UDACITY

EXECUTIVE PROGRAM SYLLABUS

AI for Business Leaders

Overview

The rise of artificial intelligence in the past decade has transformed computer science and the workplace, causing businesses to rethink ways of integrating this emerging technology into their corporate strategy. Become familiar with the fundamental technical terms and concepts of machine learning, and develop a strategic framework to evaluate business applications of artificial intelligence across industries. Through practical case studies, learn what strategic questions to ask and how to formulate proposals grounded in first principles when assessing opportunities to embed machine learning and artificial intelligence into a corporate strategy. From going through the ideation of feasible machine learning and artificial intelligence solutions to the assessment of implementation architectures, operational risks, and strategic impact, you will be enabled to build a machine learning/artificial intelligence strategy rooted in technical competence.

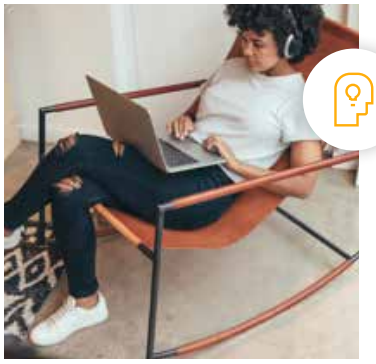
Educational Objectives: This Executive Program is ideal for business leaders and managers who are responsible for making strategic decisions regarding these technologies and want to equip themselves to evaluate proposals in terms of both impact on a business and technical feasibility. It will also enable them with the skills and knowledge necessary to formulate and evolve these strategies themselves.

Prerequisites: A well prepared student will have some prior exposure to statistics and probability in an academic or professional setting, basic knowledge of Algebra, and will have spent time in a business setting being involved in business decision-making and technical/IT projects.

IN COLLABORATION WITH

Estimated Time:
4-6 Weeks at
5 hours / week

Prerequisites:
Statistics,
Probability,
& Business
Experience



Flexible Learning:
Self-paced, so
you can learn on
the schedule that
works best for you.

Need Help?
udacity.com/advisor
Discuss this program
with an enrollment
advisor.

Course: AI for Business Leaders

This Executive Program teaches the fundamental technical terms and concepts around machine learning necessary to apply these methods to building artificial intelligence systems for business. Each lesson's material will demonstrate how to apply a new series of concepts through a hands-on case study walkthrough of McThornton's, a national electronics retailer. In the first lesson, you will be presented 11 business use cases McThornton's Electronics is considering as candidates for its newly allocated artificial intelligence innovation budget. As you progress through each lesson, incremental case information will be revealed at the end of each lesson and you will be tasked to apply the strategic decision-making concepts you've just learned. Over time, you'll eliminate use cases from contention, ultimately arriving at a final proposal for McThorton's go-forward ML/AI strategy.

Course Project
Deliver a Machine Learning / AI Strategy

Draw on all of the skills learned throughout the lessons to create an ML/AI strategy that is technically achievable and highly impactful on the business based on evaluation of various AI-enabled use cases

		LEARNING OUTCOMES
LESSON ONE	**The Paradigm Shift**	• Understand how probabilistic reasoning is applied to machine learning • Understand key terms and components involved in machine learning approaches, such as: algorithm, model, training, feature, test set, training set, and ground truth dataset • Develop ideas for machine learning and AI use cases for a business • Create before/after storyboards and use them to evaluate the feasibility and impact of an ML/AI use case
LESSON TWO	**The Math Behind the Magic**	• Differentiate between how the five "V's" of data (velocity, volume, variety, veracity, value) affect a ML model • Understand how information about the five "V's" of data impacts the potential and feasibility of an ML/AI use case • Distinguish between classification, regression, optimization, and simulation in ML/AI applications • Understand the basics of predictive modeling and the differences between classification and regression • Understand the basics of optimization and the relationship between optimization and simulation • Become familiar with key terms and concepts of deep learning, and how it can be applied to predictive modeling • Learn how reinforcement learning models can be applied to the most complex optimization scenarios

