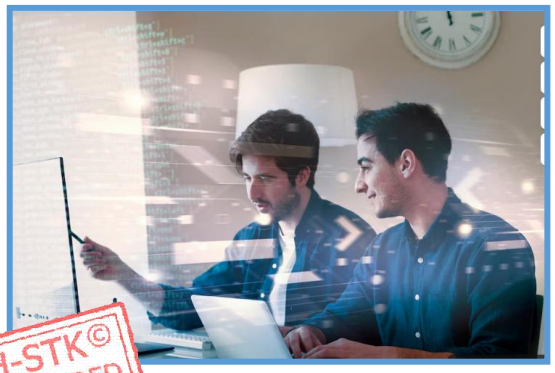
COURSE OVERVIEW IT0019
How to Build Your Own Chatbot using Python

Course Title
How to Build Your Own Chatbot using Python



Course Date/Venue
Session 1: June 30-July 04, 2025/Glasshouse Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE
Session 2: October 26-30, 2025/Tamra Meeting Room, Al Bandar Rotana Creek, Dubai UAE

Course Reference
IT0019

Course Duration/Credits
Five days/3.0 CEUs/30 PDHs

Course Objectives

This practical and highly-interactive course includes real-life case studies and exercises where participants will be engaged in a series of interactive small groups and class workshops.

This course is designed to provide participants with a detailed and up-to-date overview of How to Build Your Own Chatbot using Python. It covers the types of chatbots and its applications in various industries; setting up python for chatbot development and the basics of natural language processing (NLP); the rule-based chatbot logic, using if-else conditions for chatbot responses and creating a simple chatbot with python dictionaries; how chatbots learn from data, choosing the right dataset for training and chatbot response generation; and the sentence structure, word embeddings, vectorizing text for machine learning and context understanding in chatbots.

Further, the course will also discuss the building of chatbot using NLTK and spaCy, implementing bag-of-words (BoW) & TF-IDF and intent recognition for chatbots; collecting and preparing chatbot training data, cleaning and preprocessing conversational datasets; using prebuilt datasets for chatbot training and annotating datasets for intent recognition; the traditional ML and deep learning; and implementing recurrent neural networks (RNNs) for chatbots.

During this interactive course, participants will learn the use of LSTM and GRU for context-aware chatbots, transformer-based chatbots and BERT for question answering; choosing the right model for chatbot, using hugging face transformers for chatbot training and deploying a chatbot using a pretrained transformer model; adding context and memory to chatbots, speech-to-text and voice-enabled chatbots and integrating chatbots with APIs and databases; deploying chatbots on messaging platforms and security and ethical considerations in chatbots; and the advanced NLP techniques for better responses, multi-language chatbot development and AI-powered personalization in chatbots.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain a comprehensive knowledge on building your own chatbot using python
- Identify the types of chatbots and its applications in various industries
- Set up python for chatbot development and explain the basics of natural language processing (NLP)
- Discuss rule-based chatbot logic, use if-else conditions for chatbot responses and create a simple chatbot with python dictionaries
- Recognize how chatbots learn from data, choose the right dataset for training and discuss chatbot response generation
- Describe sentence structure, word embeddings, vectorizing text for machine learning and context understanding in chatbots
- Build a chatbot using NLTK and spaCy, implement bag-of-words (BoW) & TF-IDF and apply intent recognition for chatbots
- Collect and prepare chatbot training data as well as clean and preprocess conversational datasets
- Use prebuilt datasets for chatbot training and apply annotating datasets for intent recognition
- Differentiate traditional ML and deep learning and implement recurrent neural networks (RNNs) for chatbots
- Use LSTM and GRU for context-aware chatbots, discuss transformer-based Chatbots and Use BERT for question answering
- Choose the right model for your chatbot, use hugging face transformers for chatbot training and deploy a chatbot using a pretrained transformer model
- Add context and memory to chatbots, recognize speech-to-text and voice-enabled chatbots and integrate chatbots with APIs and databases
- Deploy chatbots on messaging platforms and apply security and ethical considerations in chatbots
- Employ advanced NLP techniques for better responses, multi-language chatbot development and AI-powered personalization in chatbots

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of building chatbot using python for beginners and intermediate python programmers, data scientists and AI enthusiast, software developers, technology enthusiasts, product managers or business analysts and other technical staff.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Fee

US$ 5,500 per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)
Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours

Certificate Accreditations
Certificates are accredited by the following international accreditation organizations: -

