data Visualization and Virtual Reality

Contribution ID: 25

Type: **not specified**

## **(Remote) Visualization Techniques for the Tokamak Digital Twin**

*Tuesday, 17 September 2024 13:30 (20 minutes)*

**Presenter:** FEIBUSH, Eliot (Princeton University)

**Session Classification:** Data Safety, Security, Privacy and Beyond

Contribution ID: 26

Type: **not specified**

## **TIPPSS to address data-related challenges in the development & deployment of digital twins**

*Monday, 16 September 2024 11:10 (20 minutes)*

**Presenter:** HUDSON, Florence (Columbia University)

**Session Classification:** Data Acquisition and Management

Contribution ID: 27

Type: **not specified**

# Safety, Security and Privacy in the Age of Generative AI

*Tuesday, 17 September 2024 13:50 (20 minutes)*

**Presenter:** SOTO, Carlos (Brookhaven National Laboratory)

**Session Classification:** Data Safety, Security, Privacy and Beyond

Contribution ID: 28

Type: **not specified**

## **(Remote) Multimodal Generative AI for Precision Health**

*Tuesday, 17 September 2024 15:00 (20 minutes)*

**Presenter:** POON, Hoifung (Microsoft)

**Session Classification:** The Future of Digital Twins

Contribution ID: 29

Type: **not specified**

## Enabling Digital Twins Through Common Infrastructure

*Tuesday, 17 September 2024 15:20 (20 minutes)*

**Presenter:** BROWNING, Jeren M. (Idaho National Laboratory)

**Session Classification:** The Future of Digital Twins

Contribution ID: **30**

Type: **not specified**

## Digital Twins in Large Scale Scientific Instruments

*Tuesday, 17 September 2024 15:40 (20 minutes)*

**Presenter:** LIN, Lucy (Brookhaven National Laboratory)

**Session Classification:** The Future of Digital Twins

Contribution ID: 31

Type: **not specified**

# Digital Twin: Open Source Development and Deployment

*Tuesday, 17 September 2024 16:00 (20 minutes)*

**Presenter:** SRIVASTAVA, Anil (Open Health Systems Laboratory)

**Session Classification:** The Future of Digital Twins



Contribution ID: 32

Type: **not specified**

## **The Evolving Digital Twin - Driving the Next Wave of Digital Transformation**

*Tuesday, 17 September 2024 16:20 (20 minutes)*

**Presenter:** ISAACS, Dan (Digital Twin Consortium)

**Session Classification:** The Future of Digital Twins

Contribution ID: 34

Type: **not specified**

## **Voice-Enabled Beamlines at National Synchrotron Light Source II (NSLS-II)**

*Tuesday, 17 September 2024 13:00 (7 minutes)*

**Presenter:** MATHUR, Shray (Brookhaven National Laboratory)

**Session Classification:** Lightning Talks

Contribution ID: 35

Type: **not specified**

## **Menopause: It's about Femhealth, not just Femtech**

*Tuesday, 17 September 2024 13:07 (7 minutes)*

**Presenter:** LIEBMAN, Michael (IPQ Analytics LLC)

**Session Classification:** Lightning Talks

Contribution ID: 36

Type: **not specified**

## **Biomimetic Digital Twins and Multiomics: Applications to Rheumatoid Arthritis to Understand the Molecular Mechanisms of Disease**

*Tuesday, 17 September 2024 13:14 (7 minutes)*

**Presenter:** KEARNS, William G. (Genzeva)

**Session Classification:** Lightning Talks

Contribution ID: 37

Type: **not specified**

## **Grand challenges and cross-disciplinary collaborations for digital twins**

*Monday, 16 September 2024 11:30 (30 minutes)*

**Presenters:** KAPADIA, Anuj (Oak Ridge National Laboratory); ALEXANDER, Frank (Argonne National Laboratory); BROWNING, Jeren M. (Idaho National Laboratory); LIN, Meifeng (Brookhaven National Laboratory)

**Session Classification:** Panel Discussion

Contribution ID: **38**

Type: **not specified**

## Biomedical Digital Twin Industry Panel

*Monday, 16 September 2024 17:00 (30 minutes)*

**Presenters:** CHRISTIANSON, Anastasia (EPAM); ELLIS, Josh (Intempo Health); HADJISAVAS, Michael (p-Chips); BRADLEY, Nathaniel (Data Vault)

**Session Classification:** Panel Discussion

Contribution ID: 39

Type: **not specified**

## Digital Twin Impact and Market

*Tuesday, 17 September 2024 11:30 (30 minutes)*

**Presenters:** FISKE, Barton (NVIDIA); PENG, Grace (NIH); CHURCHILL, Michael (PPPL); PARIKH, Mihir (Nishith Desai Associates)

**Session Classification:** Panel Discussion

Contribution ID: 40

Type: **not specified**

## **Going Forward: What do we do as a community to facilitate the R&D and applications of digital twins?**

*Tuesday, 17 September 2024 16:40 (30 minutes)*

**Presenters:** RASHEED, Adam (Amazon Web Services); STAHLBERG, Eric (Frederick National Laboratory for Cancer Research); HUDSON, Florence (Columbia University); DENG, Jun (Yale University)

**Session Classification:** Panel Discussion



Contribution ID: 41

Type: **not specified**

# Building and Deploying Digital Twins for Business Value

*Tuesday, 17 September 2024 13:21 (7 minutes)*

**Presenter:** RASHEED, Adam (Amazon Web Services)

**Session Classification:** Lightning Talks

Contribution ID: 42

Type: **not specified**

## Data Vault Holdings

*Monday, 16 September 2024 13:00 (10 minutes)*

**Presenter:** BRADLEY, Nathaniel (Data Vault)

**Session Classification:** Sponsor Presentations

Contribution ID: 43

Type: **not specified**

## Intempo Health

*Monday, 16 September 2024 13:10 (7 minutes)*

**Presenter:** ELLIS, Josh (Intempo Health)

**Session Classification:** Sponsor Presentations