UDACITY
FOR ENTERPRISE

AI for Business Leaders

EXECUTIVE PROGRAM SYLLABUS

THE SCHOOL OF BUSINESS

Overview

THIS EXECUTIVE PROGRAM WAS BUILT IN PARTNERSHIP WITH

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.

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.

Program Information

TIME
4-8 weeks
Study 5 hours/week

LEVEL
Practitioner

PREREQUISITES
Prior exposure to statistics and probability in an academic or professional setting, basic knowledge of Algebra, and direct experience being involved in business decision-making and technical/IT projects.

HARDWARE/SOFTWARE REQUIRED
Access to the internet and a 64-bit computer.

LEARN MORE ABOUT THIS NANODEGREE
Contact us at enterpriseNDs@udacity.com.

Learn with the Best

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.

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.

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.

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 1business 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.

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.

LESSON TITLE	LEARNING OUTCOMES
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.
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.

Course: AI for Business Leaders, continued

LESSON TITLE	LEARNING OUTCOMES
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.
WORKING WITH DATA	• Learn the importance and potential costs of labeling data for supervised learning. • Understand AI infrastructure requirements, and how to overcome common implementation hurdles. • Evaluate data readiness for implementation of particular ML/ AI capabilities in a business context, and use this to assess feasibility of use cases.
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 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.
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.
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.

Executive Program Overview

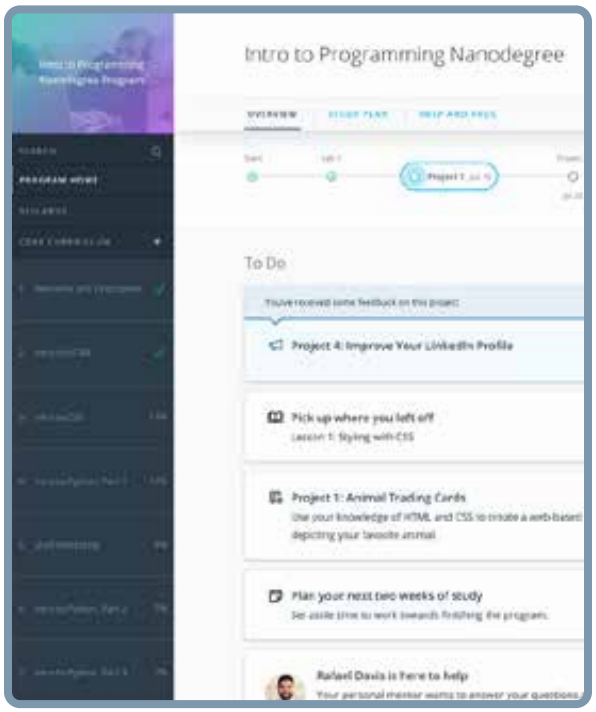
Project

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.

LESSON TITLE	LEARNING OUTCOMES
CAPSTONE WORK PART 1	• 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.
CAPSTONE WORK PART 2	• Analyze the proposed use cases' potential for success by assessing characteristics of the data sources needed.
CAPSTONE WORK PART 3	• Create mock architectures for a subset of these use cases and assess readiness for implementation of each AI/ML capability you are considering.
CAPSTONE WORK PART 4	• 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.
CAPSTONE WORK PART 5	• Create 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

Learners build new skills through industry-relevant projects and receive personalized feedback from our network of 900+ project reviewers. Our simple user interface makes it easy to submit projects as often as needed and receive unlimited feedback.

KNOWLEDGE

Answers to most questions can be found with Knowledge, our proprietary wiki. Learners can search questions asked by others and discover in real-time how to solve challenges.

