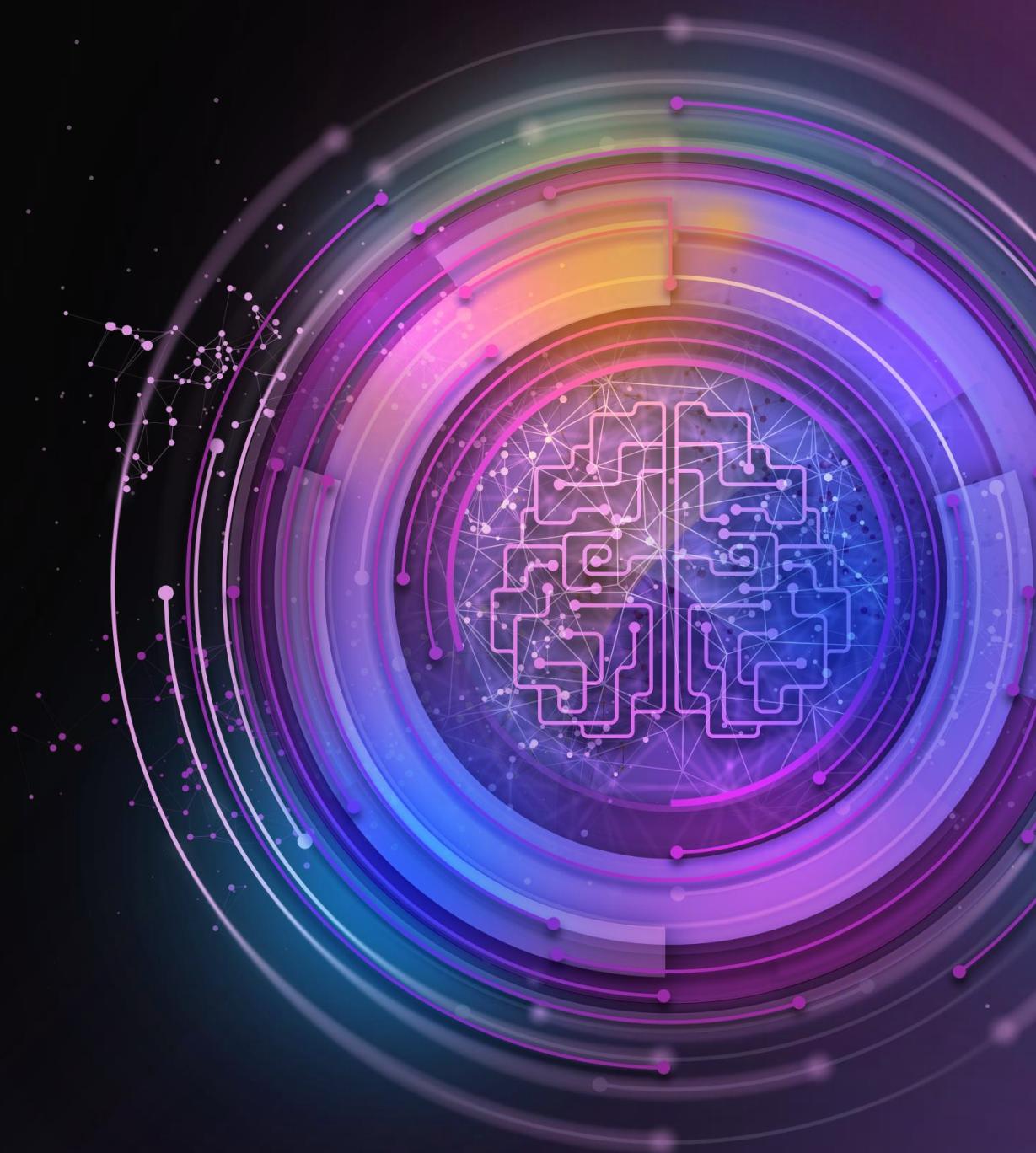


AutoGen presentation

**Enable Next Gen Large Language
Model Applications**

31-May-2024





Introduction

AutoGen

What are future AI applications like?

How do we empower every developer to build them?



AutoGen

What are future AI applications like?

How do we empower every developer to build them?

