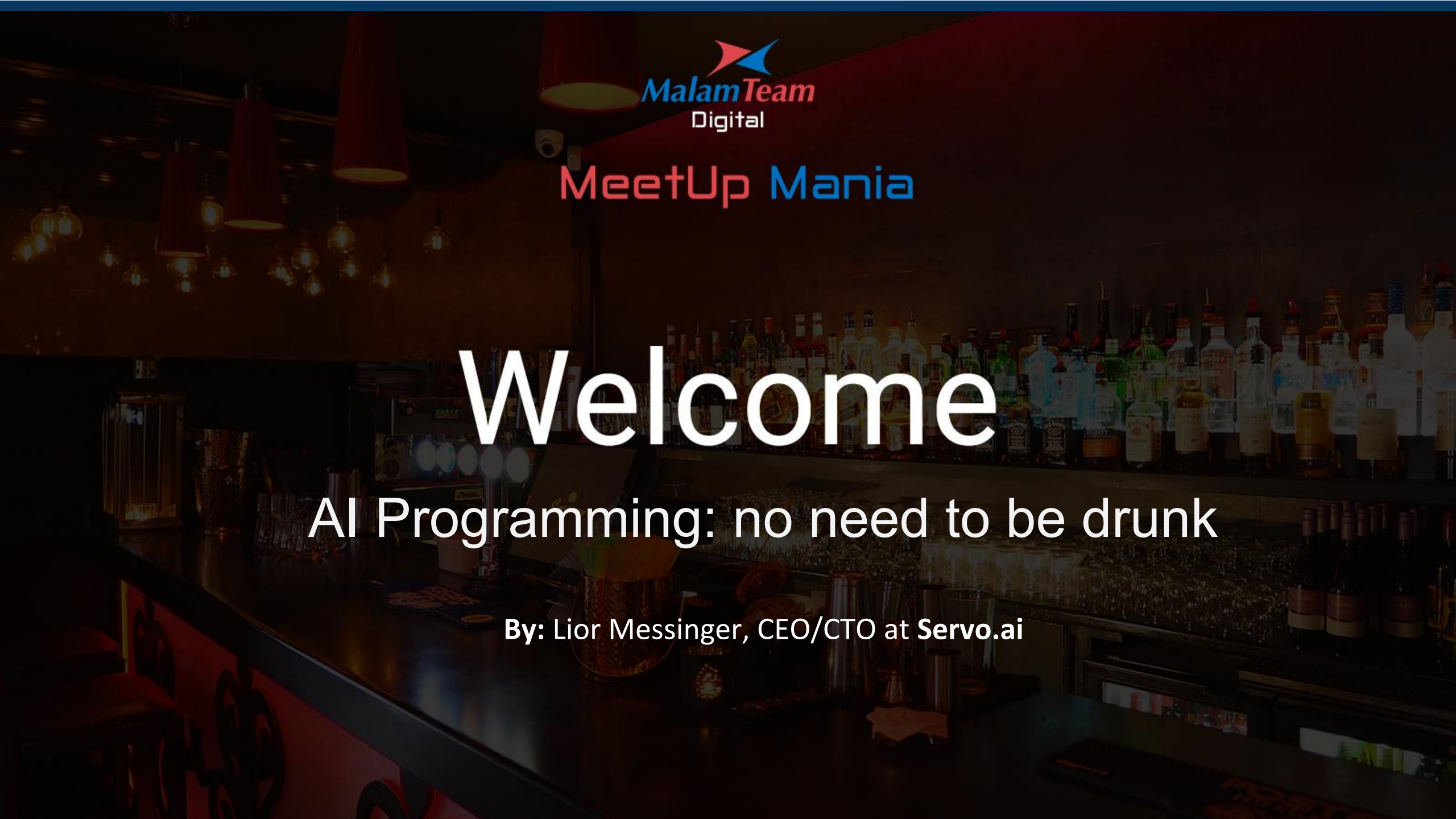

MalamTeam
Digital
MeetUp Mania
Welcome
AI Programming: no need to be drunk
By: Lior Messinger, CEO/CTO at Servo.ai

