# https://lh4.googleusercontent.com/YAkJn7VqqmAS8Vv8-JktR7RmdchyEDaNQUZSWUg3c1E1rKm9PSRoZwMP1pBLNrGNZ_sdrzO83F1Kg_RJHQis9STLyEw8TN12v56np9ZB7Qmwb_WAsfmGdxKFLcSFMUnIe-5ZJczX **BOOK TITLE: Hands-on Azure Automated Machine Learning**

# ***Subtitle:  A step by step approach to rapid model building***

# **AUTHOR: Jagannath Banerjee**



# **ABOUT THE AUTHOR**

In order for us to write your author bio, we need a few details. Please remember that your answers should be ***relevant*** to the book. Your bio helps sell the book so please *only* include *relevant* information:

|  |  |
| --- | --- |
| Full name | Jagannath Banerjee |
| What is your job title? | Senior Data Scientist |
| What is the name of the organization you work for? | Medline |
| What is your skillset (as relevant to the book)? | Machine Learning Modelling, Natural Language Processing, Demand Forecasting, Azure Cloud and Python |
| In which industry do you work? | Healthcare Supplies |
|  | Cards and Payments |
| What University degree do you have? | Sikkim Manipal Institute of Technology |
| What professional qualifications do you have? | * 5 year + hands on experience of implementing multiple data science projects. * Certified in Machine Learning from Coursera Stanford * Certified in Deep learning from Coursera deeplearning.ai |
| Please detail your *relevant* work history | * Working at leading manufacturer and distributor of medical supplies for over 2 years as Senior Data Scientist. * Prior, 12-year experience consulting and leading teams for 2 major Cards & Payments company in the capacity of Data Scientist, Data Analyst, Business Analyst and Team Lead. * Established 2 data science team from scratch. |
|  |  |
| *Relevant* projects you have worked on: |  |
| 1 | End to end machine learning application to build smart warehouse material audit system |
| 2 | Expected Time of Arrival (ETA) prediction for Backorders |
| 3 | Demand Forecasting for Materials |
| 4 | Predicting smart cross reference items with competitor items using NLP |
| 5 | End to end machine learning application for credit line increase |
| 6 | Merchant Funding & Billing modelling |
| 7 | Customer Churn Prediction |
| 8 | Customer Feedback Profiling |
| Would you like to include your social media details (optional)? | <https://www.linkedin.com/in/jagannath-banerjee/> |

# **Can you recommend a good technical reviewer for your book?**

[INSERT HERE: *Name & Contact details*] - TBD

# PART ONE: BACKGROUND RESEARCH

# **TARGET AUDIENCE**

Describe your target reader: what you assume about their knowledge of the topic, related topics, and technical topics generally; why they want to learn the technology; what will they want to do with it?

***Answer the following****:*

Who is your audience?

|  |  |
| --- | --- |
| 1 | The book is intended for business analysts, managers, data analyst and data scientist who want to create enterprise grade machine learning models without coding in Azure. |
| 2 | [What knowledge can we assume?]  Basic knowledge of Azure and Python |

What is important to them?

|  |  |
| --- | --- |
| **1** | **[INSERT HERE: What is the key problem/issue your audience is dealing with?]** |
| **2** | **[INSERT HERE: List 3 of the challenges your audience faces** |
| **3** | **[INSERT HERE: What are the need-to-know features?]** |

# **COMPETITIVE BOOK TITLES**

What is unique about your book? You will need to look at Amazon at books that have been well-received – what are the top three market-leading books that your book will compete with? Examine the description, table of contents and book reviews.

**List the books here**:

|  |  |
| --- | --- |
| 1 | Mastering Azure Machine Learning: Perform large-scale end-to-end advanced machine learning in the cloud with Microsoft Azure Machine Learning |
| 2 | [Practical Automated Machine Learning on Azure: Using Azure Machine Learning to Quickly Build AI Solutions](https://www.amazon.com/Practical-Automated-Machine-Learning-Azure/dp/149205559X/ref=sr_1_6?crid=16UD74O8RJTCF&dchild=1&keywords=azure+machine+learning&qid=1615868871&sprefix=Azure+machine%2Caps%2C223&sr=8-6) |
| 3 | [Microsoft Azure Machine Learning](https://www.amazon.com/Microsoft-Azure-Machine-Learning-Sumit/dp/1784390798/ref=sr_1_7?crid=16UD74O8RJTCF&dchild=1&keywords=azure+machine+learning&qid=1615868871&sprefix=Azure+machine%2Caps%2C223&sr=8-7) |

# 

Please ensure that you have looked at the **description**, **table of contents** and **book reviews** for each of these books.

