

LA TECHNOLOGY TRANSFER PRESENTS

# IVAN REZNIKOV

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**GENERATIVE AI**

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**Creating a LLM Chatbot for Business**

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ONLINE LIVE STREAMING

**APRIL 28-29, 2025**

DUE TO TIME ZONES, THIS CLASS WILL TAKE PLACE IN 2 AFTERNOONS  
FROM 2 PM TO 6 PM ITALIAN TIME



[info@technologytransfer.it](mailto:info@technologytransfer.it)  
[www.technologytransfer.it](http://www.technologytransfer.it)

## ABOUT THIS SEMINAR

Generative AI has significantly advanced in 2024, enhancing the capabilities of Chatbots in business applications.

**ChatGPT** fundamentally changed the world of Artificial Intelligence (AI). ChatGPT is a Chatbot driven by the GPT4 Large Language Models (LLMs) from OpenAI. These models are neural networks with billions of parameters, trained on vast amounts of text from the Internet and other sources and provide human-level intelligence on a wide variety of tasks. ChatGPT makes them available through an interactive, conversational prompt. Users can ask it to do anything. ChatGPT power users quickly sought to solve new and unexpected problems with ChatGPT and introduced the world to the field of Prompt Engineering.

**Prompt Engineering** is the science and art of using libraries like Langchain which is an application framework for conversational agents along with document processing libraries to ingest documents, language models and embeddings to encode text on the semantic language of an LLM, vector databases and search engines to provide an agent with memory and prompt formatting modules to provide an LLM with the context to bring its knowledge to bear on a problem.

**Chatbots and LLMs are highly disruptive AI technologies.** While the importance of Chatbots like ChatGPT is evident to anyone that uses them (try ChatGPT now if you haven't) and considers possible use cases. The most obvious Chatbot use case is customer service, which has seen widespread adoption. Increasingly sophisticated Chatbot customer service representatives are rapidly replacing human jobs, resulting in significant savings. Customer service agents are just the beginning.

This trend will continue, driving mass unemployment across a swath of industries and job functions. If you don't adapt, your company's business model will be disrupted and left behind.

The consequences of not embracing these technologies can be severe. **Sending your technical staff to this course is a way to plant seeds of innovation that will spread across your organization at an accelerated rate.**

### Who should attend this course

This course is for anyone who knows Python!

- Data Scientists
- Data Analysts
- Software Engineers
- Data Engineers
- Machine Learning Engineers
- Data Science and Engineering Managers who want to extend their work using Large Language Models (LLMs) and conversational agents or Chatbots

### Skills required to be successful in this course

- Students should know basic Python programming.
- **Basic experience** working with data for at least one of:
  - Spreadsheets
  - Reports
  - Analysis
  - SQL queries
  - Problem-solving
  - Machine Learning
  - Data Processing

In this course we will introduce students to building conversational agents using Python, Graphics Processing Units (GPUs), natural language processing, representation learning, language models and text embeddings, document parsing and vector search, prompt templates and large language models combined through the Langchain Chatbot Framework to conduct Prompt Engineering and Prompt Learning to solve Machine Learning problems via conversational agents driven by Large Language Models (LLMs).

Students will leave the course with working code for their own Chatbot project using cutting-edge technology that solves real-world problems. This project and its code can serve as the foundation for additional work in students' employers' business domain to create custom Chatbots for their companies.

The course isn't limited to building your own Chatbots – Students will use LLMs to perform several different Machine-Learning tasks. Students will learn how to solve AI problems using LLMs without building Chatbots. Chatbots, LLMs and Prompt Learning are powerful tools, regardless of the form your application takes.

Students will use their basic Python data skills to learn to:

- Build their own Chatbots driven by LLMs
- Grasp the theory and fundamentals behind modern LLM technologies
- Build Chatbots using the popular Langchain framework
- Interact with remote LLM APIs like ChatGPT
- Use open-source LLMs locally for privacy
- Fine-tuning open-source LLMs like LLaMa for your business domain
- Experiment and select proper Prompt Engineering techniques
- Utilize vector database and search engines for semantic search
- Add memory to Chatbots to add context to chat sessions
- Implement guardrails and improve User Experience

By the end of the course, students will have developed a functional Chatbot project using state-of-the-art technology, adapted for real-world business applications.