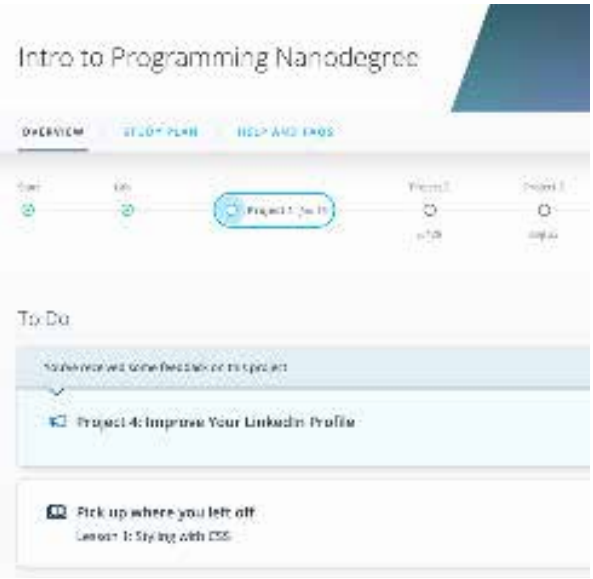
		LEARNING OUTCOMES
LESSON THREE	**Architectures of AI Systems**	• Understand the importance of machine learning system architectures and their various components • Distinguish between the applications of various machine learning capabilities, including classifiers, regressors, optimizers, simulators, policy learners, and segmenters • Differentiate between the capabilities of natural language processing, voice/speech processing, and computer vision • Build machine learning system architectures for a digital channel chatbot, negotiation engine, and visual classifier
LESSON FOUR	**Working with Data**	• Learn the importance and potential costs of labeling data for supervised learning • Understand AI infrastructure requirements, and how to overcome common hurdles in implementing it • Evaluate data readiness for implementation of particular ML/AI capabilities in a business context, and use this to assess feasibility of use cases.
LESSON FIVE	**Accuracy, Bias, and Ethics**	• Define reasonable machine learning model accuracy and how it can change over time • Understand why accuracy is only one measure of machine learning model performance and when, how, and why other metrics are commonly used • Learn how to to avoid underfitting and overfitting when developing an ML model • Apply ethical considerations and frameworks to make machine learning model design decisions that are ethically sound
LESSON SIX	**Gathering Feedback**	• Learn how to build surveys and conduct interviews to solicit feedback on prototypes • Identify various stakeholders inside and outside an organization to provide feedback in an iterative design process • Analyze results of feedback from stakeholders to inform evaluation and prioritization of use cases
LESSON SEVEN	**Thinking Bigger**	• Learn how to begin implementing AI use cases with small learning experiments • Build a roadmap deploying machine learning applications that strategically complement one another • Create a proposal integrating use cases into a transformational business story

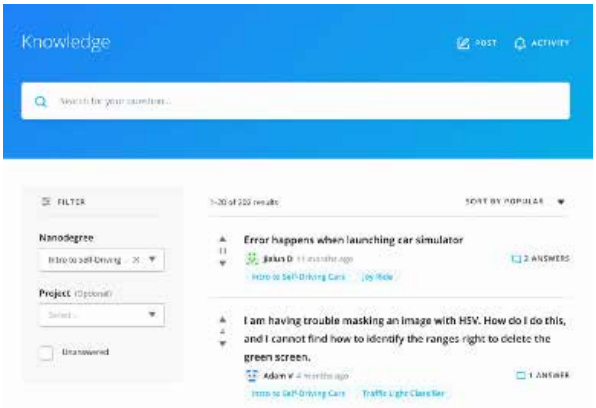
Capstone Project: Deliver a Machine Learning / AI Strategy

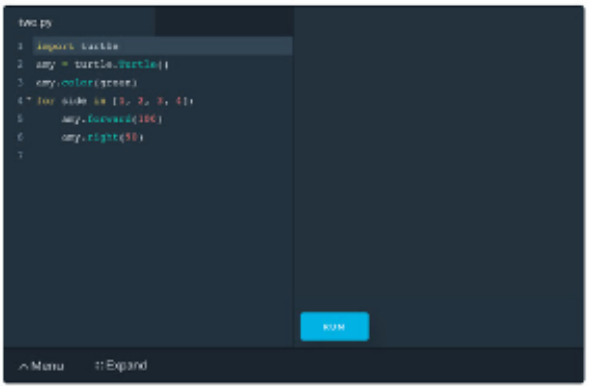
Business leaders need to develop and execute strategies that are equally organizationally transformative and technically feasible. In this project, you will formulate a cohesive AI strategy for either your own company or a predefined business scenario surrounding an automotive manufacturer.

	LEARNING OUTCOMES	
PART ONE	**Capstone Work**	Confirm the need to incorporate machine learning/artificial technologies in the business by envisioning a future state and storyboarding use cases of how various business processes might be evolved.
PART TWO	**Capstone Work**	Analyze the proposed use cases' potential for success by assessing characteristics of the data sources needed.
PART THREE	**Capstone Work**	Create mock architectures for a subset of these use cases and assess readiness for implementation of each AI/ML capability you are considering.
PART FOUR	**Capstone Work**	Take into consideration a variety of operational concerns including ethics, stakeholder implications, and long term costs to finalize your view of business impact versus technical feasibility
PART FIVE	**Capstone Work**	Ceate a strategic AI and machine learning proposal that is technically achievable and highly impactful based on the synthesis of conclusions drawn throughout the project's process.

