Syllabus - 1-week instensive high-school artificial intelligence and machine learning summer program

-/+	Monday	Tuesday	Wednesday	Thursday	Friday
wk 1 AM	**Orientation**	**Foundations** ➢ Consciousness Theory - On Intelligence w Jeff Hawkins - Hard problem of consciousness Video w David Chalmers - David Chalmers Consciousness paper - Stanford Encyclopedia Consciousness ➢ Intelligence Theory - Intelligence Overview w Deary - On measure of Intelligence - Chollett - A Thousand Brains – Jeff Hawkins ➢ Network Neuroscience Theory - Neuroscience Differences ➢ Exercise: ML w Random Forest - rF Classic approach overview	**AI + Ethics** ➢ Ethical Paradigms - Hitchhiker's Overview - Right, Good, Just (Locke, Hume) - Theory Summary ➢ The Alan Turing Institute – AI Ethics - Facebook Social Responsibility - Timnet Gebru, Google - Algorithmic Ethics in ML w Michael Kearns ➢ Bias Fundamentals ➢ Algorithm Bias ➢ Chatbot bias (MIT) ➢ Exercise: Graphing	**AI + Medicine** ➢ AI in Medicine ➢ Medicine's Future w AI ➢ Guest Speak Case Study / Guest Speaker: Covid Vaccine Discovery. AI was a key part of COVID vaccine research and research into effective existing drugs or repurposing drugs. One source that many research uses for drug-related datasets is ➢ Exercise: Feature Engineering	**AI + Business + Robots** ➢ Ethical Paradigms - Mechanic Turking ➢ The Business future of AI - Boston Dynamics Dancing Robots ➢ Exercise: Geocodes
wk 1 PM	**Frameworks** ➢ What is AI and ML Overview? - Basic Concepts - MIT ML Overview - Understanding ML Textbook ➢ Importance Vectors - Personal Vectors - Societal Vectors (IBM) - Existential Impacts (Elon Musk) ➢ MyAnalysis: Frameworks ➢ Exercise: Exploring Data	**Foundations** ➢ AI Fundamentals Review - Brookings Institute AI Overview - Hitchhikers AI Guide ➢ Machine Learning Tools - Algorithms - Machine Learning Project Workflow ➢ Manual ML Walkthrough w NASA Helicopter Exercise ➢ MyAnalysis: Confusion Matrix ➢ Exercise: TensorFlow Image Classification Basics with Confusion Matrix	**AI + Ethics** ➢ Bias structure ➢ Neural Networks 101 - Neural Net Interactive - Neural Networks Theory - Neural Networks Images ➢ MyAnalysis: Accuracy ➢ Data Set: Image MNIST ➢ Exercise: TensorFlow Image Classification with Convolutions	**AI + Medicine** ➢ AI in Medicine - Covid-19 - AI drug discovery - AI Mental Health ➢ MyAnalysis: Drug Data ➢ Data Set: Drug datasets ➢ Exercise: Drug Discovery	**AI + Surveillance** ➢ Surveillance ➢ MyAnalysis: Weekly Recap ➢ Data Set: Facial Data ➢ Exercise: Facial Recognition

Notes:

- Items with missing links exist for material that is not open source.
- Supporting syllabus module sample see https://github.com/bbe2/portfolio/tree/tech_curriculum_an_GwG.
- Complete materials confidential, b.hogan@snhu.edu.