PART TWO: BOOK OVERVIEW

# **OVERVIEW**

The long description is the device we use to describe the book on Amazon. Writing it is fairly systematic. Please answer the following questions using only one sentence.

|  |  |  |
| --- | --- | --- |
| **TEMPLATE** | **EXAMPLE:** Hands-On Blockchain Development with Hyperledger | **Your turn...** |
| Explain / Introduce the tech | Hyperledger Fabric and Hyperledger Composer enable organizations to create private, permissioned blockchain networks. |  |
| Why would a developer want to learn it? |  |  |
| Why should they buy this book? | Developers working with Blockchain will be able to put their knowledge to work with this practical guide. The book provides a hands-on approach to implementation and associated methodologies that will have you up-and-running, and productive in no time. | Developers working with [**X**] will be able to put their knowledge to work with this practical guide to [**Y**]. The book provides a hands-on approach to implementation and associated methodologies that will have you up-and-running, and productive in no time. |
| Product approach | Complete with step-by-step explanations of essential concepts, practical examples, and self-assessment questions, you will begin by exploring the blockchain evolution, including an overview of relevant blockchain technologies | Complete with step-by-step explanations of essential concepts, practical examples, and self-assessment questions, you will begin [**INSERT TEXT HERE** ] |
| Product Breakdown: In 2 sentences, describe the “journey” the book takes the reader on. Look at your section headings for help | You'll learn how to configure Hyperledger Fabric on a cloud platform, understand the architectural components of Hyperledger Fabric, and how they are configured to build private blockchain networks and the applications that connect to them. You'll then build a network and application from scratch, and learn how to implement smart contracts in chaincode. |  |
| By the end of this book you will... | By the end of this book, you will be able to build and deploy your own decentralized applications using Hyperledger, addressing the key pain points encountered in the blockchain life cycle. |  |
| Anything else you would like to add? |  |  |

# 

# **LEARNING OUTCOME - WHAT WILL THE READER LEARN AND DO?**

Consider the competing books; in particular the **description**, **table of contents** and **book reviews**. Decide what the key learning objectives will be for your book. List them below:

|  |  |
| --- | --- |
| 1 | [INSERT HERE] |
| 2 | [INSERT HERE] |
| 3 | [INSERT HERE] |
| 4 | [INSERT HERE] |
| 5 | [INSERT HERE] |

PART THREE: BOOK STRUCTURE

Using your **overview**, and **learning outcomes** now decide on the structure of your book? What are your start and endpoints?

# **GENERAL STRUCTURE**

**Divide the book into approximately 3 parts**. The **learning outcomes** you listed previously will help to inform these. These “parts” are a group of chapters that work toward the same goal. Each part will consist of 3-5 chapters. For example, A book on Building Machine Learning Systems with Python might be split into 5 parts as follows: “The Basics”; “Book Learning”; “Numbers, Forecasts and Recommendations”; “Sound and Vision” and finally, “Practical Matters”.

**WRITE YOUR PART HEADINGS BELOW:**

|  |  |
| --- | --- |
| 1 | Machine Learning, Automated Machine Learning & Azure Overview |
| 2 | Model Creation with Azure AutoML |
| 3 | Deep Dive into Azure |
| 4 | Model Deployment & Scaling |

