

# Conversational Artificial Intelligence

Principles and Practice of Virtual Assistant AI

**EECS 498, FALL 2019**

---

(prereqs: 280, 281)

## Summary

The science and art of creating conversational AI spans multiple areas in computer science. Learning about and leveraging advances in these areas to create state-of-the-art conversational virtual assistants is the central focus of this course. Throughout the course, students will learn principles of deep learning applied to natural language processing, dialogue management, response generation, and other applications. Students will also build end to end virtual assistants using tools that span both traditional techniques as well as cutting edge techniques for these AI with the goal of creating experiences that surpass existing technologies such as Google Assist, Siri, and Alexa. Students will also be tasked with integrating the AI experiences they create with a set real APIs of their choosing (e.g., Spotify, Fitbit, Unity, etc.). The course culminates in a demo day where creations are shared for others to try, and the best such creations will have the opportunity to be featured at a technology conference such as SXSW, CES, or Techcrunch Disrupt.

In the creation of these virtual assistants, students will form groups of around 5 students to select a use case, design the virtual assistant, train AI models, implement logic, and execute the end to end build out and integration into an existing product API. Throughout this process important software engineering and design practices will be exercised. Students will learn about the process of data collection, curation, and crowdsourcing to build good clean datasets. Students will also learn state of the art techniques for the iterative process of debugging and quality assurance for AI. Students will do at least 2 rounds of user testing and refinement. In parallel throughout the course, readings on the underlying deep learning techniques the enable state-of-the-art conversational AI will be selected and discussed in class. This course is going to be awesome!