Track 1: Hands-On Full Life Cycle Data Science Workshop
Co-Leaders - Steve Johnson, PhD, Lisiane Pruinelli, PhD, MS, RN,

The purpose of this track is to learn data science techniques in an interactive, hands-on, and safe environment. We will conduct exploratory data analysis, data preparation and model development. Participants will first learn important concepts and theory of data science and then discuss the challenges of working with EHR data (e.g., issues of data quality, data complexity and non-standardization). Participants will interact with and take away a fully functioning environment with synthetic data and step-by-step recipes for a data science project.

Time	Activity	Speaker
8 am	All Tracks: Welcome – Speed Networking	All
8:15 am	All Tracks: Nursing Knowledge Big Data Science Initiative: Where have we been and where are we going?	**Connie Delaney,** PhD, RN, FAAN, FACMI, Dean, Professor, University of Minnesota School of Nursing and **Bonnie Westra,** PhD, RN, FAAN, FACMI, Associate Professor, University of Minnesota School of Nursing
9:15 am	Break	
9:30 am	**Introduction to the Hands-On Full Life Cycle Data Science Workshop** – Overall workshop approach and agenda. A pre-workshop survey will be completed and participants will be introduced to Jupyter Notebooks to complete a data science project.	**Steve Johnson,** PhD, VP Technology & Informatics, Provation Medical Inc & **Lisiane Pruinelli**, PhD, MS, RN, Assistant Professor, School of Nursing, University of Minnesota.
9:50 am	**Understanding the Research Question for Nursing Data Science**. An example research question will be posed to use during the workshop to illustrate data science techniques.	**Kenrick D Cato**, PhD, RN, CPHIMS, Assistant Professor Columbia University School of Nursing, Nurse Researcher, New York-Presbyterian Hospital **& Thompson Forbes III,** PhD, RN,NE-BC, Assistant Professor, College of Nursing, East Carolina University
10:40 am	**Exploratory Data Analysis and Data Preparation**. Participants will start by working through the data extraction process and different tools will be used for exploring the data, such as Seaborn and Matplotlib, to perform data visualization. You will perform feature/variable selection for modeling suitable to answer the research question.	**Steve Johnson,** PhD & **Grace Gao**, PhD, DNP, RN-BC, Robert Wood Johnson Foundation of Future of Nursing Scholar

11:30	**Modeling and Analytics Techniques**. Different modeling and machine learning techniques will be used to predict outcomes using realistic EHR data.	**Alvin D. Jeffery**, PhD, RN, Medical Informatics Fellow, U.S. Dept. of Veterans Affairs & **Lisiane Pruinelli**
12:00 pm	Lunch	
1:00 pm	**Modeling and Analytics Techniques** (continued)	**Alvin D. Jeffery** & **Lisiane Pruinelli**
1:30 pm	**Model Performance and Evaluation**. Several techniques for model performance and evaluation, such as cross-validation and bootstrap, will be presented.	**Christopher Cruz**, MSHI, RN-BC, CPHIMS, Sr Quality Improvement Analyst University of California, San Francisco & **Lisiane Pruinelli**
2:15 pm	**Deployment and Implementation in Clinical Practice.** We will illustrate how resulting models can be implemented in the real-word, as well as options for outcomes assessments that provide feedback for a continuous cycle of model improvement.	**Thompson Forbes III**, RN, PhD & **Deborah Lekan**, PhD, RN-BC, Assistant Professor, School of Nursing, University of North Carolina at Greensboro
3:00 pm	**Workshop Conclusions and Evaluation**. Participants will discuss lessons learned, evaluate workshop activities and take a post-workshop survey.	**Steve Johnson** & **Lisiane Pruinelli**
3:30 pm	Break	
3:45 pm	All Tracks: Key Insights – from participants in tracks	**Connie Delaney** and **Bonnie Westra**
4:30 pm	All Tracks: Wrap up - link Pre-conference to Conference over the next 2 days	**Connie Delaney** and **Bonnie Westra**