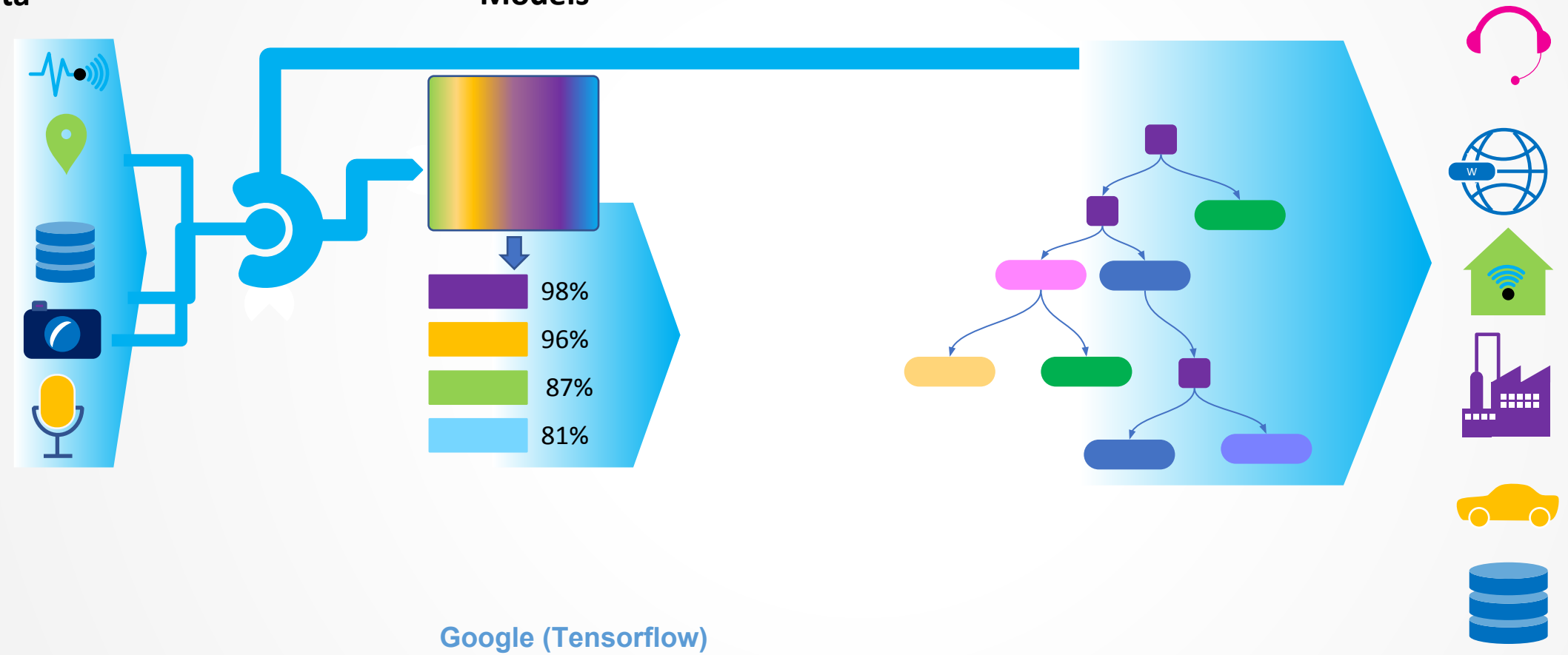
A Typical AI Project

Sensors / Data

AI Classification Models

Logic Rule Engine

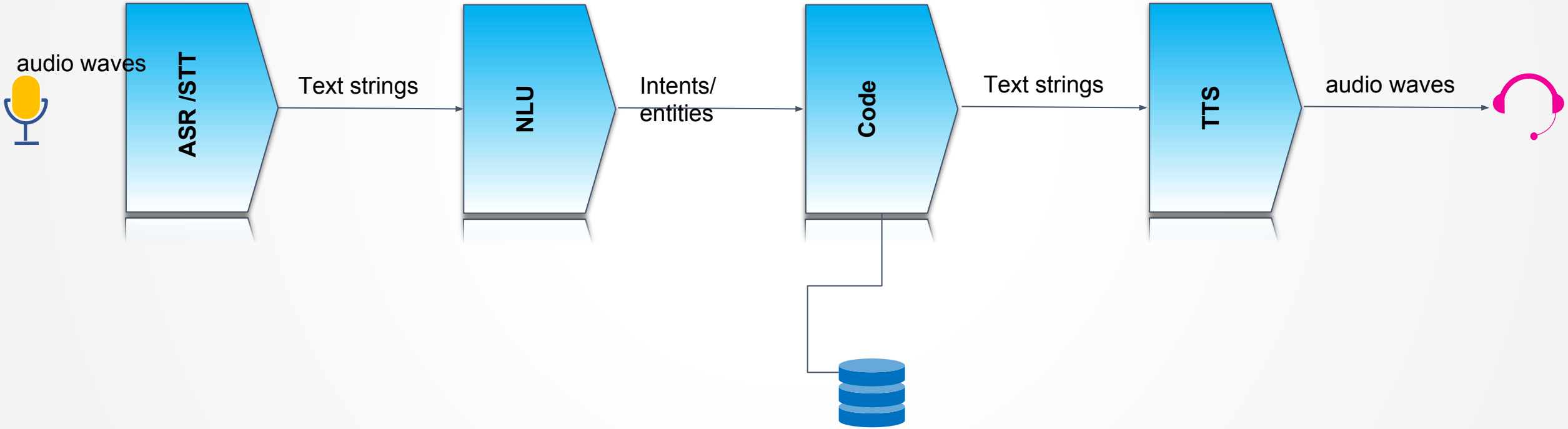
End Product



Google (Tensorflow)
IBM (Watson)
Microsoft (Azure)
Amazon...

https://www.servo.ai/single-post/2018/03/31/The-building-blocks-of-an-AI-project

Voice Path


audio waves
ASR /STT
Text strings
NLU
Intents/
entities
Code
Text strings
TTS
audio waves

We will use

- Chrome as the ASR client
- Chrome for the TTS
- Other options:
  - Alexa
  - Android voice
  - Windows speech

