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TriveraTech ®
TECHNOLOGY TRAINING

AI, Machine Learning & Deep Learning SkillJourney

Hands-on Natural Language Processing (NLP) and Generative AI Boot Camp (TTAI3030)

NLP-Driven AI Mastery: Craft Your Own GPT, Analyze Text, and Explore AI Artistry – A Comprehensive AI Skill-Building Course

Course Snapshot

- **Course: Hands-on Natural Language Processing (NLP) and Generative AI Boot Camp (TTAI3030)**
- **Duration**: 3 days
- **Audience & Skill Level:** This intermediate-level course is geared for experienced developers, analysts or others (with Python proficiency and deep learning experience) who are intending to start using learning about and working with NLP and Generative AI.
- **Format / Hands-on:** This course combines engaging instructor-led presentations and practical demonstrations with hands-on programming exercises, challenge labs, use case exploration and engaging group activities. Student machines are required.
- **Flexible Delivery Options**: This course can be delivered for your team or organization **online-live (virtual)**, **onsite in-person, self-paced** or across our immersive **blended learning experience platform (LXP).**
- **Public Schedule**: This course is currently available on our Public Open Enrollment Schedule.
- **Customizable**: We're flexible! This course agenda, topics, labs, hours and delivery modalities can be adjusted to target your specific training skills objectives, tools and learning goals. Please ask for details.

Description

The **Hands-on Natural Language Processing (NLP) and Generative AI Boot Camp** is an immersive, three-day course that serves as your comprehensive guide to building machines that can read, interpret, and even generate human language. This unique interdisciplinary field blends computational linguistics with artificial intelligence, allowing machines to understand, interpret, generate, and interact using human language. In a data-centric world, mastering NLP and Generative AI skills gives you a competitive edge, enabling the development of sophisticated applications like voice assistants, text analyzers, chatbots, and more, with an added flair of creativity and human-like interaction.

Our expansive curriculum encompasses a wide array of NLP and Generative AI topics. Beginning with an introduction to NLP, feature extraction, and the basics of Generative AI, the course progresses to hands-on development of text classifiers and exploration of web scraping, APIs, and AI assistants. Delving deeper, you'll explore topic modeling, vector representations, advanced text manipulation, sentiment analysis, and the innovative world of text and image generation using AI. Half of your time will be dedicated to practical labs, where you'll apply your knowledge in real-world scenarios—creating pipelines, text classifiers, working with web data, analyzing sentiment, and experimenting with AI-generated content. These labs mirror actual industry challenges, equipping you with the necessary skills to efficiently process, analyze, and generate text data. Time permitting, you'll engage with modern tools like Python libraries, the OpenAI GPT-4 API, TensorFlow, and others in a series of hands-on exercises.

By the end of this course, you'll have a comprehensive understanding of both NLP and Generative AI. You'll leave equipped with practical skills and insights to process and analyze text data, implement advanced text representations, apply machine learning algorithms for text data, build simple chatbots, and creatively use AI for generating text and images. You'll be adept at harnessing these technologies to gain valuable insights from text data, enhance business processes, and improve user interactions with automated text-based and generative AI systems.

Hands-on: Build a Unique GPT Assistant from Scratch

During the course, one of the projects you will complete involves harnessing the power of OpenAI APIs to create a unique GPT assistant, which we call "MeGPT." This project is not just about programming; it's an exercise in creativity and applied NLP. You'll start from scratch, building your assistant's foundation, and then meticulously train it using a dataset tailored to your specific needs and interests. As you progress, you will learn to refine its responses, ensuring accuracy and relevance. This

hands-on experience is invaluable for budding data analysts and data scientists, offering a real-world application of the skills you are learning. By the end of this project, your "MeGPT" will not only respond to queries but also reflect a level of customization that makes it uniquely yours, showcasing your proficiency in both data analytics and natural language processing.

Learning Objectives

This course combines engaging instructor-led presentations, insightful demonstrations, real-world hands-on labs and engaging group activities. Throughout the course you'll:

- Master the fundamentals of Natural Language Processing (NLP) and Generative AI, understanding their role in interpreting and generating human language for valuable insights.
- Develop the ability to transform raw text into structured formats and generate creative content using AI, enhancing machine understanding and human interaction.
- Discover how to collect and utilize web data, navigate through semi-structured data sources, and integrate AI APIs for enriched project capabilities.
- Learn how to implement sentiment analysis, topic modeling, and AI-generated content to extract meaning from text data, identify trends, and add creative dimensions.
- Gain proficiency in applying machine learning, deep learning, and generative AI techniques to text data for tasks like classification, prediction, and creative generation.
- Learn to analyze text sentiment, train emotion detectors, and interpret results, while also exploring the creative potential of AI in generating novel text and images, providing new ways to gauge public opinion, understand customer feedback, and enhance user engagement.