LEARNER HUB

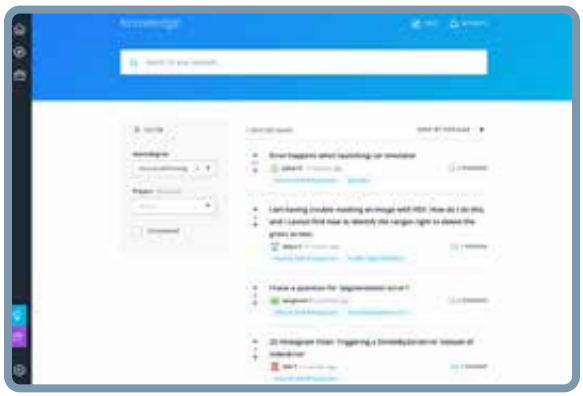
Learners leverage the power of community through a simple, yet powerful chat interface built within the classroom. Learner Hub connects learners with their technical mentor and fellow learners.

WORKSPACES

Learners can check the output and quality of their code by testing it on interactive workspaces that are integrated into the classroom.

QUIZZES

Understanding concepts learned during lessons is made simple with auto-graded quizzes. Learners can easily go back and brush up on concepts at anytime during the course.



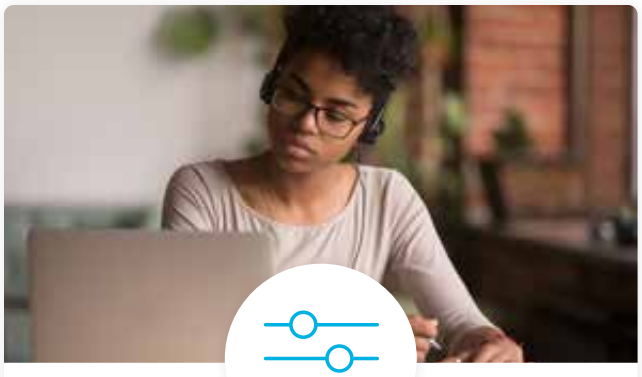
CUSTOM STUDY PLANS

Mentors create a custom study plan tailored to learners' needs. This plan keeps track of progress toward learner goals.

PROGRESS TRACKER

Personalized milestone reminders help learners stay on track and focused as they work to complete their Nanodegree program.

Our Executive Programs Include:



Pre-Assessments

Our in-depth workforce assessments identify your team's current level of knowledge in key areas. Results are used to generate custom learning paths designed to equip your workforce with the most applicable skill sets.

Dashboard & Progress Reports

Our interactive dashboard (enterprise management console) allows administrators to manage employee onboarding, track course progress, perform bulk enrollments and more.

Industry Validation & Reviews

Learners' progress and subject knowledge is tested and validated by industry experts and leaders from our advisory board. These in-depth reviews ensure your teams have achieved competency.

Real World Hands-on Projects

Through a series of rigorous, real-world projects, your employees learn and apply new techniques, analyze results, and produce actionable insights. Project portfolios demonstrate learners' growing proficiency and subject mastery.

Our Review Process

Real-life Reviewers for Real-life Projects

Real-world projects are at the core of our Nanodegree programs because hands-on learning is the best way to master a new skill. Receiving relevant feedback from an industry expert is a critical part of that learning process, and infinitely more useful than that from peers or automated grading systems. Udacity has a network of over 900 experienced project reviewers who provide personalized and timely feedback to help all learners succeed.

Vaibhav
UDACITY LEARNER

"I never felt overwhelmed while pursuing the Nanodegree program due to the valuable support of the reviewers, and now I am more confident in converting my ideas to reality."

now at
CODING VISIONS INFOTECH

All Learners Benefit From:

- Line-by-line feedback for coding projects
- Industry tips and best practices
- Advice on additional resources to research
- Unlimited submissions and feedback loops

How it Works

Real-world projects are integrated within the classroom experience, making for a seamless review process flow.