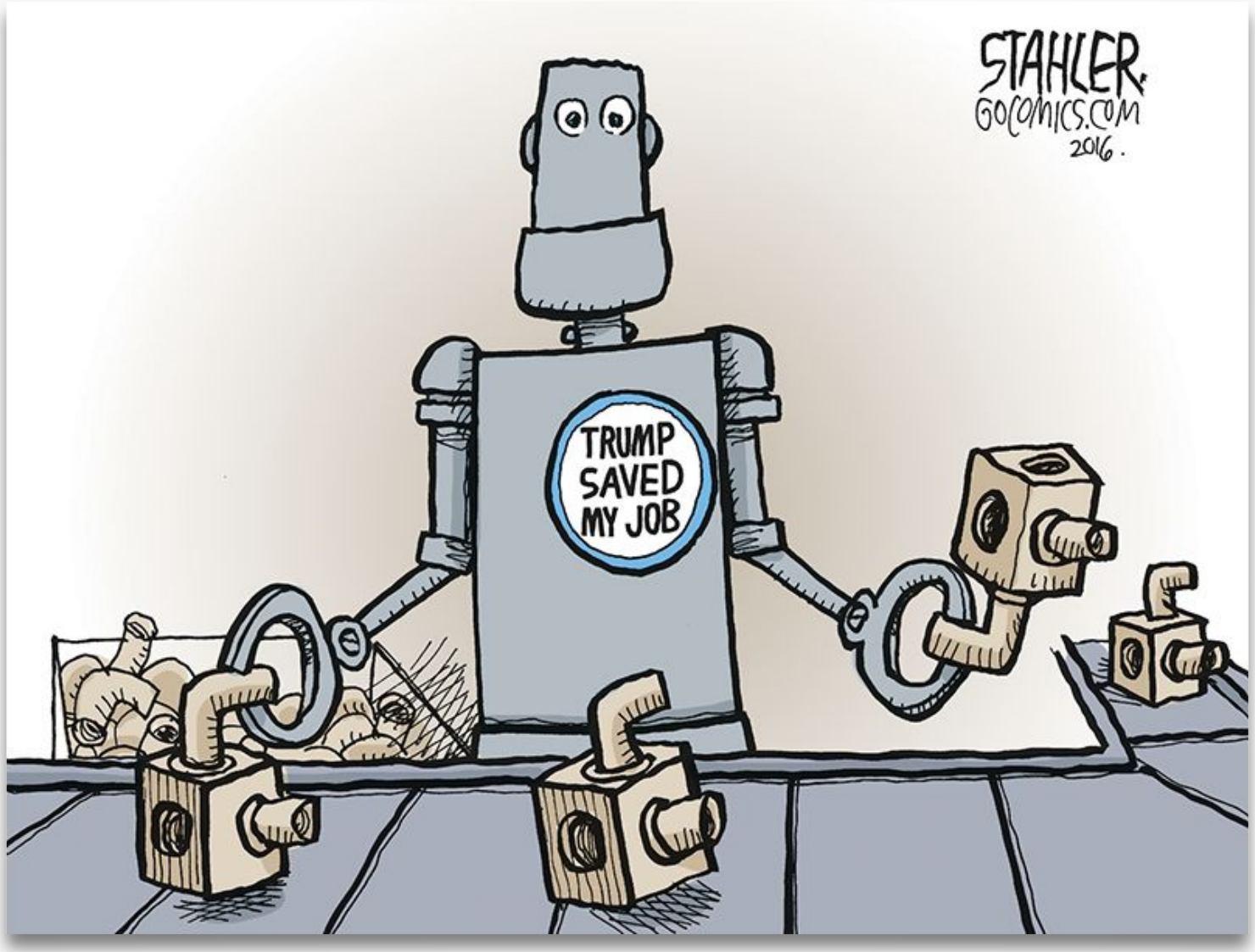
We will use

- Wit.ai as the NLU
- Other options:
  - LUIS
  - IBM watson
  - Google STT
  - Rasa.ai (open source)
  - Spacy (open source)

Please Meet

- `webkitSpeechRecognition`
- `speechSynthesis`

build it



Let’s build it

I’m not your toy:

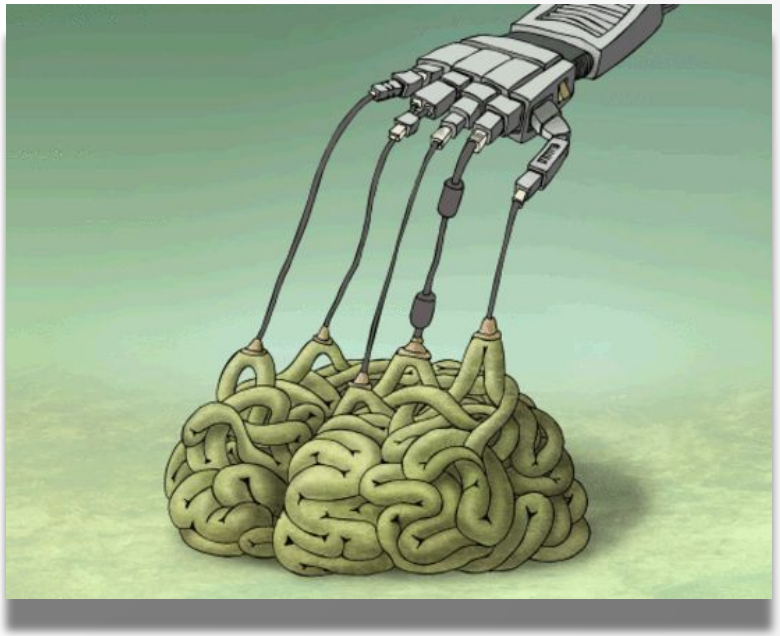
A few extensions to make it real

On Chrome

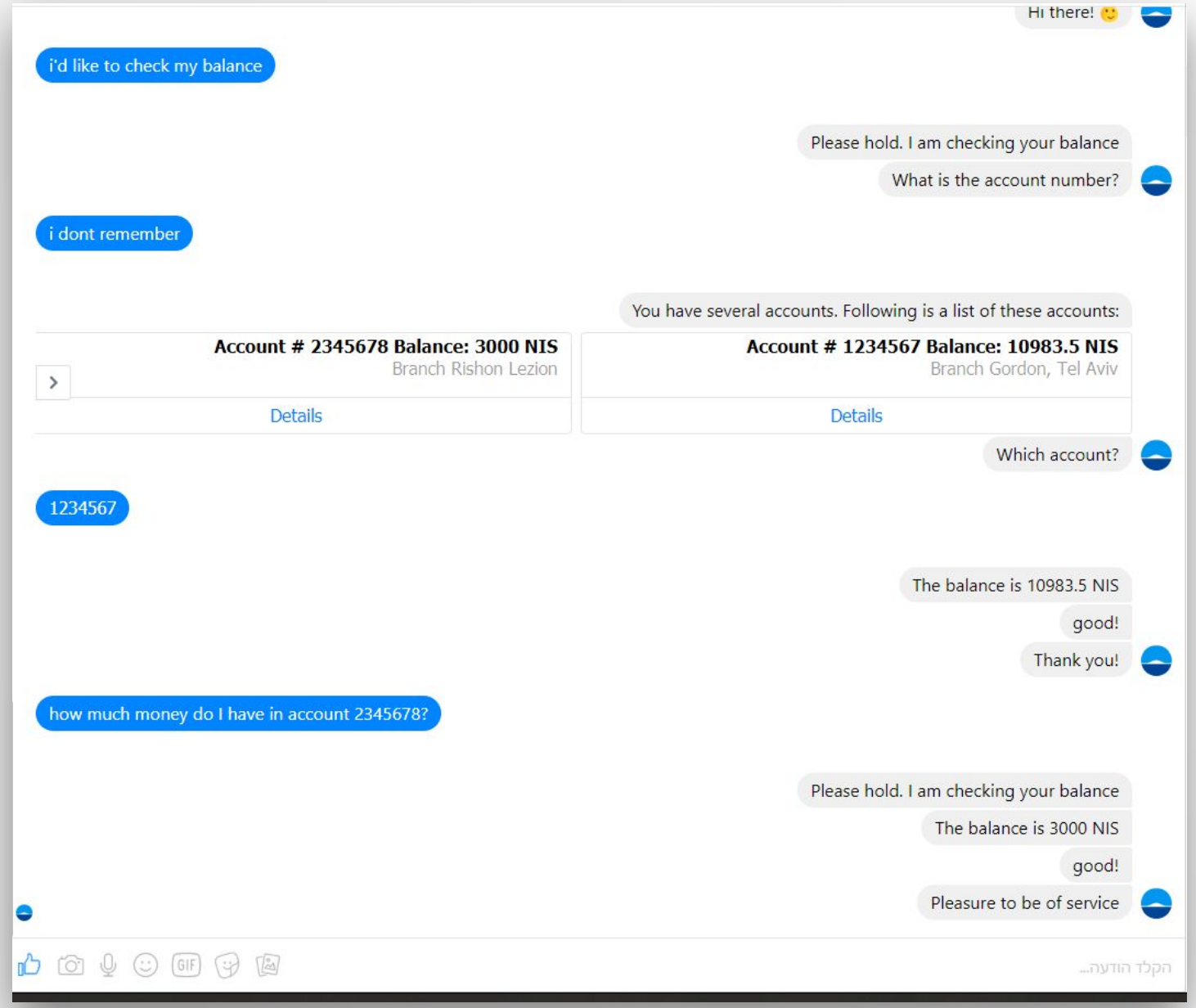
- PTT / Wake word
- Chrome ASR Bugs:
  - listens to TTS
    - need to close and open
    - Asr never finalize
- Asr stops after a while