AutoGen: Enabling Next-Gen LLM Applications via Multi-Agent Conversation

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Erkang Zhu^{*}, Li Jiang^{*}, Xiaoyun Zhang^{*}, Shaokun Zhang[†], Jiale Liu[‡]

Ahmed Awadallah*, Ryen W. White*, Doug Burger*, Chi Wang*¹

*Microsoft Research, [†]Pennsylvania State University

[±]University of Washington, [‡]Xidian University

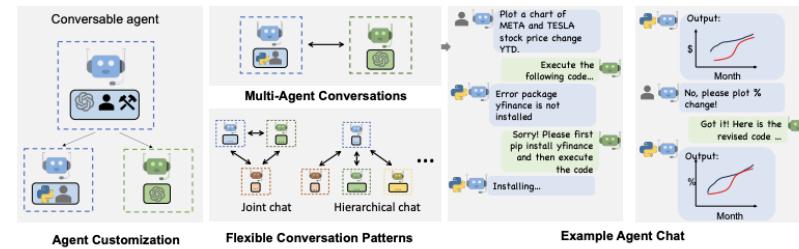


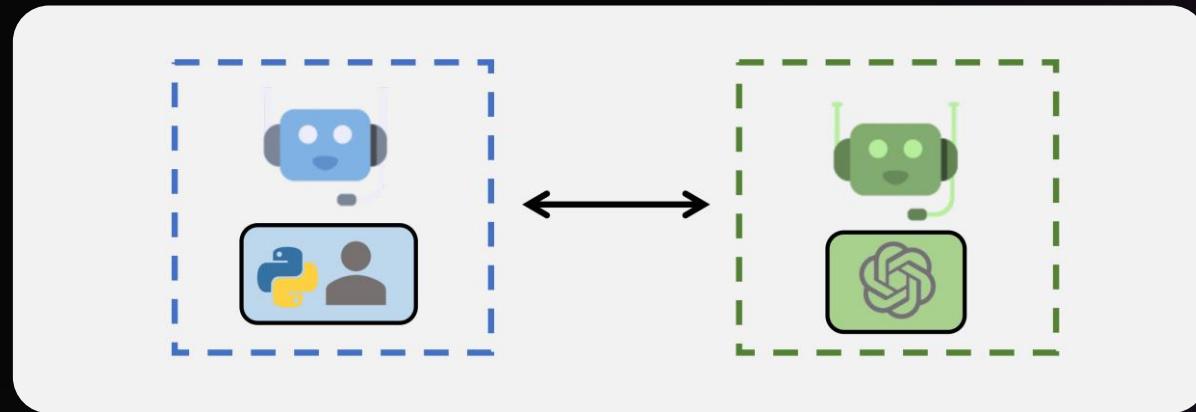
Figure 1: AutoGen enables diverse LLM-based applications using multi-agent conversations. (Left) AutoGen agents are conversable, customizable, and can be based on LLMs, tools, humans, or even a combination of them. (Top-middle) Agents can converse to solve tasks. (Right) They can form a chat, potentially with humans in the loop. (Bottom-middle) The framework supports flexible conversation patterns.

Abstract

AutoGen² is an open-source framework that allows developers to build LLM applications via multiple *agents* that can converse with each other to accomplish tasks. AutoGen agents are customizable, *conversable*, and can operate in various modes that employ combinations of LLMs, human inputs, and tools. Using AutoGen, developers can also flexibly define agent interaction behaviors. Both natural language and computer code can be used to program flexible conversation patterns for different applications. AutoGen serves as a generic framework for building diverse applications of various complexities and LLM capacities. Empirical studies demonstrate the effectiveness of the framework in many example applications, with domains ranging from mathematics, coding, question answering, operations research, online decision-making, entertainment, etc.

AutoGen - Concept

A programming framework
for agentic AI



Initially developed in FLAML (Nov 2022)
Spined off to a standalone repo (October 2023)

aka.ms/autogen

Why AutoGen?



It requires a **lot of effort and expertise to design**, implement, and optimize a workflow that can leverage the full potential of large language models (LLMs).



Automating these workflows has **tremendous value**.