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Dr. Pan Glou, PhD, BSc, is a **Senior IT**, **Telecommunications**, **Control & Electronics Engineer** with over **30 years** of extensive experience in the areas of **Web Programming**, **Gamification Techniques**, Internal & External Auditing, **E-Commerce Strategies**, **Advanced Database Management Systems**, **Web Design**, **HCI**, **3D Animation**, **Multimedia Design**, **OS Architectures** and **Network Security, Information** & **Technology Architectures**, **Application Architecture**, **Portfolio Management**, **Application Security**, **Application Integration Technologies** & **Strategies**, **Solution Architecture Patterns**, **Web Applications** & Services, **Logical Applications**, **Interface**s & Services, Logical & Physical Components, **Mobile** & **Cloud Applications**, **Blended Learning Programs**. Further, he is also well-versed in SQL Server, ASP.NET Web Core Apps, Power BI, Web Services, IIS, MS Access Databases, MS Excel & Word, HTML5, CSS3, jQuery, Javascript and Syncfusion.

During his career life, Dr. Glou has gained his practical and field experience through his various significant positions and dedication as the **IT Director**, **Head IT**, **Senior Analyst, Analyst**, **Senior Data Analyst**, **Head** of **Development**, **Project Manager**, **Senior Developer**, **Database Administrator**, **Development Team Leader**, **Team Leader**, **Supervisor**, **Senior Developer**, **Technical Consultant**, **Database Administrator**, **Developer (Part time), Technical Supervisor**, **IT Manager**, **Instructor**, **Professor** and **Assistant Professor** for various companies and universities such as METAdrasi, KPI Metrics Solution, Athens Doctors Association, Athens Dentists Association, Chania Bank, Medical Office, INTERFINAN Single P.C., ODEON, Business or Sector Entertainment Industry, NERIT, Supermarket AB Vasilopoulos, VIVODI Telecommunications, CITIBANK, Eurobank Cards, OASP, Ministry of Environment and Public Works, VIKELAS J. & A., Colgate Palmolive Hellas S.A.A. and Tsaoussoglou.

Dr. Glou has a **PhD** in **Partial Query Evaluation** on **Very Large Databases** with **Error Probability** from the **National Technical University of Athens**, and a **Bachelor's degree** in **Mathematics** from the **University** of **Patras**, **Greece**. Further, he is a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, workshops, seminars and conferences internationally.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Understanding Chatbots*** *What is a Chatbot? • Types of Chatbots (Rule-Based versus AI-Based) • Applications of Chatbots in Various Industries • Challenges in Chatbot Development*
0930 – 0945	*Break*
0945 – 1040	***Setting up Python for Chatbot Development*** *Installing Python & Essential Libraries • Introduction to Jupyter Notebook & Google Colab • Using pip & Virtual Environments • Overview of Chatbot Development Frameworks*
1040 – 1135	***Basics of Natural Language Processing (NLP)*** *What is NLP & How it Powers Chatbots? • Tokenization & Text Preprocessing • Stop-Word Removal & Stemming • Named Entity Recognition (NER)*
1135 - 1230	***Rule-Based Chatbots Using Python*** *Understanding Rule-Based Chatbot Logic • Using If-Else Conditions for Chatbot Responses • Creating a Simple Chatbot with Python Dictionaries • Limitations of Rule-Based Chatbots*
1230 – 1245	*Break*
1245 – 1335	***Machine Learning Chatbots*** *Supervised versus Unsupervised Learning • How Chatbots Learn from Data • Choosing the Right Dataset for Training • Understanding Chatbot Response Generation*
1335 - 1420	***Hands-on: Building Your First Basic Chatbot*** *Writing a Simple Chatbot in Python • Implementing Basic User Input Processing • Using a Predefined Set of Responses • Testing & Improving Chatbot Responses*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about that were Discussed Today & Advise Them of the Topics to be Discussed Tomo*
1430	*Lunch & End of Day One*

Day 2

0730 – 0830	***NLP for Chatbots*** *Understanding Sentence Structure • Word Embeddings (Word2Vec, GloVe) • Vectorizing Text for Machine Learning • Context Understanding in Chatbots*
0830 – 0900	***Building a Chatbot Using NLTK & spaCy*** *Introduction to NLTK & spaCy for NLP • Tokenizing & Lemmatizing User Input • POS Tagging for Better Context Understanding • Using spaCy's Named Entity Recognition*
0900 – 0915	*Break*

