KOENIG SOLUTIONS · COURSE OUTLINE

Conversational AI with Python: From Chatbots to Virtual Assistants

Learn to build chatbots and virtual assistants in Python, from text processing and intent recognition to dialogue management.

4	15	32
MODULES	TOPICS	HANDS-ON EXERCISES

COURSE OVERVIEW

This course covers the foundations of conversational software, including giving a chatbot personality, variety and text processing with regular expressions. It then moves into natural language understanding, covering intents, entities, word vectors and classification. Learners proceed to building a virtual assistant that accesses data through SQL, including natural language queries and slot filling. The final module addresses dialogue management, including statefulness, question-and-answer queuing and current frontiers of dialogue research.

WHO THIS COURSE IS FOR

- **Python Developers**
- **NLP Engineers**
- **Chatbot Developers**
- **Conversational AI Developers**
- **Data Scientists**

LEARNING OBJECTIVES

- Explain the principles of conversational software and chatbot personality
- Apply regular expressions for text processing in chatbots
- Identify intents and entities in natural language input
- Apply word vectors and classification for language understanding
- Build a virtual assistant that queries a database with SQL
- Implement incremental slot filling and negation handling
- Explain the role of statefulness in dialogue systems
- Describe current frontiers of dialogue research

COURSE SYLLABUS

4 Modules, 15 Topics

01 — 7 Exercises

Chatbots 101

TOPICS

Introduction to conversational software · Creating a personality · Adding variety · Text processing with regular expressions

02 — 9 Exercises

Understanding Natural Language

TOPICS

Understanding intents and entities · Word vectors · Intents and classification · Entity extraction

03 — 7 Exercises

Building a Virtual Assistant

TOPICS

Virtual assistants and accessing data · SQL basics · Exploring a DB with natural language · Incremental slot filling and negation

04 — 9 Exercises

Dialogue

TOPICS

Why statefulness is key · Asking questions and queuing answers · Frontiers of dialogue research

HANDS-ON EXERCISES

Practise What You Learn

#	MODULE	ACTIVITY
01	**Chatbots 101**	■ Echo bot 1 ■ Echo Bot 2 ■ Chit chat ■ ELIZA 1 - asking questions ■ ELIZA 2 – Extracting key phrases ■ ELIZA 3 – Pronouns ■ ELIZA 4 – Putting it all together
02	**Understanding Natural Language**	■ Intent classification with regex 1 ■ Intent classification with regex 2 ■ Entity extraction with regex ■ Word vectors with spaCy ■ Intent classification with sklearn ■ Using spaCy's entity recognizer ■ Assigning roles using spaCy's parser ■ Robust language understanding with rasa NLU ■ Data-efficient entity recognition
03	**Building a Virtual Assistant**	■ SQL statements in Python ■ Creating queries from parameters ■ Using your custom function to find hotels ■ Creating SQL from natural language ■ Refining your search ■ Basic negation ■ Filtering with excluded slots
04	**Dialogue**	■ Form filling ■ Asking contextual questions ■ Dealing with rejection ■ Pending actions 1 ■ Pending actions 2 ■ Pending state transitions ■ Summarizing 1 ■ Summarizing 2 ■ Generating text with neural networks

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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