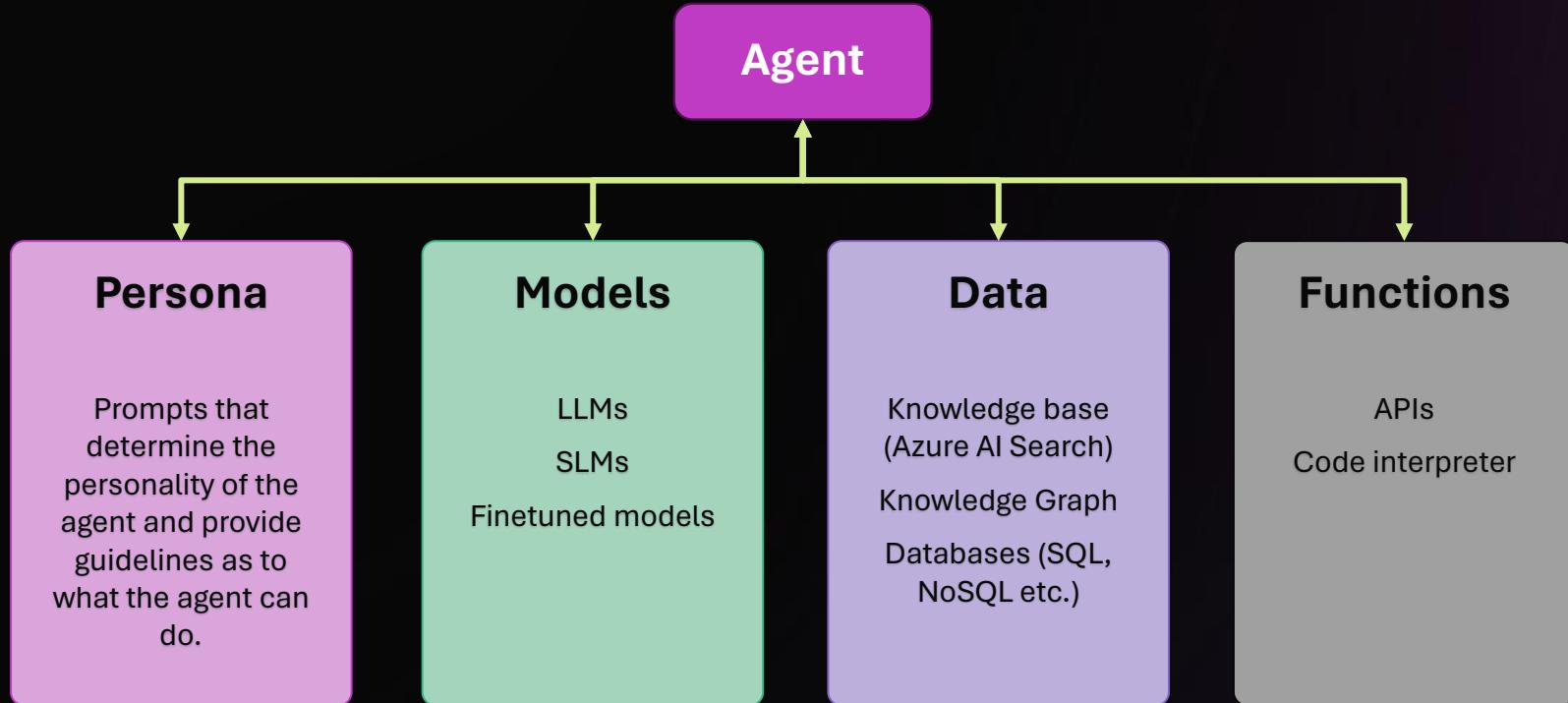


The potential design space for such workflows **could be vast and complex**, thereby heightening the challenge of orchestrating an optimal workflow with robust performance.



AutoGen is a framework for simplifying the **orchestration, optimization**, and **automation** of LM workflows.

AutoGen – What is an agent?