# **CHAPTER OUTLINE**

**Each chapter should have a clear focus**. Each chapter title should clearly state what aspect of the overall topic the chapter deals with. Continuing the example of *Building Machine Learning Systems with Python* your section on “Book Learning” might be broken down into 4 chapters as follows: “Clustering – sorting text into groups”, “Topic Modeling – creating non-exclusive groups”; “Logistic Regression – evaluating text quality”; “Bayes Classification – sentiment analysis”. *PLEASE NOTE: Chapter titles appear on Amazon*

|  |  |
| --- | --- |
| **PART ONE:** Machine Learning, Automated Machine Learning & Azure Overview | |
| 1 | **General Introduction to Machine Learning & Automated machine Learning** |
| 2 | **Azure Machine Learning & AutoML Introduction** |
| 3 | **Azure Components Basics** |

|  |  |
| --- | --- |
| **PART TWO: Model Creation with Azure AutoML** | |
| 1 | **Classification, Regression and Time Series Forecasting for AutoML** |
| 2 | **Building First Classification Model with no Code** |
| 3 | **Building First Regression Model with no Code** |
| 4 | **Building First Time Series Forecasting with no Code** |
| 5 | [Insert your *chapter title here*] |

|  |  |
| --- | --- |
| **PART THREE: Deep Dive into Azure AutoML** | |
| 1 | **Deep Dive into Classification Model** |
| 2 | **Deep Dive into Regression Model** |
| 3 | **Deep Dive into Time Series** |
| 4 | [Insert your *chapter title here*] |
| 5 | [Insert your *chapter title here*] |

|  |  |
| --- | --- |
| **PART FOUR: Model Deployment and Scaling** | |
| 1 | **Building End to End Pipeline** |
| 2 | **Model Deployment using API** |
| 3 | **Scaling the Architecture** |
| 4 | **Data, Model and Experiment versioning** |
| 5 |  |

PART FOUR: DETAILED OUTLINE

# PART 1: [*Insert your* *part header here*]

[INSERT HERE: In **25** words, describe the objective of Part 1: What will the reader achieve on completion?]

### 

### **CHAPTER 1:** [Insert your *chapter title here*] - [Pages] pages

### 

### DESCRIPTION:

[INSERT HERE: **50-100** words, describing the content of the chapter and why that information will be useful.]

### Level: [*INSERT HERE: Basic, Intermediate, or Advanced with regard to the target readership of the book*]

### Main Chapter Headings (3-5 main chapter headings)

1. HEADING 1: [*INSERT HERE: Core topic*]
2. HEADING 2: [*INSERT HERE: Core topic*]
3. HEADING 3: [*INSERT HERE: Core topic*]
4. HEADING 4: [*INSERT HERE: Core topic*]
5. HEADING 5: [*INSERT HERE: Core topic*]

### Skills learned: *For each heading, insert what the reader will learn to DO in this chapter?*

1. SKILL 1: [*INSERT HERE: Core topic*]
2. SKILL 2: [*INSERT HERE: Core topic*]
3. SKILL 3: [*INSERT HERE: Core topic*]
4. SKILL 4: [*INSERT HERE: Core topic*]
5. SKILL 5: [*INSERT HERE: Core topic*]

### 

### **CHAPTER 2:** [Insert your *chapter title here*] - [Pages] pages

### 

### DESCRIPTION:

[INSERT HERE: **50-100** words, describing the content of the chapter]

### Level: [*INSERT HERE: Basic, Intermediate, or Advanced with regard to the target readership of the book*]

### Main Chapter Headings (3-5 main chapter headings)

1. HEADING 1: [*INSERT HERE: Core topic*]
2. HEADING 2: [*INSERT HERE: Core topic*]
3. HEADING 3: [*INSERT HERE: Core topic*]
4. HEADING 4: [*INSERT HERE: Core topic*]
5. HEADING 5: [*INSERT HERE: Core topic*]

### Skills learned: *For each heading, insert what the reader will learn to DO in this chapter?*

1. SKILL 1: [*INSERT HERE: Core topic*]
2. SKILL 2: [*INSERT HERE: Core topic*]
3. SKILL 3: [*INSERT HERE: Core topic*]
4. SKILL 4: [*INSERT HERE: Core topic*]
5. SKILL 5: [*INSERT HERE: Core topic*]

### 

# PART 2: [*Insert your* *part header here*]

[INSERT HERE: In **25** words, describe the objective of Part 2: What will the reader achieve on completion?]