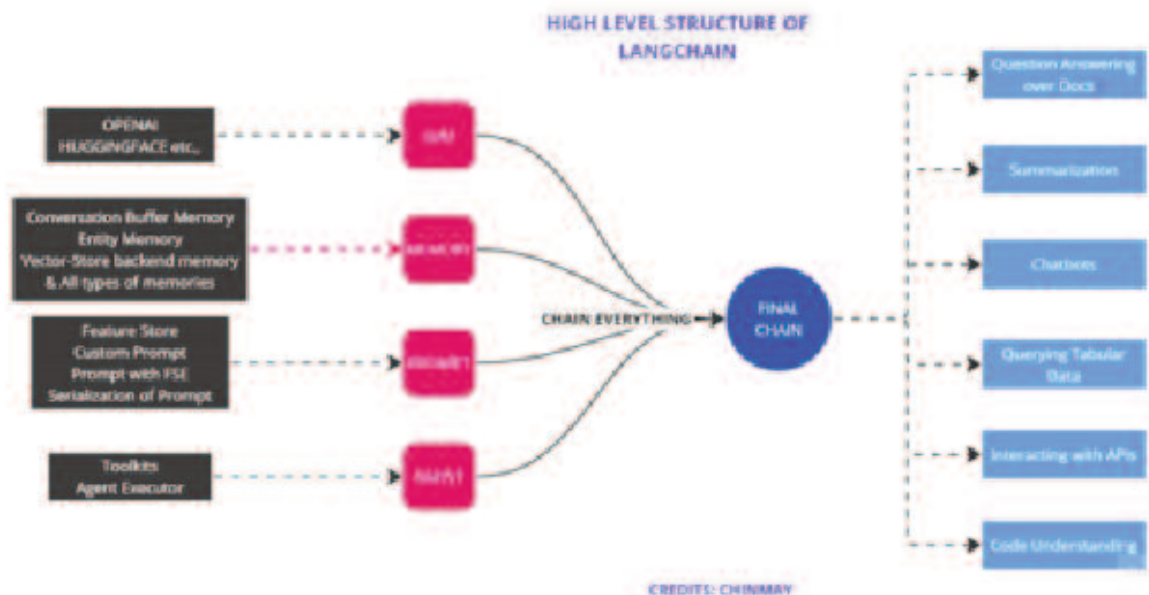
# OUTLINE

The course outline is subject to change as technology rapidly develops but will roughly cover:

- Day 0 - **Preparation**: during the week before class begins, students will prepare their computers to run the software for the course. I will be available by email to help them debug any problems. This lets us spend classroom time learning. Setup is painless using Docker Desktop (download here) with a custom docker image for the course. This image contains web-based, interactive Python code using Jupyter notebooks that contain the interactive course content.

At the start of Day 1 of the bootcamp, we will verify all software and course content works for all students and debug any issues that remain. Docker images should make this process seamless, as there is nothing to configure or change - the images contain a complete operating system and the course software.

- Afternoon 1 - **Theory and Practice**: The first day is heavy on theory to provide the background students need to understand Prompt Engineering concepts.



We will familiarize students with the following topics:

- Generative AI Strategy - how your company can adapt!
  - Natural Language Processing (NLP)
  - Natural Language Understanding (NLU)
  - Seq2Seq Machine Learning Tasks
  - Basic Linear Algebra for Understanding LLMs
  - Text Embeddings
  - The Inner Workings of Word2Vec and Doc2Vec
  - Introduction to Transformer Models
  - Sentence Transformers
  - HuggingFace Hub
  - Large Language Models (LLMs) - Training, Bias, Hallucinations!
  - Vector Distance Metrics
  - Vector Databases: FAISS, OpenSearch
  - Introduction to Langchain: Concepts and APIs
  - Streamlit Web Apps in 10 Minutes
- Afternoon 2 - **Building Conversational Agents with LLMs**: On the second afternoon we will put theory into practice to solve Machine Learning problems using LLMs and build our own Chatbot!

We will work through the following Python projects:

- Chatbot Power Users: ChatGPT as your Coding Partner
- Data Labeling using the Facebook LLama LLM
- LLMs: Entity Resolution with ChatGPT4
- Building our First Chatbot with Langchain
  - Basic Streamlit/Langchain Chatbot web apps
  - Vector search in OpenSearch
  - Ingesting Business Documents
  - Adding Memory to our Chatbot
  - Creating complex Chains

# INFORMATION

<p><b>PARTICIPATION FEE</b></p> <p>€ 900</p> <p>The fee includes all seminar documentation.</p> <p><b>SEMINAR TIMETABLE</b></p> <p>2.00 pm - 6.00 pm ( Italian time)</p>	<p><b>HOW TO REGISTER</b></p> <p>You must send the registration form with the receipt of the payment to: info@technologytransfer.it</p> <p>TECHNOLOGY TRANSFER S.r.l. Piazza Cavour, 3 - 00193 Rome (Italy)</p> <p><b>PAYMENT</b></p> <p>Wire transfer to: Technology Transfer S.r.l. Banca: Cariparma Agenzia 1 di Roma IBAN Code: IT 03 W 06230 03202 000057031348 BIC/SWIFT: CRPPIT2P546</p>	<p><b>GENERAL CONDITIONS</b></p> <p><b>DISCOUNT</b></p> <p>The participants who will register 30 days before the seminar are entitled to a 5% discount.</p> <p>If a company registers 5 participants to the same seminar, it will pay only for 4.</p> <p>Those who benefit of this discount are not entitled to other discounts for the same seminar.</p> <p><b>CANCELLATION POLICY</b></p> <p>A full refund is given for any cancellation received more than 15 days before the seminar starts. Cancellations less than 15 days prior the event are liable for 50% of the fee. Cancellations less than one week prior to the event date will be liable for the full fee.</p> <p><b>CANCELLATION LIABILITY</b></p> <p>In the case of cancellation of an event for any reason, Technology Transfer's liability is limited to the return of the registration fee only.</p>
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**GENERATIVE AI**  
**CREATING A LLM CHATBOT FOR**  
**BUSINESS**

April 28-29, 2025

Registration fee:  
€ 900

*If registered participants are unable to attend, or in case of cancellation of the seminar, the general conditions mentioned before are applicable.*

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Stamp and Signature

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www.technologytransfer.it

## ***SPEAKER***

**Ivan Reznikov** is a Principal Data Scientist, who brings over a dozen years of proficiency in Python and Data Science. Dr. Ivan Reznikov holds a PhD degree in Computational Sciences and is a Professor in Middlesex University Dubai, teaching a Master's in Data Science program. He is currently dedicating his expertise to authoring LangChain for Life Sciences, a book published by O'Reilly.

Ivan worked as the Chief Technology Officer and Chief AI Officer in several startups and companies. He has spoken on TEDx, GITEX and PyCON MEA and holds the Kaggle Competition Expert title.