Introduction to AI, Machine Learning & Deep Learning Boot Camp - TTAI3005

Gain the Hands-On essential skills required to confidently apply AI, machine learning, and deep learning in practical settings

Duration: 3 Days
Skill Level: Intermediate
Available Format: Instructor-Led Online ; On Public Schedule

Launch into the dynamic world of AI with our Introduction to AI, Machine Learning & Deep Learning Boot Camp, perfect for those getting started in the field seeking comprehensive insights. This three-day, introductory course strikes the perfect balance between foundational theory and practical application, providing you with a solid overview of AI's core principles, the mechanics behind ML algorithms, and the innovative capabilities of Deep Learning systems.

What You'll Learn

Overview

Launch into the dynamic world of AI with our Introduction to AI, Machine Learning & Deep Learning Boot Camp, perfect for those getting started in the field seeking comprehensive insights. This three-day, introductory course strikes the perfect balance between foundational theory and practical application, providing you with a solid overview of AI's core principles, the mechanics behind ML algorithms, and the innovative capabilities of Deep Learning systems. Through a blend of engaging lectures and direct, hands-on experience, you'll be introduced to the fascinating world of AI and its potential to revolutionize the way we solve problems and make decisions.

Under the mentorship of an industry expert, you'll dive into 50% practical lab sessions, where real-time feedback and guidance are provided to enhance your learning curve and confidence. This immersive approach is designed to build job-ready skills in areas such as data preprocessing, model development, and neural network implementation to

a foundational level. By fostering an environment where you can apply concepts in real-world scenarios, the boot camp aims to equip you with valuable skills and insights, preparing you to navigate the AI landscape effectively and contribute to your organization with cutting-edge solutions.

Objectives

This course combines engaging instructor-led presentations and useful demonstrations with valuable hands-on labs and engaging group activities. Throughout the course you'll explore:

- **Foundations of AI, ML, and DL:** Introduce the core principles behind artificial intelligence, machine learning, and deep learning, highlighting their roles in powering modern technologies.
- **Data Skills for AI:** Equip participants with essential skills to manipulate and analyze data, preparing the groundwork for its application in AI and deep learning models.
- **Basic Machine Learning Concepts:** Cover the basics of machine learning, including understanding different algorithms and their applications, to build a strong foundation for advancing into deep learning.
- **Introduction to Deep Learning:** Familiarize participants with the fundamentals of deep learning, including the architecture of neural networks and how they learn from data.
- **Ethical AI Deployment:** Instill an understanding of the ethical considerations in AI, with a focus on developing and deploying AI and deep learning models responsibly.
- **Applying Deep Learning:** Provide a basic framework for applying deep learning to real-world problems, encouraging participants to think critically about where and how to implement these models effectively.

If your team requires different topics, additional skills or a custom approach, our team will collaborate with you to adjust the course to focus on your specific learning objectives and goals.

Audience

This intermediate and beyond level course is geared for experienced professionals aiming to apply machine learning and deep learning to solve complex business problems, including product managers, data analysts, data scientists, developers, team leads, and other technical stakeholders who want to leverage deep learning for strategic decisions. It's also suited for those who are in roles that require them to work with data, understand patterns, or make predictions, such as business analysts, software developers, and researchers. Python experience is required.

Pre-Requisites

To ensure a smooth learning experience and maximize the benefits of attending this course, you should have the following prerequisite skills:

- Attendees should have some familiarity with Enterprise IT as well as a general (high-level) understanding of systems architecture, as well as some knowledge of the business drivers that might be able to take advantage of applying data science, AI and machine learning.
- Python programming is required, as the labs revolve around leveraging Python. Basic skills in handling and manipulating data using Python libraries such as NumPy and Pandas would be advantageous.
- Familiarity with concepts such as variables, functions, control flow, and data structures will ensure a smooth learning experience.
- While the course will introduce deep learning from scratch, having a grasp of basic machine learning concepts will be beneficial.
- Some understanding of algebra and basic calculus will be helpful in comprehending the mathematical components of deep learning.

Take Before: Students should have incoming practical skills aligned with those in the course(s) below, or should have attended the following course(s) as a pre-requisite:

- **TTPS4873** Fast Track to Python in Data Science (3 days)

Next Steps / Follow-on Courses: We offer a wide variety of follow-on courses and learning paths for Python, Big Data, Machine Learning, Generative AI, AI for Business, GPT, Applied AI, Azure OpenAI, Google BARD, AI for developers, testers, data analytics, deep learning, programming, intelligent automation and many other related topics. Please see our catalog for the current Python, Data Science, AI & Machine Learning Courses, Learning Journeys & Skills Roadmaps, list courses and programs.