### **CHAPTER 3:** [Insert your *chapter title here*] - [Pages] pages

### DESCRIPTION:

[INSERT HERE: **50-100** words, describing the content of the chapter]

### Level: [*INSERT HERE: Basic, Intermediate, or Advanced with regard to the target readership of the book*]

### Main Chapter Headings (3-5 main chapter headings)

1. HEADING 1: [*INSERT HERE: Core topic*]
2. HEADING 2: [*INSERT HERE: Core topic*]
3. HEADING 3: [*INSERT HERE: Core topic*]
4. HEADING 4: [*INSERT HERE: Core topic*]
5. HEADING 5: [*INSERT HERE: Core topic*]

### Skills learned: *For each heading, insert what the reader will learn to DO in this chapter?*

1. SKILL 1: [*INSERT HERE: Core topic*]
2. SKILL 2: [*INSERT HERE: Core topic*]
3. SKILL 3: [*INSERT HERE: Core topic*]
4. SKILL 4: [*INSERT HERE: Core topic*]
5. SKILL 5: [*INSERT HERE: Core topic*]

### 

### **CHAPTER 4:** [Insert your *chapter title here*] - [Pages] pages

### 

### DESCRIPTION:

[INSERT HERE: **50-100** words, describing the content of the chapter]

### Level: [*INSERT HERE: Basic, Intermediate, or Advanced with regard to the target readership of the book*]

### Main Chapter Headings (3-5 main chapter headings)

1. HEADING 1: [*INSERT HERE: Core topic*]
2. HEADING 2: [*INSERT HERE: Core topic*]
3. HEADING 3: [*INSERT HERE: Core topic*]
4. HEADING 4: [*INSERT HERE: Core topic*]
5. HEADING 5: [*INSERT HERE: Core topic*]

### Skills learned: *For each heading, insert what the reader will learn to DO in this chapter?*

1. SKILL 1: [*INSERT HERE: Core topic*]
2. SKILL 2: [*INSERT HERE: Core topic*]
3. SKILL 3: [*INSERT HERE: Core topic*]
4. SKILL 4: [*INSERT HERE: Core topic*]
5. SKILL 5: [*INSERT HERE: Core topic*]

### 

### **CHAPTER 5:** [Insert your *chapter title here*] - [Pages] pages

### 

### DESCRIPTION:

[INSERT HERE: **50-100** words, describing the content of the chapter]

### Level: [*INSERT HERE: Basic, Intermediate, or Advanced with regard to the target readership of the book*]

### Main Chapter Headings (3-5 main chapter headings)

1. HEADING 1: [*INSERT HERE: Core topic*]
2. HEADING 2: [*INSERT HERE: Core topic*]
3. HEADING 3: [*INSERT HERE: Core topic*]
4. HEADING 4: [*INSERT HERE: Core topic*]
5. HEADING 5: [*INSERT HERE: Core topic*]

### Skills learned: *For each heading, insert what the reader will learn to DO in this chapter?*

1. SKILL 1: [*INSERT HERE: Core topic*]
2. SKILL 2: [*INSERT HERE: Core topic*]
3. SKILL 3: [*INSERT HERE: Core topic*]
4. SKILL 4: [*INSERT HERE: Core topic*]
5. SKILL 5: [*INSERT HERE: Core topic*]

### 

### **CHAPTER 6:** [Insert your *chapter title here*] - [Pages] pages

### 

### DESCRIPTION:

[INSERT HERE: **50-100** words, describing the content of the chapter]

### Level: [*INSERT HERE: Basic, Intermediate, or Advanced with regard to the target readership of the book*]

### Main Chapter Headings (3-5 main chapter headings)

1. HEADING 1: [*INSERT HERE: Core topic*]
2. HEADING 2: [*INSERT HERE: Core topic*]
3. HEADING 3: [*INSERT HERE: Core topic*]
4. HEADING 4: [*INSERT HERE: Core topic*]
5. HEADING 5: [*INSERT HERE: Core topic*]

### Skills learned: *For each heading, insert what the reader will learn to DO in this chapter?*

1. SKILL 1: [*INSERT HERE: Core topic*]
2. SKILL 2: [*INSERT HERE: Core topic*]
3. SKILL 3: [*INSERT HERE: Core topic*]
4. SKILL 4: [*INSERT HERE: Core topic*]
5. SKILL 5: [*INSERT HERE: Core topic*]

# PART 3: [*Insert your* *part header here*]

[INSERT HERE: In **25** words, describe the objective of Part 3: What will the reader achieve on completion?]

