

Fluent in AI: Course Executive Design Doc

Executive Summary

There is a rapidly growing awareness that the coming 'AI Revolution' will fundamentally transform the workplace.

This course aims to help anyone - particularly those without a background in programming or statistics - develop the skills they need to become 'AI literate'.

It makes heavy use of analogies and practical examples, with a particular focus on empowering **line-of-business managers, analysts, marketers, executives, and other working professionals** who will work with - and help design and implement - AI solutions. The authors have a track record of producing highly engaging and accessible introductions to complex subjects.

This course is a guide to what you need to know about AI to partner with data scientists, work with AI applications, evaluate their efficacy, and help shape your organisation's AI strategy.

Course Structure & Performance Objectives

This self-paced, online course is composed of 12 modules - grouped into 4 sections, plus a primer (module 1) and a guide to next steps (module 12).

Each module consists of **animated slide or video content with voice narration**. The course contains a number of supplemental materials, guides, and worksheets available for download and future reference.

Participants should expect that the course will take 12 - 16 hours to complete, over 1 month.

Part 1: How and why AI will transform the future of work

Part 1 of this course equips participants with an intuitive understanding of how AI will be applied in the workplace. With reference to real-world examples, it will help them understand why AI applications are transforming the workplace, the conditions under which they are likely to be effective, and what they can't do. It emphasises that these can be extremely useful tools in the right circumstances, but that they also have hard limitations - and come with serious risks that need to be managed and mitigated. It ends by explaining why domain expertise is crucial for the effective implementation of any AI application.

Module 2 | AI's workplace applications: an intuitive introduction

Module 3 | Beyond the hype: opportunities, risks, and the future of work

Module 4 | Bridging the skills gap: why your domain knowledge matters

Part 2: Artificial intelligence and machine learning: what do you need to know?

Participants will be introduced to core the principles of AI and data science, with special focus on the machine learning methodologies central to them. They will be provided with a strong foundational understanding of these domains that will be practically useful to them in their careers. This course will empower participants to have productive conversations with technical experts, and share their informed opinions when partnering with them.

Module 5 | The big picture: thinking clearly about AI, machine learning, and data science

Module 6 | Demystifying machine learning: a code-free introduction to the technical principles

Part 3: The anatomy of an AI project

Participants will be equipped with an understanding of how AI applications are built, and how the machine learning models which generally power them are designed, developed, and tested. They will learn the key steps to rolling out a data project: who is involved, what their responsibilities are, and what processes they generally follow.

Module 7 | Inside data science teams: who develops AI applications?

Module 8 | How it's built: machine learning project workflows

Part 4: How to help shape your organisation's AI strategy

Participants will be shown how to add value to data projects by leveraging their domain-specific expertise. They will learn how to partner with data professionals, how to evaluate their work through common error metrics and evaluation criteria, and how to help anticipate and mitigate potential ethical concerns and risks. They will also be introduced to frameworks for evaluating predictions, recommendations and decisions made by AI applications.

Module 9a | Partnering with data science teams: why they need you - and how you can help

Module 9b | Error metrics and evaluation criteria: getting it wrong in the right way

Module 10 | AI ethics and risks: rogue machines or bad design?

Module 11 | Interpreting AI outputs: When can you trust a machine?

About the Authors

Marshall Lincoln is a data scientist, strategic advisor to a number of Silicon Valley organizations, and former Director of Business Intelligence at 8x8, Inc. Keyur Patel is an independent journalist and consultant, who has written about technology, economics, and financial services for many of the world's leading publications. Marshall and Keyur are co-founders of the Lucid Analytics Project, which conducts cross-industry research into the responsible use of artificial intelligence.

Course Modules

Introduction

Module 1 | The 'AI revolution': it's too important to be left to data scientists alone

An introduction to what AI typically means from a business perspective, challenging common misconceptions - and emphasizing the idea that effective implementation and use of AI systems is dependent on humans.

Part 1: How and why AI will transform the future of work

Module 2 | AI's workplace applications: an intuitive introduction

This module provides students with an intuitive introduction to AI applications in the workplace. It describes how, stripped down to their core, different AI applications can be framed as essentially doing the same thing: running data through a prediction engine in order to perform predefined tasks. It provides an accessible overview of potential inputs, how the prediction engine is built, and potential outputs, with reference to real-world examples.

The module then looks at AI applications through a different lens: the new capabilities they bring to the table - including automation of more complex tasks, deeper pattern detection, and inexpensive personalisation - and the business needs they can support. It ends by looking at the limitations of AI applications in the workplace, emphasizing that these technologies should not be thought of as a solution to every problem.

Module 3 | Beyond the hype: opportunities, risks, and the future of work

This module provides a wide-lens review of the predicted impact of AI applications in the workplace over the coming years. It takes a sober look at why organisations are under pressure to implement AI applications into their businesses, the opportunities this creates, and why using AI also encapsulates potentially serious risks which need to be managed and mitigated. It includes a discussion of what the AI revolution might mean for the future of human work - and touches upon the point that AI can be thought of as automating tasks, not jobs.

Module 4 | Bridging the skills gap: why your domain knowledge matters

This module will help participants understand the importance of domain expertise for any AI application. It explains one of the central ideas behind this course: that even with no technical knowledge of AI, individuals with pre-existing expertise in any core area of their sector can make a valuable contribution to AI implementation.

