Course

PRINCIPLES OF DATA SCIENCE APPLIED TO LIVESTOCK

September 13 – 17, 2021

Instructors

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Course description

Graduate level course (PhD and advanced MS) for researchers working in all areas of animal sciences, such as nutrition and physiology, management, genetics and reproduction, in industry or academia. Statisticians, computer scientists, and data scientists interested on learning about potential applications in animal science can also benefit from the course. The course will cover key concepts and techniques related to statistics and machine learning applied to high-dimensional data in livestock, including data from sensors, imaging, genomics, farm-recorded data from management software, and publicly available datasets. The course is structured with 4 sessions per day, Monday through Friday (Sept 13-17, 2021) – except on Wed afternoon (free time to foster discussion and networking among participants), including expositive lectures and some demo with real data and useful software and algorithms that will be shared with the participants.

Topics

- Basics of Statistics
- Planning Research Studies in Animal Sciences
- Database Management (demo: how to insert, remove, edit data in a SQL)
- Data Analysis Techniques
- Variable Selection and Model Comparison
- Image Processing and Analysis (demo: thresholding, convolution, etc. in Matlab)
- Infrared Spectroscopy and Hyperspectral Imaging (demo: get spectral data from hyperspectral images)
- Wearable Sensing Technology
- Deep Learning
- Genomics Data
- Mining Operational Farm data
- Cloud Computing (demo: Azure Cloud Computing)

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