

# AI and Health Care

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# Health Care and AI (Spring Quarter Course)

## High Level

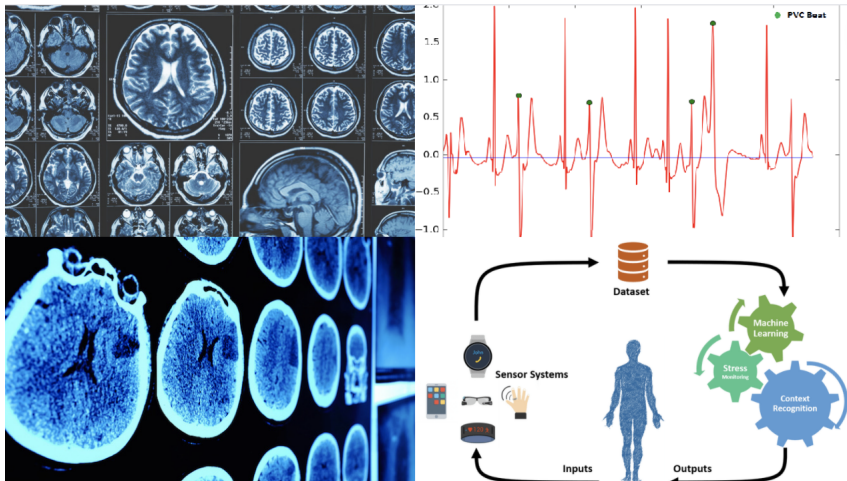
Motivation and Applications, Personalized health tracking. Patient diagnosis and monitoring. Machine Learning Problems: Anomaly Detection, Classification, Time-series analysis. Natural Language Processing for Medical Health Records. Interpretability in Machine Learning.

## Applications

Arrhythmia detection, Cancer detection, MRI classification, Automated Scribing of health records, Stress Monitoring Systems, patient risk assessments and more!

Assessments: Weekly conceptual and programming assignment and final project

# MRI, Heart, Stress and Cancer Detection (clockwise)



# Week by Week Breakdown

## Week 1

Health care problems. Personalized health tracking. Patient diagnosis and monitoring. Automating health records. Other problems? How can AI help ? Case studies and examples. Getting started with foundations of AI for health care.

## Week 2,3 & 4

**Health focus:** Disease diagnosis and patient monitoring: Case studies

**Data focus:** Data from wearables and other sensors - Reliability and Signal/Noise

**Data focus:** Data sources, data cleaning, pre-processing and post-processing techniques in ML

**Model focus:** Modeling AI for Disease diagnosis Machine learning models  
- Foundations and libraries Unsupervised, Supervised ML and contexts  
Specific applications Conceptual assignments and programming portions for case study

# Week by Week Breakdown

## Week 5 and 6

**Health focus:** Automating health records - Case study

**ML focus:** Natural Language Processing - Foundations and applications to health care Classic example of handwriting recognition and document generation Conceptual assignments and programming portions for structured learning from NLP data sets Project: Discussion of final project

## Week 7

**Health focus:** Interpretability in Health care and Machine Learning - Case study

**ML focus:** Why is interpretability of models important and how to measure it? ML focus: Deep dive into models in ML from standpoint of interpretability Conceptual + programming portion for Interpretability case study in health care

# Week by Week

## Week 8

**Health focus:** Assessing patient risks for treatments **ML focus:** Models for risk assessment Conceptual + programming portion for Interpretability case study in health care

## Week 9

Open topics discussion Project presentations Final project due