- Go through the lessons and work on the projects that follow
- Get help from your technical mentor, if needed
- Submit your project work
- Receive personalized feedback from the reviewer
- If the submission is not satisfactory, resubmit your project
- Continue submitting and receiving feedback from the reviewer until you successfully complete your project

About our Project Reviewers

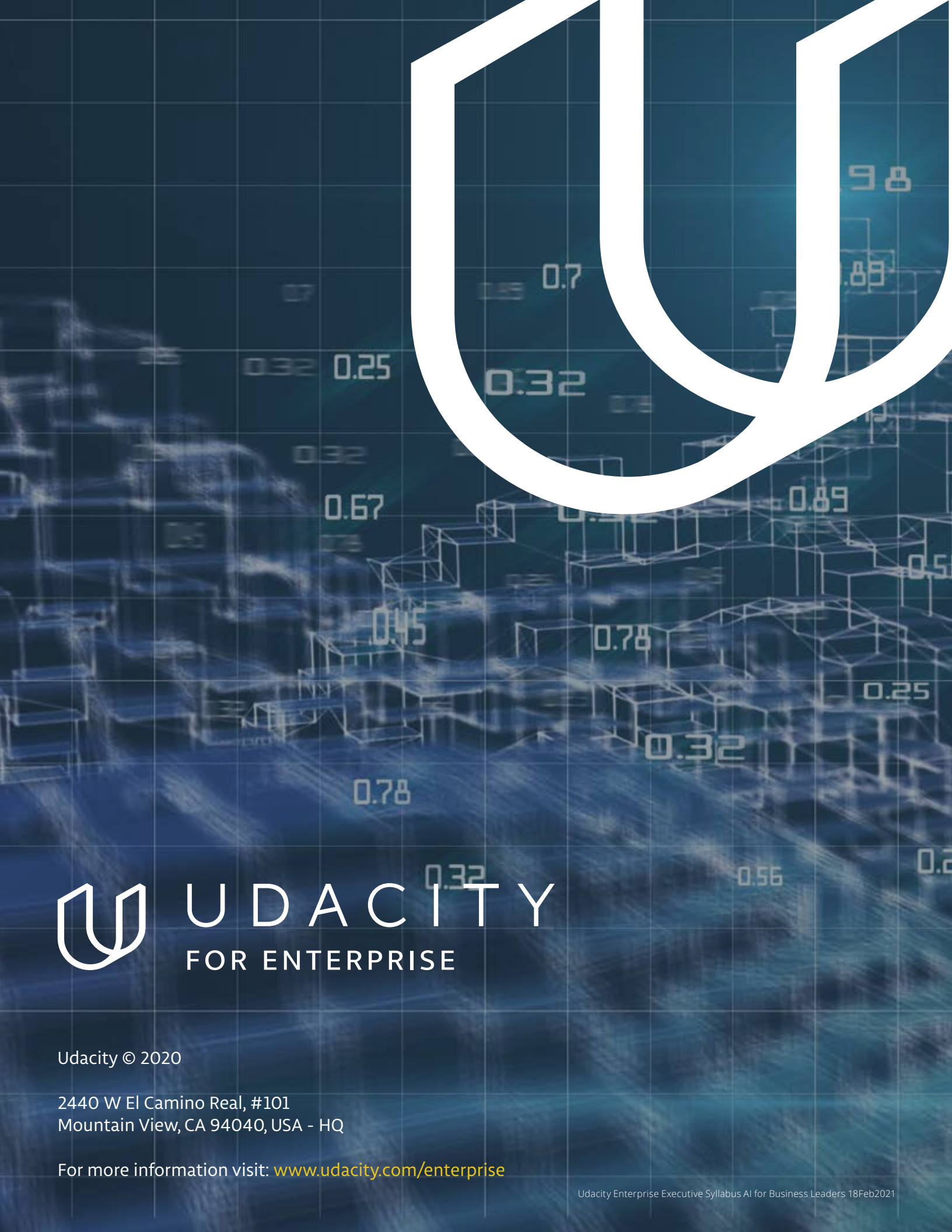
Our expert project reviewers are evaluated against the highest standards and graded based on learners' progress. **Here's how they measure up to ensure your success.**

900+
Expert Project Reviewers
Are hand-picked to provide detailed feedback on your project submissions.

1.8M
Projects Reviewed
Our reviewers have extensive experience in guiding learners through their course projects.

3
Hours Average Turnaround
You can resubmit your project on the same day for additional feedback.

4.85 /5
Average Reviewer Rating
Our learners love the quality of the feedback they receive from our experienced reviewers.



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For more information visit: www.udacity.com/enterprise