# Mini-project theme: conversational agent

MRSI - Sistemas Inteligentes - Ano Lectivo de 2024/2025

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Conversational agents, sometimes known as chat bots, have several applications, namely for remote automatic assistance. On the other hand, if a conversational agent has a conversational behavior that makes it indistinguishable from the behavior expected in a human being, it may be considered that this agent has human-level intelligence, as Alan Turing suggested. The proposed work consists in the development of a conversational agent with the following characteristics:

- Natural language processing (Portuguese and/or English) for some common sentences types.
- Ability to accumulate information/knowledge provided by interlocutors (i.e. learn from interaction) and produce answers to questions.
- For grammatically incorrect sentences, or sentences not supported by the system, react in a "seemingly intelligent" way.

The following resources can be useful when performing this work.

- ALICE
  (http://alice.pandorabots.com).
- Use the actual Eliza algorithm in your chatbot
  (https://blog.csml.dev/use-the-actual-eliza-algorithm-in-your-chatbot)
- How to Build Eliza Chatterbot - A Program that can Chat with Humans
  (https://www.sourcecodesworld.com/articles/How-to-build-Eliza-Chatterbot.asp)
- Creating a Chat Bot
  (https://www.freecodecamp.org/news/creating-a-chat-bot-42861e6a2acd)
- ChatterBot - a machine learning, conversational dialog engine for creating chat bots.
  (https://github.com/gunthercox/ChatterBot/blob/master/README.md)
- AIML (Artificial Intelligence Markup Language: The open standard scripting language for chatbots)
  (http://www.aiml.foundation)
- WORDNET - it can be useful to diversify the vocabulary and to deal with words not known by the system when they are synonymous with known ones.
  (https://wordnet.princeton.edu/)
- S. Witzig, "Acessing Wordnet from Prolog", Artificial Intelligence Center, University of Georgia, 2003.
  (http://ai1.ai.uga.edu/mc/pronto/Witzig.pdf)
  (Code: http://ai1.ai.uga.edu/mc/pronto/Witzig.zip)

- spaCy
  (https://spacy.io)
- TextBlob
  (https://textblob.readthedocs.io/en/dev)
- NLTK: Natural Language Toolkit
  (https://www.nltk.org)
- "Question analysis: how Watson reads a clue"
  (http://www.patwardhans.net/papers/LallyEtAl12.pdf)
- "A Critical Review of State-of-the-art Chatbot Designs and Applications"
  (https://wires.onlinelibrary.wiley.com/doi/epdf/10.1002/widm.1434)
- "A state-of-the-art open source chatbot"
  (https://ai.meta.com/blog/state-of-the-art-open-source-chatbot)
- "Recipes for building an open-domain chatbot"
  (https://arxiv.org/pdf/2004.13637.pdf)

This project can be performed by a group of 3 to 4 students.