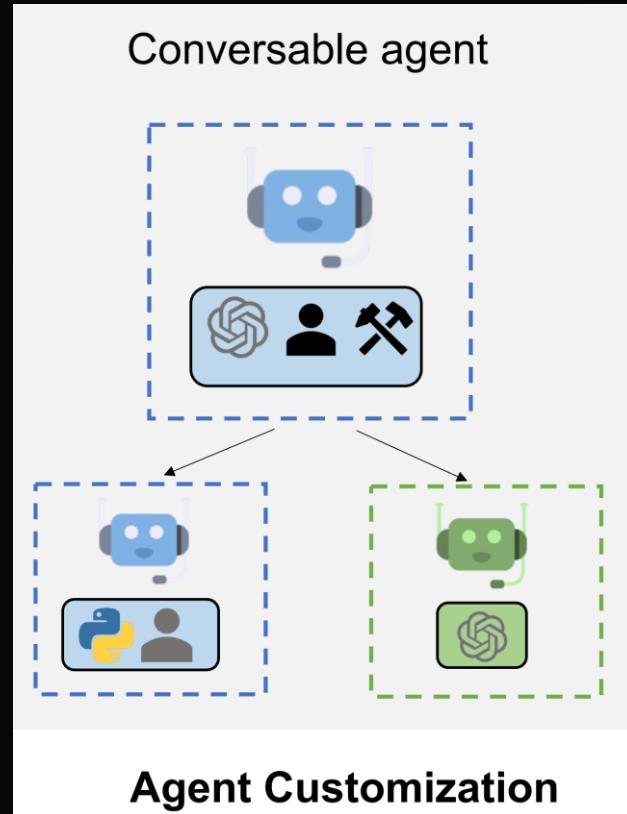


*“Agents are not only going to change how everyone interacts with computers. They’re also going to **upend the software industry**, bringing about the **biggest revolution in computing** since we went from typing commands to tapping on icons.”*

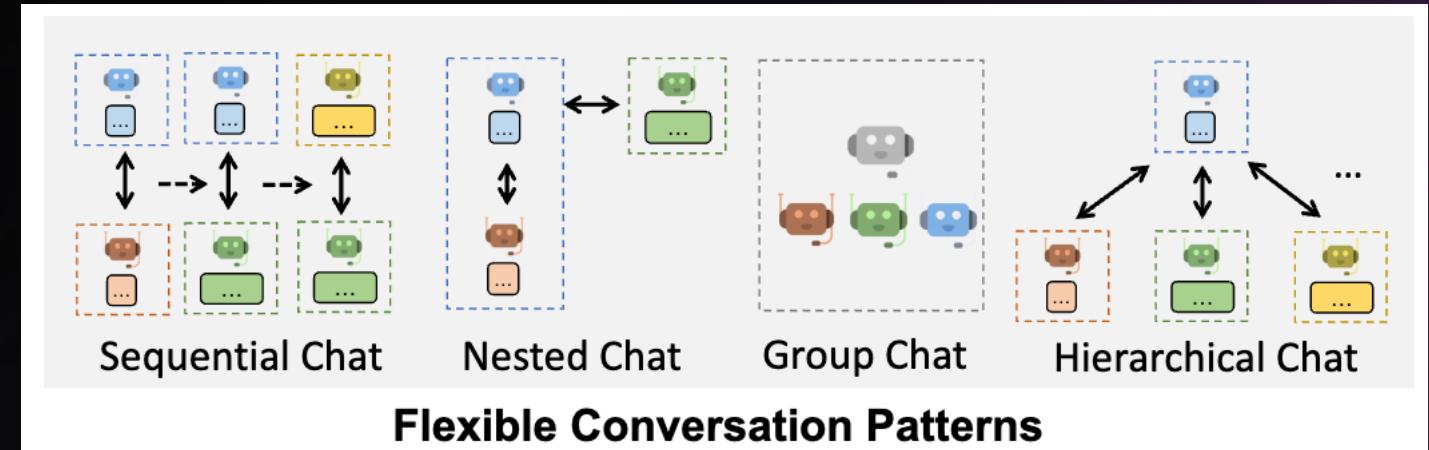
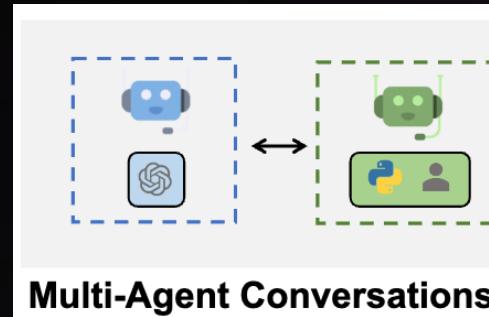
Bill Gates, 13 Nov 2023

