

Inspirit AI - AI + Healthcare Summer Projects 2021

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AI + Mental Health: Digital Phenotyping to Predict Schizophrenia

In this project, you'll create models for digital phenotyping in mental health. You'll use smartphone sensor data to predict depression or relapse in mental illness. In the project, you'll use modules such as Pandas, Matplotlib, and Scikit-learn to examine the distribution of smartphone and survey data. You'll build models that will predict depression and relapses in the hopes of initiating preemptive treatment. Along the way, you'll also discuss the ethical implications of data gathering and erroneous predictions.

AI + Healthcare: DNA Detectives

In this project, you'll trace the origins of COVID-19 to help understand its spread. You'll learn about the biology behind the virus and techniques for working with genomic data. Then you'll create machine learning models to identify the geographic origins of different COVID-19 strains. Finally, you'll apply advanced techniques like dimensionality reduction for building more accurate models from complex biological datasets.

AI + Biology: Protein Networks

In this series of notebooks, you will work to build an AI system that uncovers the underlying system of interaction between proteins. You will then use your discoveries to help doctors better understand diseases and their component protein networks. Through combining computational biology and machine learning, you will develop an AI model that predicts protein interactions and highlights disease pathways vital for clinical understanding and therapeutic intervention.

AI + Healthcare: Skin Cancer Detection

In this project, you'll use computer vision and image classification tools to develop machine learning models to diagnose skin lesion images. You'll explore a variety of image manipulation techniques and convolutional neural networks as you create an effective model that could help save lives. You'll also study your model for bias, to make sure that it works for people with a variety of skin tones. Finally, you'll take your model one step further by packaging it into an application with a user interface.

AI + Healthcare: Diagnosing Pneumonia

In this project, you'll create a computer vision system to help diagnose pneumonia from chest X-rays. You'll review neural networks and create convolutional neural networks in Keras to process medical images. Then you'll improve your models using transfer learning: adapting from expert models. You'll also evaluate your model on field data, and learn to create artificial data using image transformations so that your model performs well on real-life data. You may even deploy your model to an app!