The module lays out one of the key challenges businesses face, which is an acute shortage of human skills - both a 'talent gap' and a 'knowledge gap'. It juxtaposes this challenge with the consequent opportunities for non-technical domain experts and other stakeholders to provide essential value along every step of design, development, and implementation of AI projects.

Part 2: Artificial intelligence and machine learning: what do you need to know?

Module 5 | The big picture: thinking clearly about AI, machine learning, and data science

The module will help participants clarify and declutter the terminology around the inter-related domains of artificial intelligence, machine learning, and data science. It equips participants with the foundational understanding of these domains that will be necessary for them to progress through the rest of the course. It aims to give participants confidence that while each of these domains can be extremely complex, gaining a cogent understanding of the big picture is well within their grasp.

It briefly looks at how the field of AI has evolved over the past few decades, touching upon why so many varied definitions of AI exist. It uses easily understandable examples to introduce the key differences between rule-based approaches to automation on the one hand, and statistical, 'learning'-based approaches on the other. It ends with a discussion of how data science differs from more traditional data analytics methodologies.

Module 6 | Demystifying machine learning: a code-free introduction to the technical principles

This module equips participants with a robust understanding of the technical mechanisms and processes at the heart of AI applications. It examines the key differences between machine learning and rule-based programming, and introduces different approaches to machine learning, the ideas behind deep learning, and the cost functions at the heart of machine learning algorithms.

Its objective is to enable participants to engage in meaningful discussions with technical experts and to have informed opinions, and to generally empower participants with an understanding of the technical basis around how ML works.

Part 3: The anatomy of an AI project

Module 7 | Inside data science teams: who develops AI applications?

This module introduces participants to the specific roles and responsibilities of data scientists and other related technical specialists. Participants are introduced to the common educational and vocational backgrounds from which data scientists and other specialists typically come, the various types of experts commonly found on data teams, and the roles these individuals respectively play in the design, development, and implementation of AI and other data projects.

In examining these roles and backgrounds, students are introduced to common skill sets and domain expertise that data specialists often lack - thus highlighting areas where data specialists are likely to be particularly reliant on their business partners (such as the individuals taking this course) to help round out these gaps.

Module 8 | How it's built: machine learning project workflows

The module presents a detailed walkthrough of the typical Machine Learning Development Lifecycle. It provides a broad overview of the standard processes and development workflows through which data specialists design, develop, and implement AI applications, and other data projects. Students will be equipped with a functional understanding of how projects are taken from start to finish, in order to better understand and anticipate their own role in helping to see projects through to successful fruition.

Special focus is placed on points of interlock between data science teams and the business partners and other stakeholders they often work with across the organization. Students are introduced to common pitfalls that arise during the design and development of machine learning projects - and the important role that they can play in helping to anticipate and avoid them.

Part 4: How to help shape your organisation's AI strategy

Module 9a | Partnering with data science teams: why they need you - and how you can help

This module helps line-of-business (LOB) managers, non-technical specialists, analysts, and other stakeholders to effectively and efficiently bring new AI applications into their organization.

The module provides a framework for participants to use when partnering with data teams, to define and set reasonable requirements, timelines, and expectations. It presents them with the tools to develop clearly-defined project plans, with measurable business outcomes - including how to properly define context, approach timelines and resource allocation.

Students will be introduced to the particular roles that they can (and should) play at each of the five key steps of AI projects: context setting, problem definition, preparing for development, development and testing, and project application. They will be shown how to best help data scientists and other specialists deliver solutions which provide maximum value to their organization.

Module 9b | Error metrics and evaluation criteria: getting it wrong in the right way

This module provides participants with a basic understanding of common error metrics and evaluation criteria that data scientists use to assess the performance of machine learning models.

A working familiarity with these terms will be of great value to participants, and improve their ability to communicate with data scientists and evaluate the efficacy of their work.

Module 10 | AI ethics and risks: rogue machines or bad design?

This module examines the ethical questions and risks that often arise as organisations implement AI, and helps participants understand how they can play a key role in anticipating and flagging potential pitfalls.

It describes how risks can arise both a) from the characteristics of AI technologies and the methodologies used to implement them; and b) from a lack of human understanding and preparedness. It introduces a framework for understanding these risks - and ways to help reduce their potential incidence and impact.

Module 11 | Interpreting AI outputs: When can you trust a machine?

This module provides a framework for evaluating predictions, recommendations and decisions made by AI applications. Students will learn to use this framework - in conjunction with their own domain expertise and newfound familiarity with AI - to make informed decisions when interacting with and relying on these applications.

Students will be introduced to two common scenarios, and provided with a framework to tackle them. First, what to do when something's gone wrong but you don't know why. Second, how to decide whether to rely upon machine outputs. The module also looks at how to evaluate third party AI solutions, and how to determine whether AI is an appropriate and effective potential solution for a new problem.

Conclusion

Module 12 | Next steps

This module aims to help participants make the transition from 'AI literate' to 'AI influencer'.

One of the prime aims of this course is to equip participants with actionable skill sets they can apply in the real world - and the confidence to apply those skills.

This module takes stock of what students have learned, highlights several key themes that have emerged throughout the course, and provides students with practical next steps and recommendations around how to get plugged into meaningful AI, machine learning, and other data science projects at their organizations.