### **CHAPTER 7:** [Insert your *chapter title here*] - [Pages] pages

### 

### DESCRIPTION:

[INSERT HERE: **50-100** words, describing the content of the chapter]

### Level: [*INSERT HERE: Basic, Intermediate, or Advanced with regard to the target readership of the book*]

### Main Chapter Headings (3-5 main chapter headings)

1. HEADING 1: [*INSERT HERE: Core topic*]
2. HEADING 2: [*INSERT HERE: Core topic*]
3. HEADING 3: [*INSERT HERE: Core topic*]
4. HEADING 4: [*INSERT HERE: Core topic*]
5. HEADING 5: [*INSERT HERE: Core topic*]

### Skills learned: *For each heading, insert what the reader will learn to DO in this chapter?*

1. SKILL 1: [*INSERT HERE: Core topic*]
2. SKILL 2: [*INSERT HERE: Core topic*]
3. SKILL 3: [*INSERT HERE: Core topic*]
4. SKILL 4: [*INSERT HERE: Core topic*]
5. SKILL 5: [*INSERT HERE: Core topic*]

### 

### **CHAPTER 8:** [Insert your *chapter title here*] - [Pages] pages

### 

### DESCRIPTION:

[INSERT HERE: **50-100** words, describing the content of the chapter]

### Level: [*INSERT HERE: Basic, Intermediate, or Advanced with regard to the target readership of the book*]

### Main Chapter Headings (3-5 main chapter headings)

1. HEADING 1: [*INSERT HERE: Core topic*]
2. HEADING 2: [*INSERT HERE: Core topic*]
3. HEADING 3: [*INSERT HERE: Core topic*]
4. HEADING 4: [*INSERT HERE: Core topic*]
5. HEADING 5: [*INSERT HERE: Core topic*]

### Skills learned: *For each heading, insert what the reader will learn to DO in this chapter?*

1. SKILL 1: [*INSERT HERE: Core topic*]
2. SKILL 2: [*INSERT HERE: Core topic*]
3. SKILL 3: [*INSERT HERE: Core topic*]
4. SKILL 4: [*INSERT HERE: Core topic*]
5. SKILL 5: [*INSERT HERE: Core topic*]

### 

### **CHAPTER 9:** [Insert your *chapter title here*] - [Pages] pages

### 

### DESCRIPTION:

[INSERT HERE: **50-100** words, describing the content of the chapter]

### Level: [*INSERT HERE: Basic, Intermediate, or Advanced with regard to the target readership of the book*]

### Main Chapter Headings (3-5 main chapter headings)

1. HEADING 1: [*INSERT HERE: Core topic*]
2. HEADING 2: [*INSERT HERE: Core topic*]
3. HEADING 3: [*INSERT HERE: Core topic*]
4. HEADING 4: [*INSERT HERE: Core topic*]
5. HEADING 5: [*INSERT HERE: Core topic*]

### Skills learned: *For each heading, insert what the reader will learn to DO in this chapter?*

1. SKILL 1: [*INSERT HERE: Core topic*]
2. SKILL 2: [*INSERT HERE: Core topic*]
3. SKILL 3: [*INSERT HERE: Core topic*]
4. SKILL 4: [*INSERT HERE: Core topic*]
5. SKILL 5: [*INSERT HERE: Core topic*]

### 

### **CHAPTER 10:** [Insert your *chapter title here*] - [Pages] pages

### 

### DESCRIPTION:

[INSERT HERE: **50-100** words, describing the content of the chapter]

### Level: [*INSERT HERE: Basic, Intermediate, or Advanced with regard to the target readership of the book*]

### Main Chapter Headings (3-5 main chapter headings)

1. HEADING 1: [*INSERT HERE: Core topic*]
2. HEADING 2: [*INSERT HERE: Core topic*]
3. HEADING 3: [*INSERT HERE: Core topic*]
4. HEADING 4: [*INSERT HERE: Core topic*]
5. HEADING 5: [*INSERT HERE: Core topic*]