0915 – 1100	***Implementing Bag-of-Words (BoW) & TF-IDF*** *Understanding BoW & TF-IDF Representation • Implementing BoW Using Scikit-Learn • TF-IDF Vectorization for Chatbot Responses • Choosing the Best Representation Method*
1100 – 1230	***Intent Recognition for Chatbots*** *Understanding Chatbot Intents & Responses • Using Classification Models for Intent Detection • Implementing a Basic Intent Classifier in Python • Evaluating Chatbot Intent Recognition Accuracy*
1230 – 1245	*Break*
1245 – 1335	***Chatbot Training Data & Dataset Preparation*** *Collecting & Preparing Chatbot Training Data • Cleaning & Preprocessing Conversational Datasets • Using Prebuilt Datasets for Chatbot Training • Annotating Datasets for Intent Recognition*
1335 - 1420	***Hands-on: Creating an AI-Based Chatbot With NLP*** *Implementing Text Preprocessing in Python • Training a Chatbot to Recognize Simple Intents • Evaluating Chatbot Responses • Debugging Chatbot Response Mismatches*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about that were Discussed Today & Advise Them of the Topics to be Discussed Tomo*
1430	*Lunch & End of Day Two*

Day 3

0730 – 0830	***Deep Learning for Chatbots*** *Difference Between Traditional ML & Deep Learning • Why Deep Learning Improves Chatbot Accuracy • Overview of Deep Learning Frameworks (TensorFlow, PyTorch) • Pretrained Models for Chatbot Development*
0830 – 0900	***Implementing Recurrent Neural Networks (RNNs) for Chatbots*** *Understanding Sequence Models in NLP • Building a Chatbot Using RNNs • Challenges in Training RNN-Based Chatbots • Optimizing Chatbot Performance with RNNs*
0900 – 0915	*Break*
0915 – 1100	***Using LSTM & GRU for Context-Aware Chatbots*** *Why LSTMs Are Better for Chatbot Memory • Implementing LSTM-Based Chatbot in Python • Improving Chatbot Response Accuracy with GRUs • Handling Long-Term User Context in Chatbots*
1100 – 1230	***Transformer Models (BERT, GPT)*** *Understanding Transformer-Based Chatbots • Using BERT for Question Answering • GPT-Based Chatbots for Text Generation • Comparing Traditional Deep Learning versus Transformer Models*
1230 – 1245	*Break*
1245 – 1335	***Fine-Tuning Pretrained Models for Chatbots*** *Choosing the Right Model for Your Chatbot • Fine-Tuning GPT-3 for Chatbot Responses • Using Hugging Face Transformers for Chatbot Training • Deploying a Chatbot Using a Pretrained Transformer Model*

1335 - 1420	***Hands-on: Building an AI Chatbot Using Deep Learning*** *Implementing an LSTM Chatbot in TensorFlow • Training Chatbot Responses on Custom Datasets • Evaluating Chatbot Performance Metrics • Improving Chatbot Responses with Transfer Learning*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about that were Discussed Today & Advise Them of the Topics to be Discussed Tomo*
1430	*Lunch & End of Day Three*

Day 4

0730 – 0830	***Adding Context & Memory to Chatbots*** *How Chatbots Remember Past Interactions • Implementing a Session-Based Chatbot • Using Embeddings to Store User Context • Creating Personalized Chatbot Experiences*
0830 – 0930	***Speech-to-Text & Voice-Enabled Chatbots*** *Converting Speech to Text Using AI • Implementing Text-to-Speech (TTS) for Chatbot Responses • Using Google Speech API for Voice Interaction • Real-World Applications of Voice-Based Chatbots*
0930 – 0945	*Break*
0945 – 1100	***Integrating Chatbots with APIs & Databases*** *Connecting Chatbots to External APIs • Using a Database to Store Chatbot Conversations • Retrieving Data Dynamically in Chatbot Responses • Examples of Chatbot API Integrations (Weather, News, Finance)*
1100 – 1215	***Deploying Chatbots on Messaging Platforms*** *Integrating Chatbots with WhatsApp, Telegram & Slack • Using Flask & Django for Chatbot API Deployment • Hosting Chatbots on Cloud Services (AWS, GCP, Azure) • Automating Chatbot Updates & Maintenance*
1215 – 1230	*Break*
1245 – 1335	***Security & Ethical Considerations in Chatbots*** *Preventing Chatbot Abuse & Bias • Avoiding Security Vulnerabilities in Chatbot Systems • Handling Sensitive User Data Securely • Ethical Concerns in AI-Driven Conversations*
1335 - 1420	***Hands-on: Deploying a Chatbot to a Web App*** *Using Flask to Create a Chatbot API • Deploying Chatbot Services on AWS/GCP • Testing Chatbot Performance in Production • Monitoring Chatbot Interactions & Logs*
1420 – 1430	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about that were Discussed Today & Advise Them of the Topics to be Discussed Tomor*
1430	*Lunch & End of Day Four*