AutoGen – Agent's definition & conversation

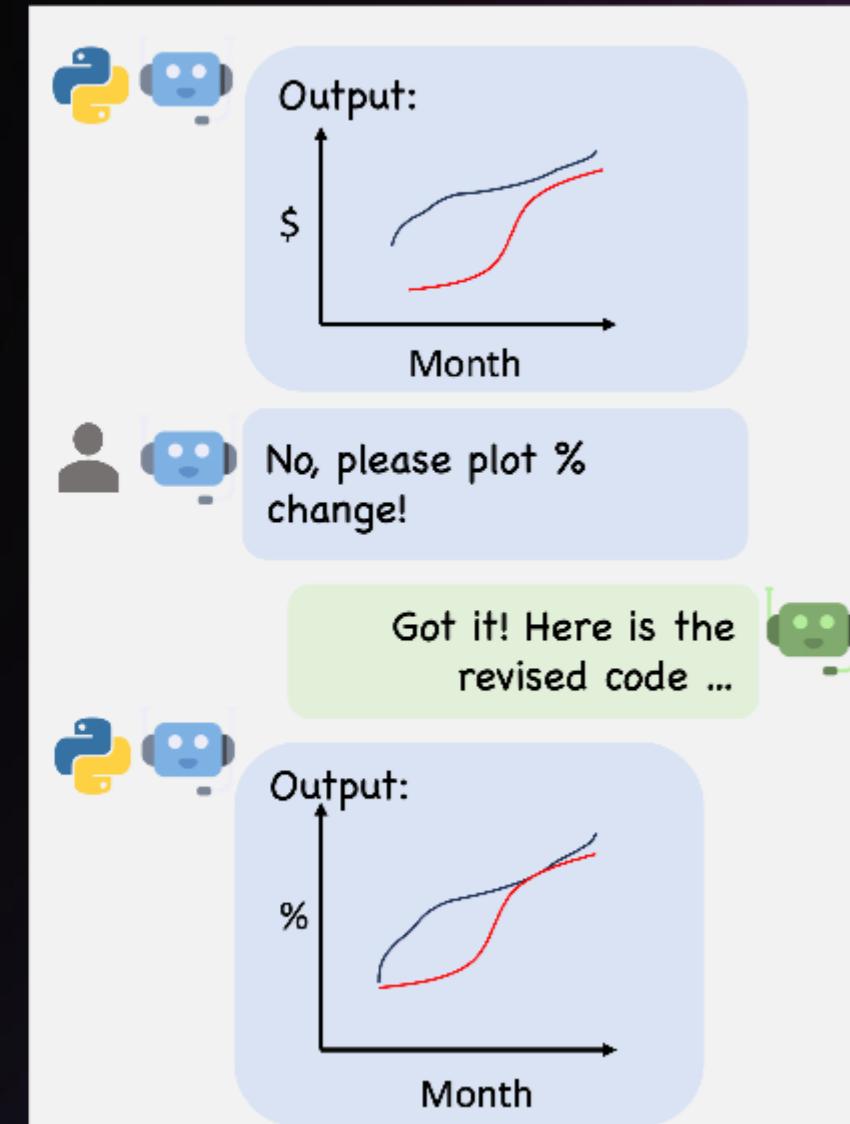