In general

- Complex to build conversations
  - a lot of state to handle
- Context is king



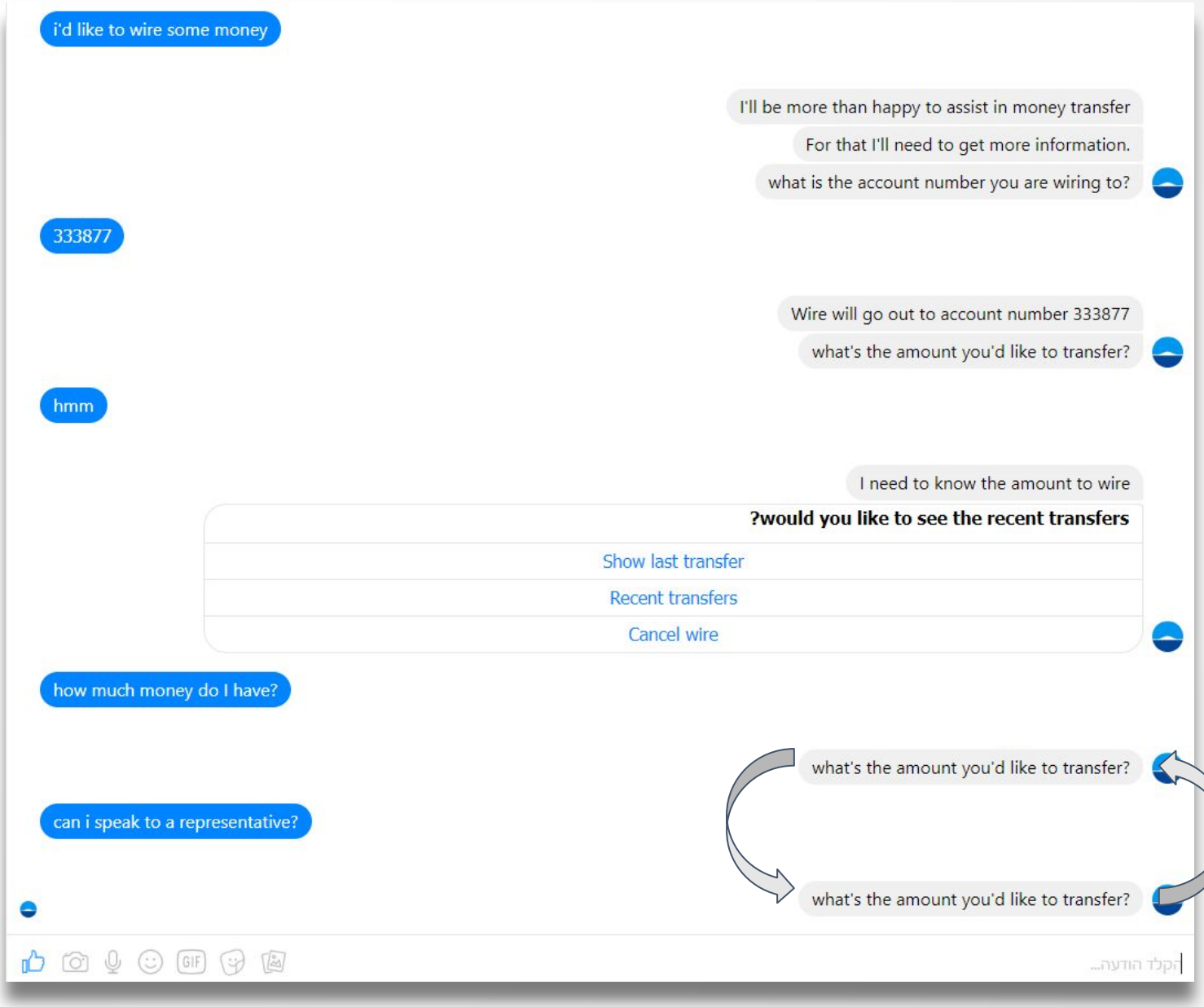
The Technical Problem



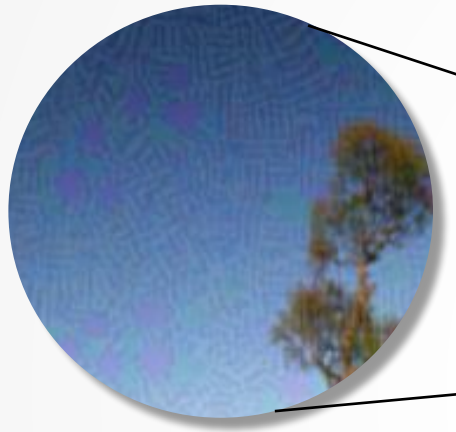
Chatbots can do very well one topic at a time

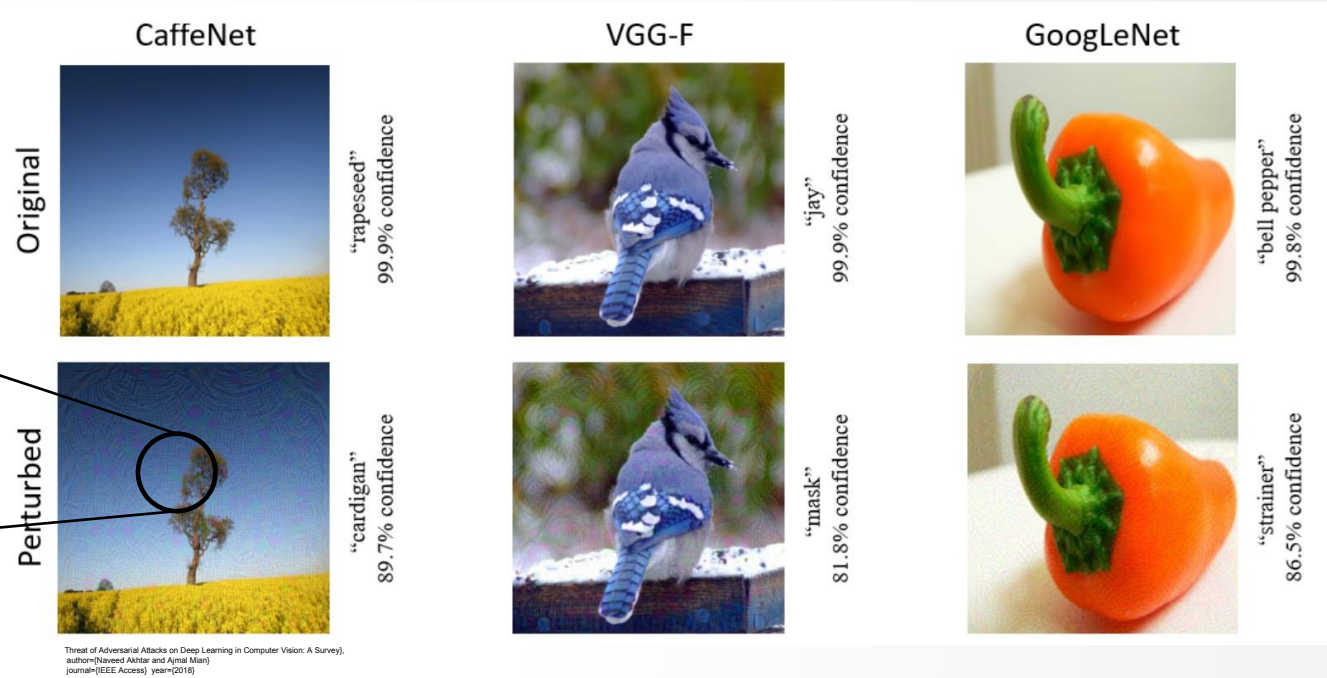
The Technical Problem

But will behave poorly when dialog deviates from fixed flows



AI Problems - Technical





Threat of Adversarial Attacks on Deep Learning in Computer Vision: A Survey}, author={Naveed Akhtar and Ajmal Mian} journal={IEEE Access} year={2018}

"...humans are able to correctly classify the adversarial image with relative ease, whereas the CNNs predict the wrong label, usually with very high confidence."

