Artificial Intelligence in Sensory Science: The Big Picture

Taught by Dr. John Ennis[1]

1. Aigora, Richmond, Virginia, USA

Artificial intelligence, or "AI", is among the hottest buzzwords. Yet, too often it's unclear what AI actually means in practice. On the one hand, many of us now receive daily weather forecasts from AI-powered speakers, travel to work using AI-powered directions, or rely on AI-powered recommendations when we shop online. These facts - among many others - show that AI already plays a real and significant role in our lives. On the other hand, each week brings a new set of increasingly fantastic AI-based promises - when faced with such promises, the only healthy response is skepticism. This tension, intensified by the technical knowledge required to evaluate AI-based technologies, leaves sensory scientists in the frustrating position of not wanting to be left behind but not knowing which steps will move them forward.

In this tutorial, we relieve this tension by:

1) Demystifying AI through a review of its history and its active research areas.
2) Reviewing AI-related topics - such as data science, machine learning, and knowledge management - relevant to sensory scientists seeking to implement AI.
3) Presenting use-cases from the public record of how sensory and consumer scientists are already successfully leveraging AI to increase their business impact.

As part of this tutorial, we will overview a number of technical topics in terms accessible to a general audience. These topics will include supervised versus unsupervised machine learning, natural language processing (NLP) and text analytics more generally, reproducible workflows, and graph databases. Machine learning topics will include clustering techniques, dimensionality reduction approaches such as principal components analysis (PCA) and multiple correspondence analysis (MCA), regression techniques, tree-based techniques such as random forests, and deep learning. This overview will provide attendees with the ability to understand when to consider which tools and a working understanding of the terms commonly used around AI. Resources (freely available and/or open-source when possible) will be recommended to attendees who seek to engage with the material at a more technical level.

At the conclusion of this tutorial, attendees will enjoy improved confidence in their understanding of and decision making around AI.

Level

This tutorial will be taught at the level of general interest. No laptop is required.

Instructor Biography

Dr. John Ennis is president of Aigora. A Ph.D. mathematician who conducted his postdoctoral training in computational neuroscience, Dr. Ennis has more than a dozen years of sensory and consumer science consulting experience. Dr. Ennis was the 2013 winner of the Food Quality and Preference "Researcher of the Future" award and is the author of over 30 peer-reviewed publications and two books.