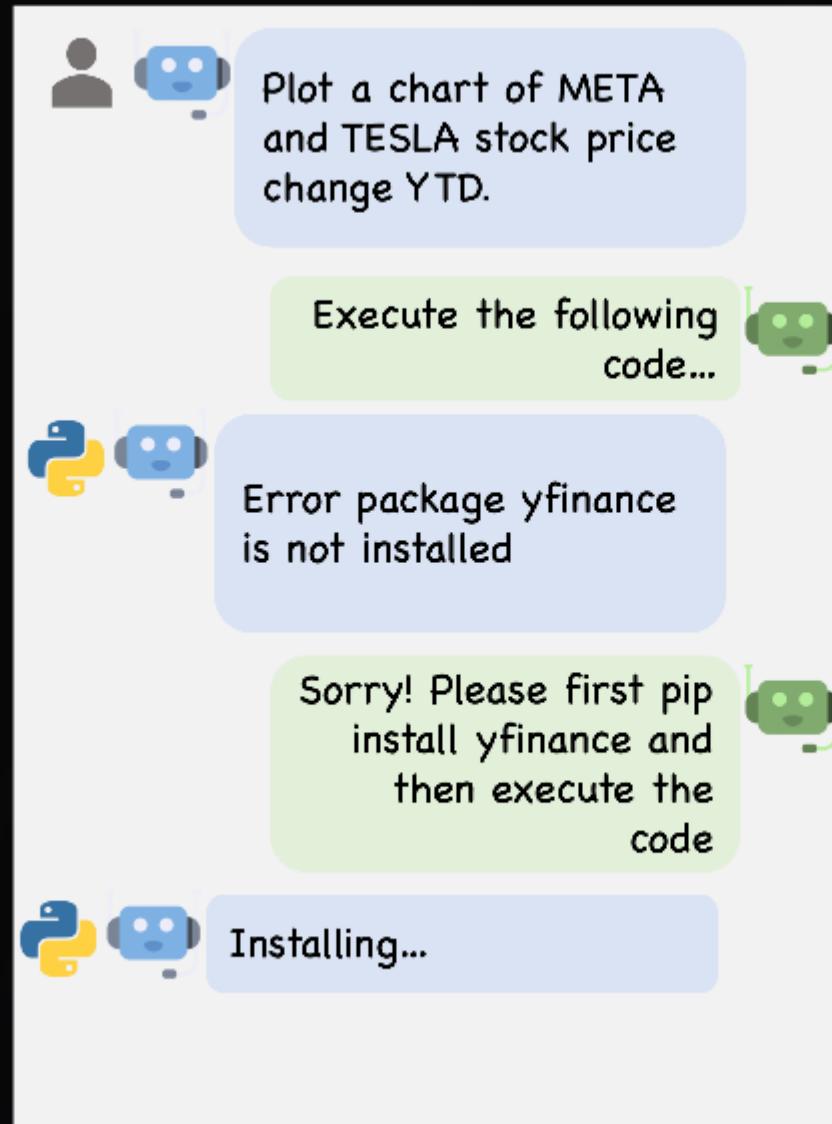
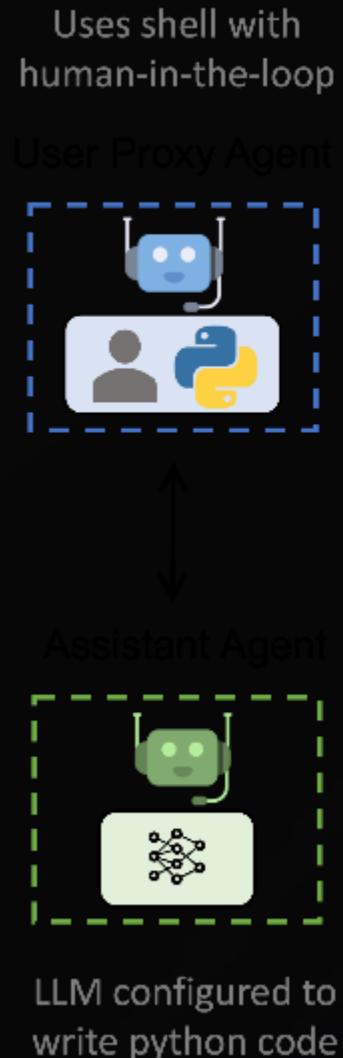
Define agents:
Conversable & Customizable