Measuring the tendency of CNNs to Learn Surface Statistical Regularities. JO & Bengio, 2017

When one model handles several ML layers, once conditions are changed (image clarity), the models does not work

"...Instead of making predictions in the sensory (e.g. pixel) space, the consciousness prior allows the agent to make predictions in the abstract space"

The Consciousness Prior, Y. Bongio, 2017

The end

Why did we build it?

A few issues with AI

AI Problems - Lack of Resources

servo.ai

The New York Times

Tech Giants Are Paying Huge Salaries for Scarce A.I. Talent

Nearly all big tech companies have an artificial intelligence project, and they are willing to pay experts millions of dollars to help get it done.

- **Businesses want to add AI but:**
- **Shortage of AI experts at all development layers**

https://www.nytimes.com/2017/10/22/technology/artificial-intelligence-experts-salaries.html

AI Problems - Technical

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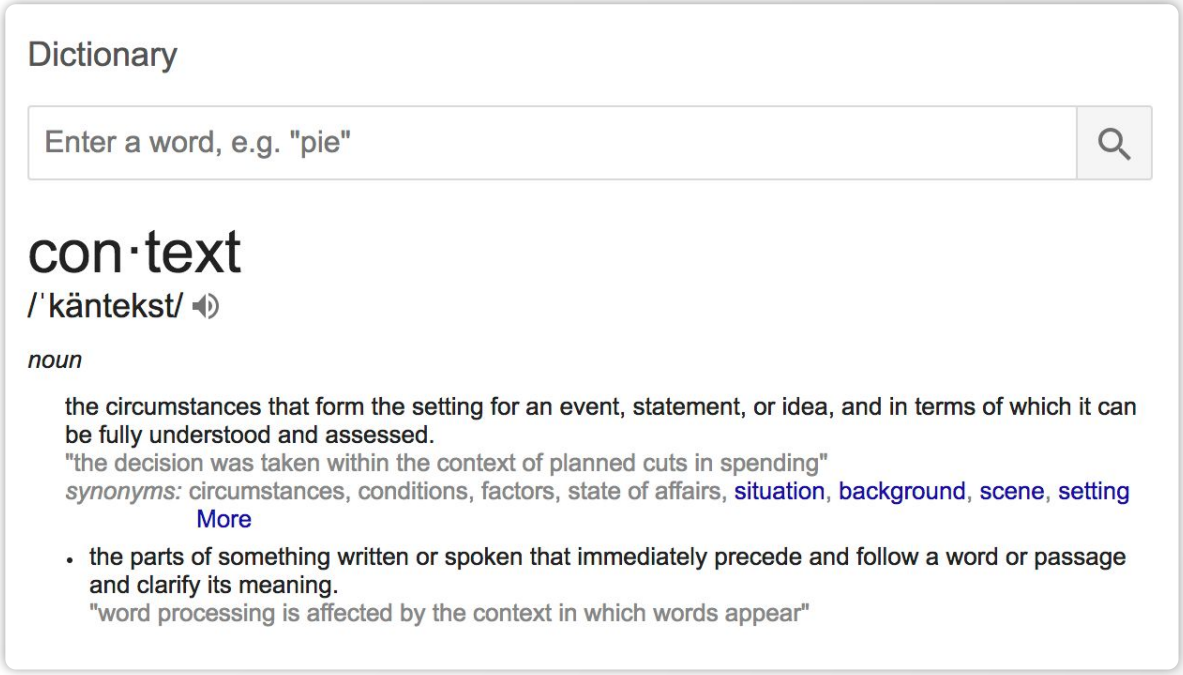
WHY?

Because AI understands by pixels, frequencies and data

Humans understand using pixels, frequencies, data - and **context**



The Solution(s)