### Skills learned: *For each heading, insert what the reader will learn to DO in this chapter?*

1. SKILL 1: [*INSERT HERE: Core topic*]
2. SKILL 2: [*INSERT HERE: Core topic*]
3. SKILL 3: [*INSERT HERE: Core topic*]
4. SKILL 4: [*INSERT HERE: Core topic*]
5. SKILL 5: [*INSERT HERE: Core topic*]

### 

### **CHAPTER *n*:** [Insert your *chapter title here*] - [Pages] pages

### 

### DESCRIPTION:

[INSERT HERE: **50-100** words, describing the content of the chapter]

### Level: [*INSERT HERE: Basic, Intermediate, or Advanced with regard to the target readership of the book*]

### Main Chapter Headings (3-5 main chapter headings)

1. HEADING 1: [*INSERT HERE: Core topic*]
2. HEADING 2: [*INSERT HERE: Core topic*]
3. HEADING 3: [*INSERT HERE: Core topic*]
4. HEADING 4: [*INSERT HERE: Core topic*]
5. HEADING 5: [*INSERT HERE: Core topic*]

### Skills learned: *For each heading, insert what the reader will learn to DO in this chapter?*

1. SKILL 1: [*INSERT HERE: Core topic*]
2. SKILL 2: [*INSERT HERE: Core topic*]
3. SKILL 3: [*INSERT HERE: Core topic*]
4. SKILL 4: [*INSERT HERE: Core topic*]
5. SKILL 5: [*INSERT HERE: Core topic*]

**Appendix**

**General Introduction to Machine Learning & Automated machine Learning**

* Overview of Machine Learning
* Machine Learning Life Cycle
* Overview of AutoML
* Advantages of using AutoML
* Use case for AutoML
* Current AutoML Platform

**Azure Machine Learning & AutoML Introduction**

* Introduction to Azure ML landscape
* Introduction to Azure AutoML
* Scope of Azure AutoML
* Advantage of Azure AutoML

**Azure Components Basics**

* Creating free Azure Account
* Creating Machine Learning Workspace
* Introduction to various Azure ML Components
  + Workspace
  + Compute
  + Dataset & Datastores
  + Environments
  + Experiments
  + Run & Run Configuration
  + Snapshots
  + Logging
  + Git Tracking & Integration
  + Model Registry
  + Deployment
  + Endpoints

**Machine Learning Basics**

* Classification - Introduction & model supported by AutoML
* Regression - Introduction & model supported by AutoML
* Time Series - Introduction & model supported by AutoML

**Getting Started with Azure AutoML**

* Automated machine Learning with coding in Python
  + Building First Classification Model
  + Building First Regression Model
  + Building First Time Series Model

* Automated Machine Learning with no coding
  + Building First Classification Model
  + Building First Regression Model
  + Building First Time Series Model

**Deep Dive into Classification Model**

* Select your experiment type: Classification
* Data source, formats, and fetch data
* Choose your compute target: local or remote
* Automated machine learning experiment settings
* Run an automated machine learning experiment
* Explore model metrics
* Register and deploy model
* Configuring the API
* Consuming the model

**Deep Dive into Regression Model**

* Select your experiment type: Regression
* Data source, formats, and fetch data
* Choose your compute target: local or remote
* Automated machine learning experiment settings
* Run an automated machine learning experiment
* Explore model metrics
* Register and deploy model
* Configuring the API
* Consuming the model

**Deep Dive into Time Series**

* Select your experiment type: Time Series Forecasting
* Data source, formats, and fetch data
* Choose your compute target: local or remote
* Automated machine learning experiment settings
* Run an automated machine learning experiment
* Explore model metrics
* Register and deploy model
* Configuring the API
* Consuming the model

MLOps in Azure

* Version the data
* Version the experiment
* Version the model
* Version the API

Building an end to end automated Machine Learning Pipeline

* Setup up data in blob
* Auto trigger ML Pipeline
* Process real-time response
* Save response in SQL database

Scaling the Architecture

* Adding more powerful compute
* Distributed Training
* Monitoring the logs

<https://docs.microsoft.com/en-us/azure/machine-learning/concept-automated-ml>

<https://docs.microsoft.com/en-us/azure/machine-learning/tutorial-automated-ml-forecast>

<https://docs.microsoft.com/en-us/azure/machine-learning/how-to-use-automated-ml-for-ml-models>