Our Classroom Experience







REAL-WORLD PROJECTS
Build your skills through industry-relevant projects. Get personalized feedback from our network of 900+ project reviewers. Our simple interface makes it easy to submit your projects as often as you need and receive unlimited feedback on your work.

KNOWLEDGE
Find answers to your questions with Knowledge, our proprietary wiki. Search questions asked by other students and discover in real-time how to solve the challenges that you encounter.

STUDENT HUB
Leverage the power of community through a simple, yet powerful chat interface built within the classroom. Use Student Hub to connect with your technical mentor and fellow students in your Nanodegree program.

WORKSPACES
See your code in action. Check the output and quality of your code by running them on workspaces that are a part of our classroom.

QUIZZES
Check your understanding of concepts learned in the program by answering simple and auto-graded quizzes. Easily go back to the lessons to brush up on concepts anytime you get an answer wrong.

CUSTOM STUDY PLANS
Work with a mentor to create a custom study plan to suit your personal needs. Use this plan to keep track of your progress toward your goal.

PROGRESS TRACKER
Stay on track to complete your Nanodegree program with useful milestone reminders.

Learn with the Best

William Ross

FOUNDER, PRODUCT MANAGER, & CORPORATE DEVELOPMENT LEADER

William Ross is an experienced investor in AI and ML, and previously worked with IBM's Watson group managing a variety of PM and corporate dev teams. Today, he is the co-founder of a Silicon Valley-based AI startup. He attended Stanford's Graduate School of Business.

Luis Serrano

AI ENGINEER AT APPLE

Luis was formerly a Machine Learning Engineer at Google. He holds a PhD in mathematics from the University of Michigan, and a Postdoctoral Fellowship at the University of Quebec at Montreal.

Josh Bernhard

DATA SCIENTIST AT NERD WALLET

Josh has been sharing his passion for data for nearly a decade at all levels of university, and as Lead Data Science Instructor at Galvanize. He's used data science for work ranging from cancer research to process automation.

All Our Nanodegree Programs Include:

EXPERIENCED PROJECT REVIEWERS

REVIEWER SERVICES

- Personalized feedback & line by line code reviews
- 1600+ Reviewers with a 4.85/5 average rating
- 3 hour average project review turnaround time
- Unlimited submissions and feedback loops
- Practical tips and industry best practices
- Additional suggested resources to improve

TECHNICAL MENTOR SUPPORT

MENTORSHIP SERVICES

- Questions answered quickly by our team of technical mentors
- 1000+ Mentors with a 4.7/5 average rating
- Support for all your technical questions

PERSONAL CAREER SERVICES

CAREER SUPPORT

- Resume support
- Github portfolio review
- LinkedIn profile optimization

Frequently Asked Questions

PROGRAM OVERVIEW

WHY SHOULD I ENROLL?

93% of high growth companies are with double digit organic growth plan to implement AI into their business within the next one to three years, but 94% of enterprises struggle to understand how to implement AI in their organizations.

This program is designed for business executives who want to understand the foundational concepts of Artificial Intelligence and be able to implement machine learning technology into their business processes. You'll learn about the broad foundations of Artificial Intelligence including predictive modeling, machine learning, deep learning, supervised and unsupervised learning, and then traverse a series of business case studies that will train learners in how to find optimal applications of AI for particular business scenarios.

WHAT JOBS WILL THIS PROGRAM PREPARE ME FOR?

This program is designed to train business leaders tasked with determining the strategic decisions to equip their company with the latest advancements in the fields of machine learning and artificial intelligence.

Read in detail about how companies like Amazon, Facebook, Google, Salesforce, Microsoft, and more are successfully implementing AI technology to develop cutting-edge products that enable them to win in the competitive business landscape. With the AI for Business Leaders Executive Program, you can be positioned to do the same in your organization.

HOW DO I KNOW IF THIS PROGRAM IS RIGHT FOR ME?

This Executive Program teaches the technical foundations of machine learning and practical business applications of artificial intelligence in the 21st century. It is intended for business leaders and managers who are responsible for making strategic decisions regarding these technologies, and want to equip themselves to formulate and evaluate proposals involving machine learning and artificial intelligence technologies to impact their business.

WHAT IS AN EXECUTIVE PROGRAM? HOW IS IT DIFFERENT FROM A NANODEGREE PROGRAM?

This Executive Program teaches the technical foundations of machine learning and practical business applications of artificial intelligence in the 21st century. It is intended for business leaders and managers who are responsible for making strategic decisions regarding these technologies, and want to equip themselves to formulate and evaluate proposals involving machine learning and artificial intelligence technologies to impact their business.