3 Pillars

to servo.ai Solution

1st Pillar: Orchestration Environment

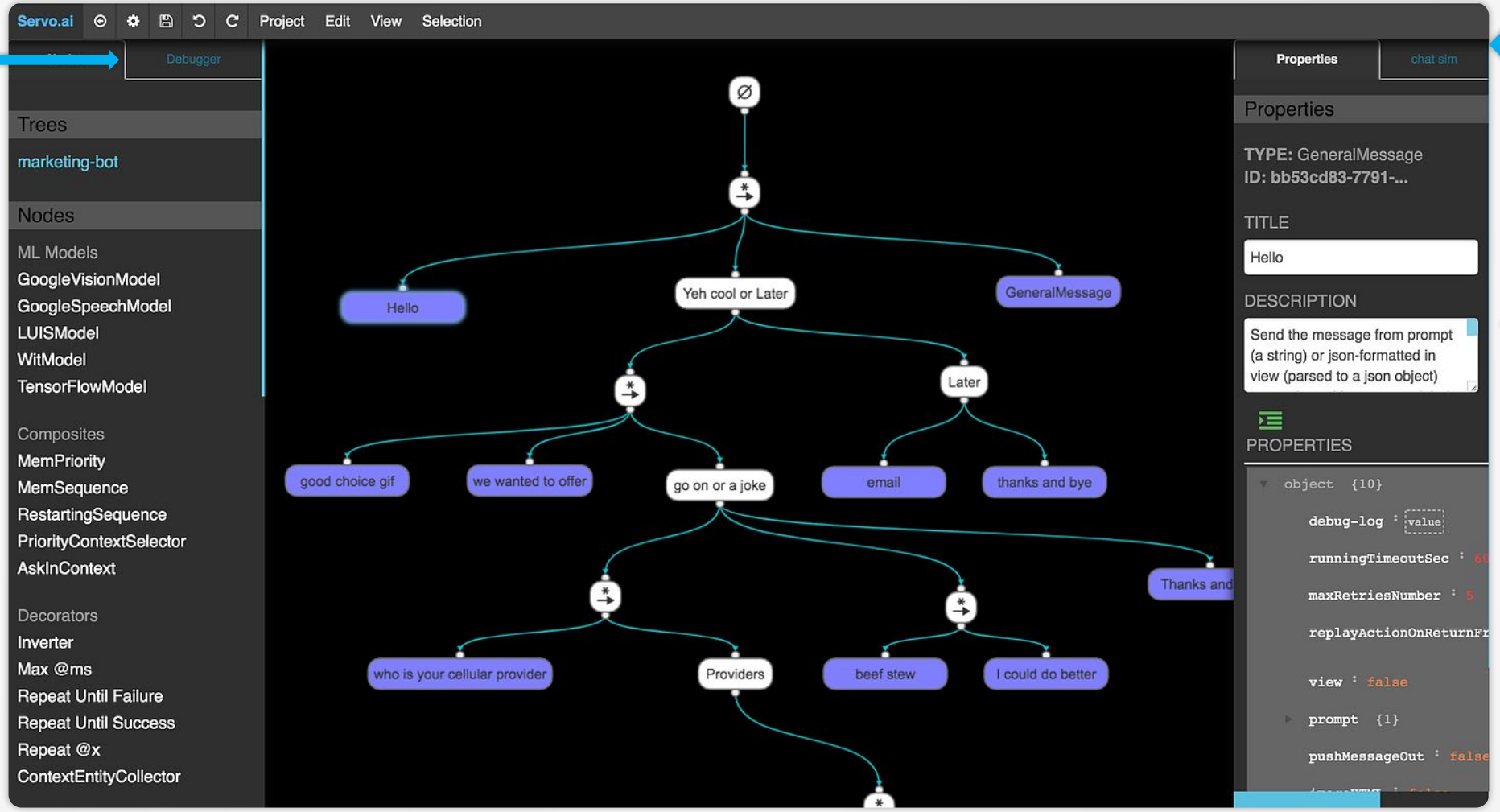
An end-to-end AI orchestration platform

Debugger

ML Models

Components

Functions