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 in an **intermediate and beyond-level** course is geared for experienced Python developers looking to delve into the exciting field of Natural Language Processing. It is ideally suited for roles such as data analysts, data scientists, machine learning engineers, or anyone working with text data and seeking to extract valuable insights from it. If you're in a role where you're tasked with analyzing customer sentiment, building chatbots, or dealing with large volumes of text data, this course will provide you with practical, hands-on skills that you can apply right away.

Pre-Requisites

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

- Proficiency in Python: As the course involves Python for hands-on labs and examples, attendees should have a good understanding of Python programming, including data structures, control flow, and basic coding practices.
- Basic knowledge of Machine Learning: Understanding the principles of machine learning, including concepts like training and testing splits, model evaluation, and overfitting, will be beneficial.
- Familiarity with Linear Algebra and Statistics: Some fundamental concepts in linear algebra (such as vectors and matrices) and statistics (mean, median, standard deviation, etc.) are essential for understanding the theory behind NLP.
- Experience with any Data Analysis Libraries: Having experience with Python data analysis libraries like Pandas, NumPy, or Matplotlib can be beneficial as they are often used in the preprocessing and analysis of text data.
- General Understanding of Natural Language Processing: While not strictly necessary, having a basic understanding of what NLP is and its potential applications can help attendees contextualize the learnings better.

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 for Data Science
- TTML5503   Introduction to AI, AI Programming and Machine Learning
- TTML5506-P Machine Learning Essentials with Python

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

Enhanced Learning Services: Please also ask about our robust Learning Experience Platform (LXP), Skills Assessment & Skills Prep Services, Skills Immersion Programs & Camps, Coaching and Mentoring Services and Extended Learning Support programs.

Course Topics / 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.

1. **Introduction to Natural Language Processing**
- Overview of NLP in Data Analytics
- Historical Perspective and Evolution of NLP

2. **Feature Extraction Methods**
- Importance in Data Analytics
- Types of Data: Structured vs Unstructured Data
- Cleaning Text Data: Techniques and Best Practices
- Feature Extraction from Texts: Methods and Tools
- Finding Text Similarity: Applications in Data Analytics

3. **Developing a Text Classifier**
- Role in Data Analytics and AI
- Machine Learning: Overview of ML in NLP
- Supervised Learning: Concepts and Applications
- Developing a Text Classifier: Step-by-Step Guide
- Building Pipelines for NLP Projects: Design and Implementation
- Saving and Loading Models: Techniques and Tools

4. **Generative AI (APIs)**
- Fundamentals of Generative AI
- Text (OpenAI Text APIs): Usage and Case Studies
- Vision (OpenAI Vision APIs): Applications in Image Recognition
- Text to Speech (OpenAI APIs): Technologies and Use Cases
- Speech to Text: Conversion Techniques
- Overview of Key Points

5. **Creating Assistants**
- The Rise of AI Assistants
- GPTs (in the Browser): Implementation and Examples

- Custom Assistants with APIs: Building Tailored Solutions
- Live Search (Bing): Integration and Application
- Code Generation" Techniques and Tools
- Image Generation: Exploring Creative AI
- Insights and Future Trends

6. **Vector Representation**
- Importance in Data Representation
- What Is a Vector?: Definition and Applications

7. **Text Generation and Summarization**
- Overview of Text Generation
- Generating Text with Markov Chains: Methodology and Use Cases
- Text Summarization: Techniques and Tools
- Key Input Parameters for TextRank: Algorithmic Insights
- Recent Developments in Text Generation and Summarization: State-of-the-Art Techniques
- Practical Challenges in Extractive Summarization: Addressing Real-World Issues

8. **Sentiment Analysis**
- Relevance in Market Research
- Tools Used for Sentiment Analysis (TextBlob and NLTK): Comparative Analysis
- The textblob library: Features and Use Cases
- Understanding Data for Sentiment Analysis: Analytical Techniques
- Training Sentiment Models:
- Strategies and Best Practices

Setup Made Simple! Learning Experience Platform (LXP)

All applicable course software, digital courseware files or course notes, labs, data sets and solutions, live coaching support channels, CodeCoach.AI anytime tutor access, and rich extended learning and post training resources are provided for you in our "easy access, single source, 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

For more information about our training services (instructor-led, self-paced or blended), collaborative coaching services, robust Learning Experience Platform (LXP), Career Experiences, public course schedule, partner programs, courseware licensing options or to see our complete list of course offerings, solutions and special offers, please visit us at **www.triveratech.com**, email **Info@triveratech.com** or call us toll free at **844-475-4559.** Our pricing and services are always satisfaction guaranteed.

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