FAQs Continued

WHAT IS INCLUDED IN AN EXECUTIVE PROGRAM?

This Executive Program teaches the technical foundations of machine learning and practical business applications of artificial intelligence in the 21st century. It is intended for business leaders and managers who are responsible for making strategic decisions regarding these technologies, and want to equip themselves to formulate and evaluate proposals involving machine learning and artificial intelligence technologies to impact their business.

HOW LONG IS THE AI FOR BUSINESS LEADERS EXECUTIVE PROGRAM?

The AI for Business Leaders Executive Program can be completed in 4-6 weeks, working 5 hours per week. Two full months of access to the learning environment is included in your enrollment in the Executive Program.

ENROLLMENT AND ADMISSION

DO I NEED TO APPLY? WHAT ARE THE ADMISSION CRITERIA?

No application is necessary. This Executive Program accepts all applicants regardless of experience and specific background.

WHAT ARE THE PREREQUISITES FOR ENROLLMENT?

This program is intended for students who have spent time in a business setting, had exposure to business decision making, and have potentially worked on technical or IT projects.

In addition, a well-prepared learner will have:
- Basic knowledge of mathematics (Algebra, Geometry, etc.)
- Basic statistics (Able to calculate the mean, median, and mode from a data set)
- Prior exposure to statistics and probability in an academic or professional setting

WHAT IS THE DIFFERENCE BETWEEN THE AI PM NANODEGREE PROGRAM AND THE AI FOR BUSINESS LEADERS EXECUTIVE PROGRAM?

For students who have little or no coding background, our Introduction to Programming Nanodegree program is an opportunity to learn object-oriented programming in Python. If you are interested in self-driving cars and have no programming experience, the Intro to Self-Driving Cars Nanodegree program will teach you the basics of object-oriented programming in C++, as well as linear algebra and calculus.

FAQs Continued

WHAT IS THE DIFFERENCE BETWEEN THE AI PM NANODEGREE PROGRAM AND THE AI FOR BUSINESS LEADERS EXECUTIVE PROGRAM?

The AI PM Nanodegree program is meant for product managers that are responsible for building and deploying AI products. Unlike the AI for Business Leaders Executive Program, the AI PM Nanodegree program is focused on the hands-on tasks of scoping a data set, training a model, and evaluating the performance of the model.

On the other hand, the AI for Business Leaders Executive Program is meant for people in management that make organizational or department-wide strategic decisions on what, where, and how to embed AI within a company.

Unlike the AI PM Nanodegree program, the AI for Business Leaders Executive Program focuses on the high-level strategic framework to evaluate the architectural design and technical implications of new business opportunities that leverage AI, and the process to enable adoption of AI within an organization. Moreover, it trains students to apply this strategic process to real-world business contexts.

The AI for Business Leaders Executive Program is meant for people in the organization to define in which opportunities AI Product Managers should be responsible for owning products.

TUITION AND TERM OF PROGRAM

HOW IS THIS EXECUTIVE PROGRAM STRUCTURED?

The AI for Business Leaders Executive program is comprised of content and curriculum to support one capstone project. Once you enroll in a Executive program, you will have access to the content and services for the length of time specified by your subscription. We estimate that learners can complete the program in four to six weeks, working approximately five hours per week.

The Capstone project will be reviewed by the Udacity reviewer network. Feedback will be provided, and if you do not pass the project, you will be asked to resubmit the project until it passes.

HOW LONG IS THIS NANODEGREE PROGRAM?

The AI for Business Leaders Executive Program can be completed in 4-6 weeks, working 5 hours per week. Two full months of access to the learning environment is included in your enrollment in the Executive Program. See the Terms of Use for other policies around the terms of access to our Nanodegree programs.

FAQs Continued

HOW MUCH DOES THE EXECUTIVE PROGRAM COST?

The AI for Business Leaders Executive Program takes 4-6 weeks to complete, and costs $1599 (variable if purchased during a promotion) for two months access to the program. If you don't finish the program before your two months of access are over, you will shift over to a monthly subscription plan, which will be $399 per month if you purchased the program at full-price, and a variable amount if you purchased during a promotional period.

SOFTWARE AND HARDWARE

WHAT SOFTWARE AND VERSIONS WILL I NEED IN THIS PROGRAM?

You will use Google Sheets and Google Slides, or similar spreadsheet and slides software, and Google Forms to facilitate more practical exercises in the lessons and Capstone project. Jupyter Notebooks, which are embedded in the Udacity classroom, are used for some exercises and short explorations into code.

You will not be asked to write code in this course, so you will not need to have a Jupyter Notebook on your own computer.