Get them to talk:
Conversation Programming

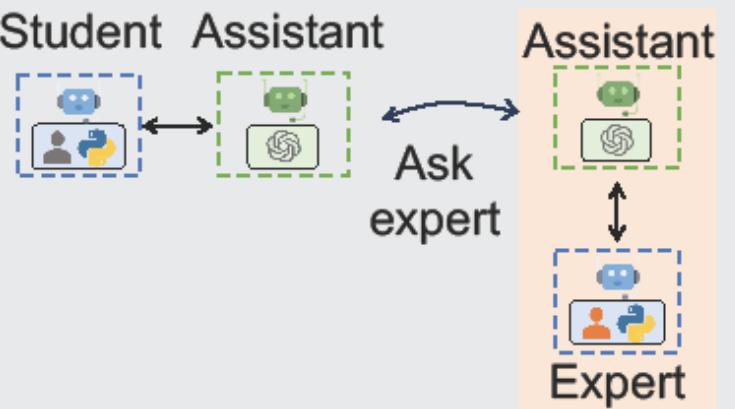


AutoGen - Multi agents & code execution



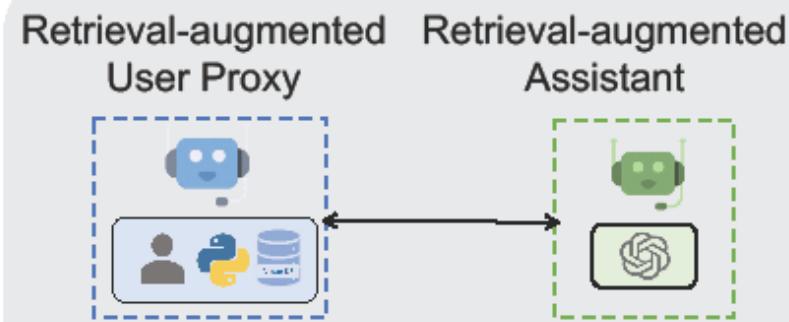
AutoGen – some use cases

Student Assistant



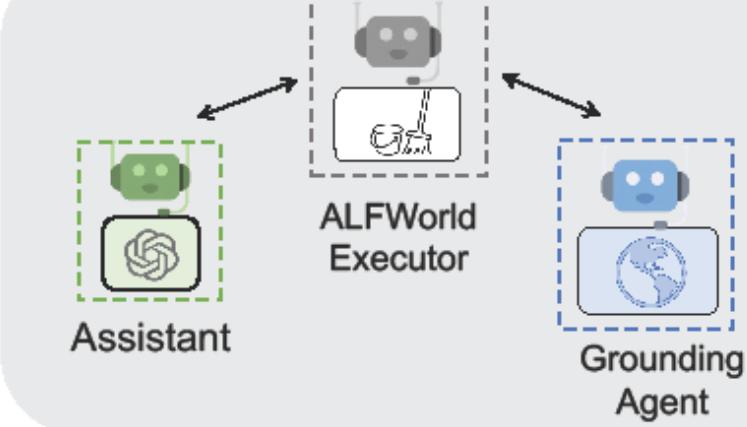
A1. Math Problem Solving

Retrieval-augmented User Proxy



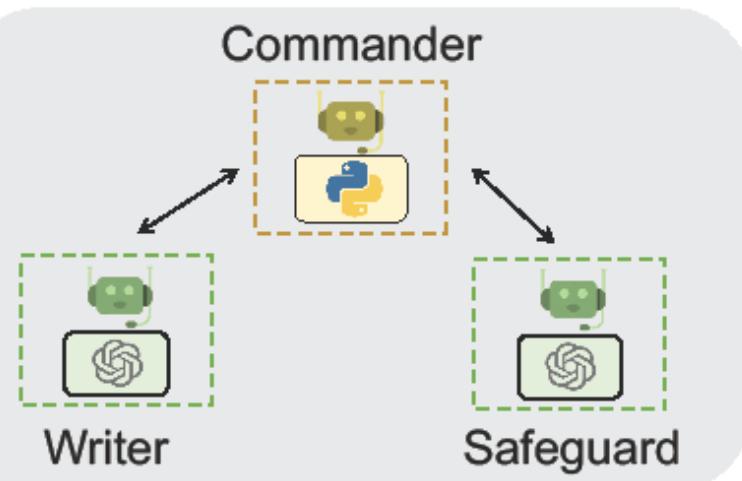
A2. Retrieval-augmented Q&A

ALFWorld Executor



A3. Decision Making in Household Tasks

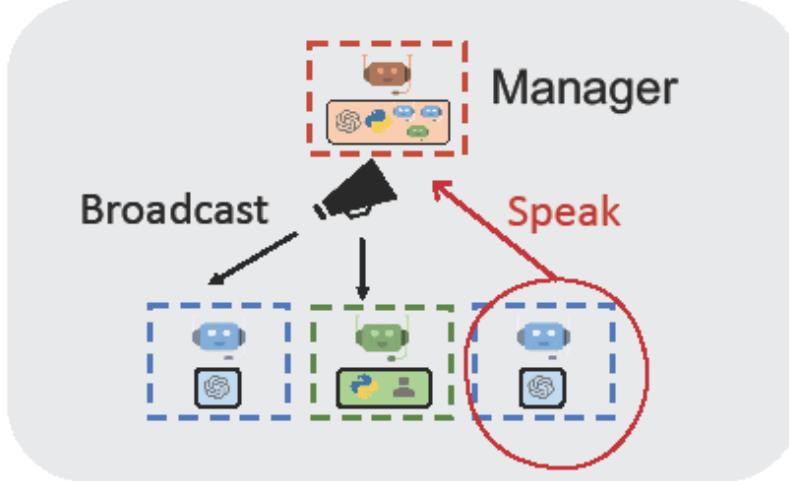
Commander



Writer

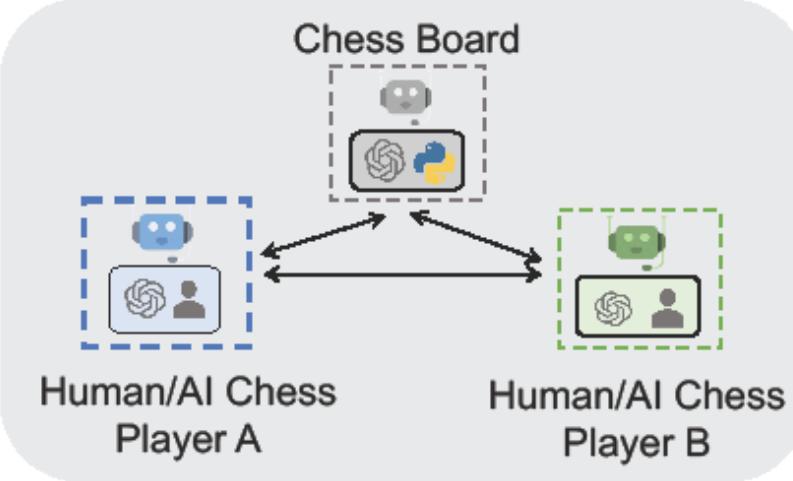
Safeguard

Manager



A5. Dynamic Task Solving with Group Chat

Chess Board



Human/AI Chess Player A

Human/AI Chess Player B

A6. Conversational Chess



Demos

AutoGen demos

<https://microsoft.github.io/autogen>



Documentation

<https://microsoft.github.io/autogen/>

What's new in AutoGen? Read [this blog](#) for an overview of updates

AutoGen Docs Examples Other Languages Blog GitHub Discord Twitter ☰ Search ctrl K

AutoGen

