

AI for Healthcare

Course Summary

Description

AI is the new electricity. It will change the way we do everything. Healthcare, with its vast resources and even greater needs, stands to benefit greatly from AI. This applies to the various aspects of healthcare, from financial to clinical to pharmaceuticals.

This course is intended for healthcare specialists, managers, software architects, and engineers. It gives the participants a practical level of experience, achieved through a combination of about 50% lecture, 50% demo work with student's participation.

Objectives

At the completion of this course, Students will be able to:

- Find the low-hanging fruit for AI in Healthcare
- Form correct predictions for healthcare issues
- Address the ethical part of AI in their solutions

Topics

- Building Foundations
- ML Basics and Elements of AI
- Healthcare AI Techniques
- Fighting adversaries Implementing AI in Healthcare

Audience

This course is designed for Healthcare Professionals, Managers, Software Architects, and Developers.

Prerequisites

Exposure to healthcare and familiarity with a programming language is a prerequisite for this course.

Duration

Three Days

AI for Healthcare

Course Outline

I. *Building Foundations*

- A. Introduction: What makes Healthcare unique?
- B. Case Studies in Risk Stratification
- C. Data Science Methodology
- D. Time-Series Modeling (using R or Python)

II. *ML Basics and Elements of AI*

- A. Predictive Modeling
- B. Dimensionality Reduction & Tensor Factorization
- C. Graph Analysis
- D. Deep learning
- E. Gradient-boosting
- F. Random forests
- G. Ensemble learning

III. *Healthcare AI Techniques*

- A. Computational Phenotyping
- B. Patient Similarity Metrics
- C. Medical Ontology
- D. Predicting the Outcome of Interventions: Causal Inference from Observational Data
- E. Case Study - Group Discussion & Lab Session

IV. *Fighting adversaries Implementing AI in Healthcare*

- A. Interpretability of Machine Learning Models
- B. Machine Learning Frameworks
- C. Machine Learning APIs
- D. Deploying Machine Learning in Healthcare Settings
- E. Data Science Ethics
- F. Case Study Conclusion - Group Discussion & Lab Session
- G. Conclusion: Where to Next?