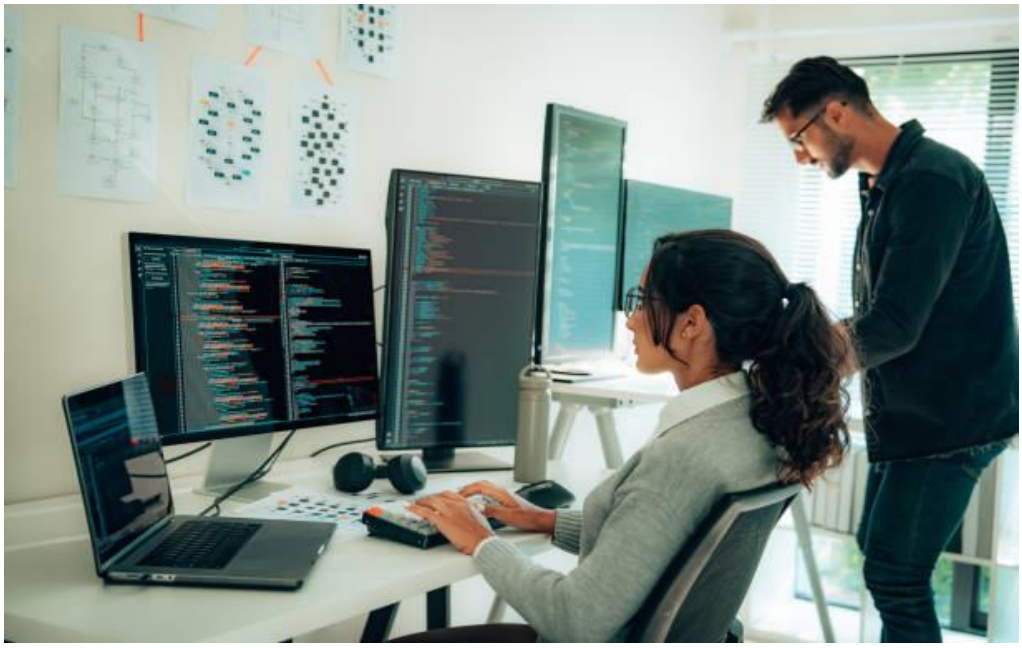
Day 5

0730 – 0830	***Advanced NLP Techniques for Better Responses*** *Using Reinforcement Learning to Improve Chatbot Learning • Implementing Sentiment Analysis for Chatbot Responses • Handling Sarcasm & Complex User Inputs • Improving Chatbot Engagement With AI*
0830 – 0930	***Multi-Language Chatbot Development*** *Training Chatbots for Multilingual Support • Using Translation APIs for Chatbot Conversations • Handling Multiple Languages in AI-Based Chatbots • Testing Chatbot Responses in Different Languages*

0930 – 0945	*Break*
0945 – 1100	***AI-Powered Personalization in Chatbots*** *Implementing Recommendation Systems in Chatbots • Personalizing Chatbot Responses Based on User Behavior • AI-Based Learning from Chatbot Interactions • Case Studies of Personalized AI Chatbots*
1100 – 1215	***Real-World Applications of AI Chatbots*** *AI Chatbots in Customer Support • AI-Powered Medical Chatbots • Chatbots for Financial Services & Banking • Chatbots in E-Commerce & Virtual Assistants*
1215 – 1230	*Break*
1230 – 1345	***Hands-on: End-to-End AI Chatbot Project*** *Designing a Chatbot for a Real-World Problem • Implementing All Learned Concepts in One Chatbot • Deploying the Chatbot for Public Use • Testing, Debugging, & Improving Chatbot Performance*
1345 – 1400	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about Topics that were Covered During the Course*
1400 – 1415	***POST-TEST***
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Practical Sessions

This practical and highly-interactive course includes real-life case studies and exercises:-



Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org