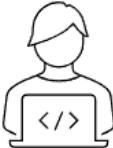
Enable Next-Gen Large Language Model Applications

Getting Started - 3min ⏱



Multi-Agent Conversation Framework

AutoGen provides multi-agent conversation framework as a high-level abstraction. With this framework, one can conveniently build LLM workflows.



Easily Build Diverse Applications

AutoGen offers a collection of working systems spanning a wide range of applications from various domains and complexities.



Enhanced LLM Inference & Optimization

AutoGen supports enhanced LLM inference APIs, which can be used to improve inference performance and reduce cost.

Links

GitHub:
[aka.ms/autogen-gh](https://github.com/aka.ms/autogen-gh)

 Star 24,297  Contributors 254

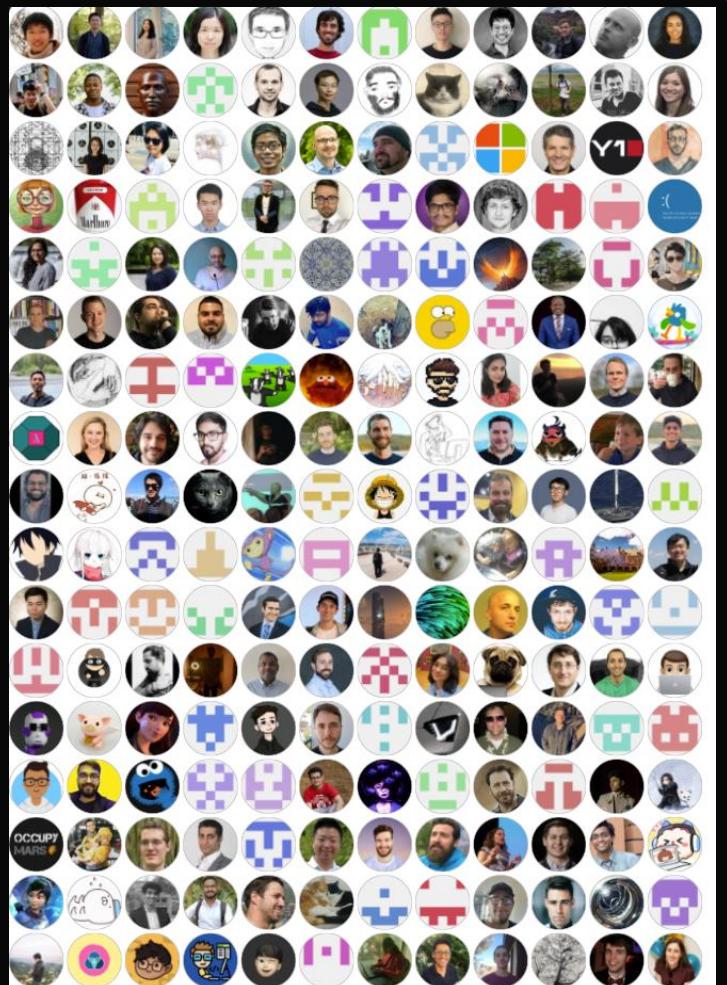
Discord:
[aka.ms/autogen-dc](https://discord.com/invite/aka.ms/autogen-dc)

2,443 Online • 16,206 Members

Paper:
aka.ms/autogen-pdf

Blog:
aka.ms/autogen-blog

Part of this presentation is based on [What's New in AutoGen?](#)





Thank You