TTPS4873   Fast Track to Python for Data Science and/or Machine Learning

Agenda

Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We'll work with you to tune this course and level of coverage to target the skills you need most. Topics, agenda and labs are subject to change, and may adjust during live delivery based on audience skill level, interests and participation.

Day 1: Foundations of Data Science and AI

Exploring Data Science & Its Role In AI

- Discover how data science shapes the foundation of AI.
- Data science: The modern alchemy
- Bridging data and AI innovations
- Pioneering technologies behind data science
- From data chaos to strategic insights
- Industry transformations through data science
- Hands-on Lab

Getting Started with AI

- Explore the evolution, impact, and ethics of AI.
- AI's journey from dreams to reality
- AI's transformative role across sectors
- Clarifying AI, ML, and DL distinctions
- Ethical AI: Principles and importance
- Predicting the future with AI
- Hands-on Lab

Machine Learning Basics

- Delve into the core concepts and applications of ML.
- Exploring the potential of machine learning
- From data to decisions: ML's role
- Algorithm overview: ML's building blocks
- Preparing your data for ML
- The pathway to building ML models
- Hands-on Lab

Day 2: Next-Level Machine Learning and Introduction to Deep Learning

Next-Level Machine Learning

- Enhance your ML skills with advanced techniques and algorithms.
- Beyond basics: Advanced classification

- Insights into clustering and regression
- The magic of dimensionality reduction
- Powering accuracy with ensemble methods
- Exploring advanced ML tools
- Hands-on Lab

Entering the World of Deep Learning

- Unravel the complexities and applications of deep learning.
- Deep Learning: Beyond traditional ML
- Architectures of neural networks
- Deep learning in action: Case studies
- Navigating deep learning tools and frameworks
- Deep learning's societal impacts
- Hands-on Lab

Practical Deep Learning

- Apply deep learning to real-world problems and datasets.
- Crafting solutions with CNNs
- Sequential data and RNNs
- Unveiling the power of GANs
- Deep learning optimization techniques
- Deploying deep learning models
- Lab: Deep Learning Application (1 hour): Implement a CNN for image recognition.

Day 3: Specialized Applications of AI and Culmination in Deep Learning

The Language of AI: Natural Language Processing

- Dive into NLP to understand how AI interprets human language.
- Core concepts of NLP
- Techniques for text processing
- Real-world NLP applications
- Popular NLP tools and libraries
- Overcoming common NLP challenges

- Hands-on Lab

Seeing and Hearing: AI in Image and Audio Processing

- Explore how AI understands our world through vision and sound.
- Introduction to computer vision
- Basics of audio and speech recognition
- Practical AI applications in media
- Tools for processing images and audio
- Future trends in visual and auditory processing
- Hands-on Lab

Mastering AI: Implementing and Advancing with Deep Learning

- Bringing everything together, focusing on deep learning's pivotal role in AI.
- Strategies for deploying AI and deep learning models
- Integrating deep learning in real-world applications
- Advanced deep learning techniques and trends
- Ethical considerations and future of deep learning
- Continuing your deep learning journey

Bonus Project / Time Permitting

- Hands-on guided workshop: Apply deep learning models to solve a real problem, encapsulating the skills learned throughout the course.

Bonus Content / Time Permitting

Bonus: Getting Started with Deep Reinforcement Learning (2 hours)

- Explore the fundamentals of deep reinforcement learning, showing how AI systems learn from interactions to make decisions, tailored for beginners interested in the next frontier

of deep learning.

Bonus: Exploring AI Ethics and Bias Mitigation

- Explore the ethical considerations of AI technologies and practical approaches for identifying and mitigating bias in AI models.

All applicable course software, digital courseware files or course notes, labs, data sets and solutions, live coaching support channels and rich extended learning and post training resources are provided for you in our "easy access, no install required" online **Learning Experience Platform (LXP),** remote lab and content environment. Access periods vary by course. We'll collaborate with you to ensure your team is set up and ready to go well in advance of the class. Please inquire about set up details and options for your specific course of interest.

For More Information

Please contact us or call 844-475-4559 toll free for more information about our training services (instructor-led, self-paced or blended), coaching and mentoring services, public course enrollment or questions, partner programs, courseware licensing options and more.