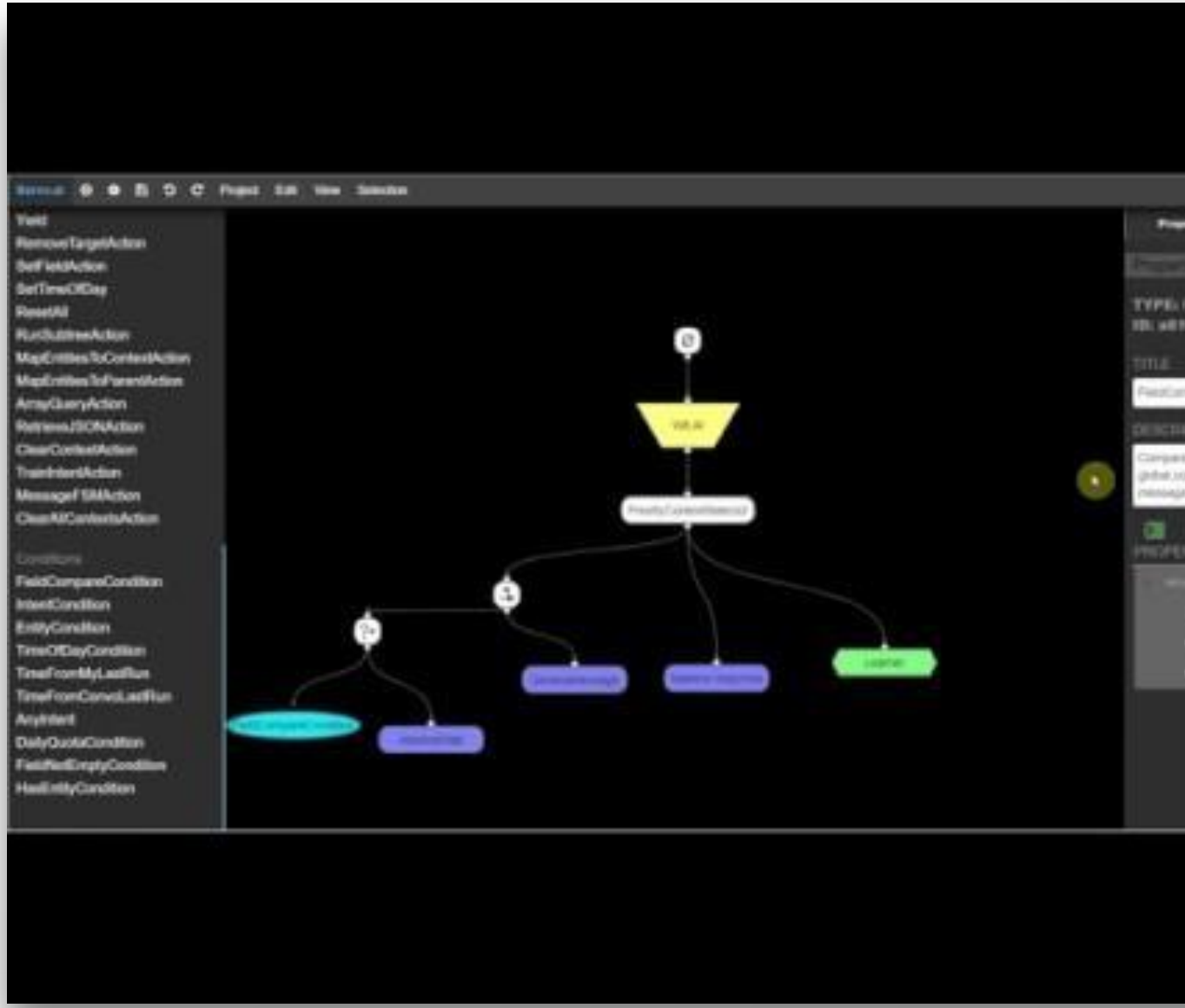


Simulator

Proerties

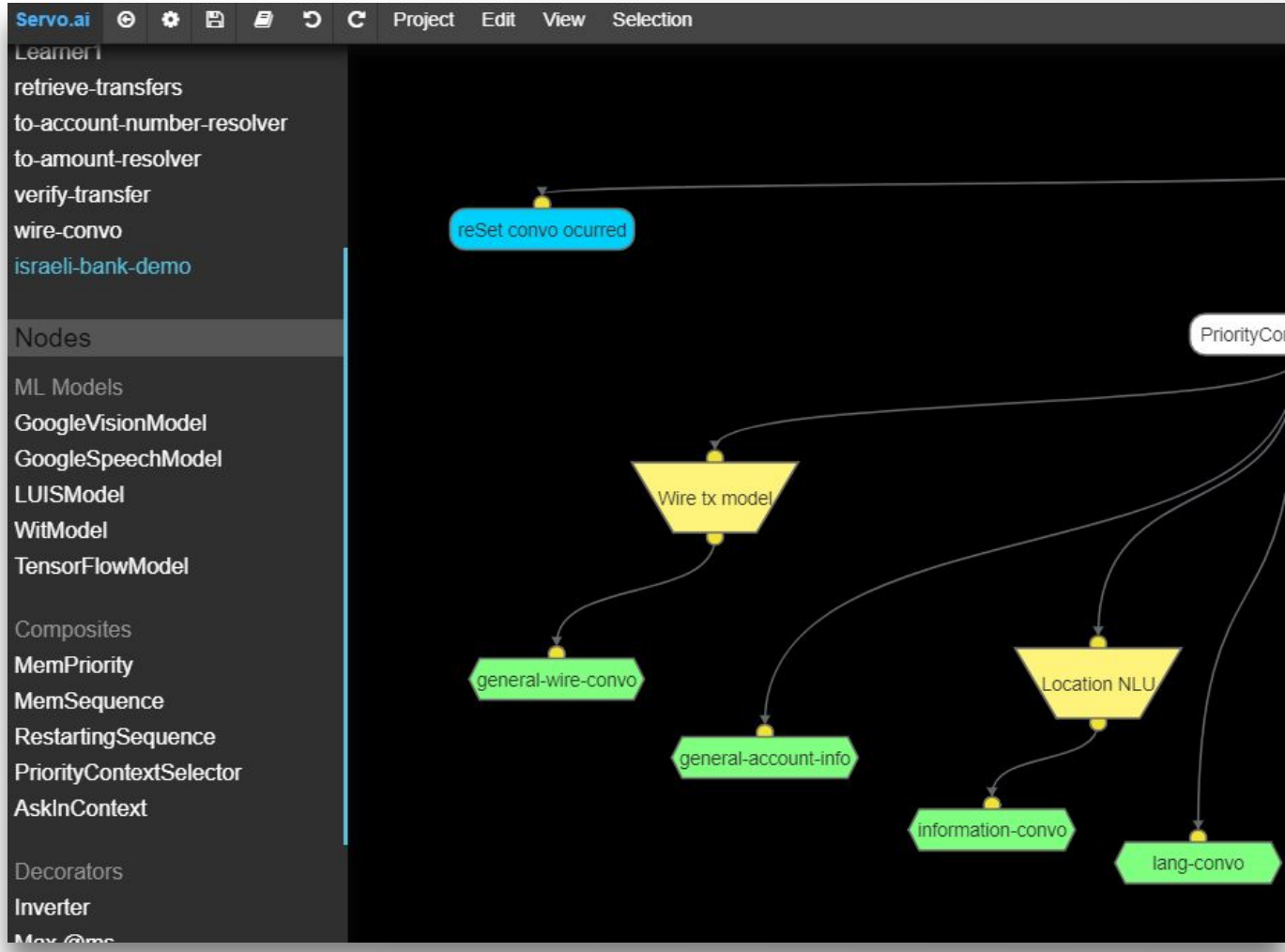
1st Pillar: Orchestration Environment

- Not just AI: **orchestration of AI, logic, databases and sensors**



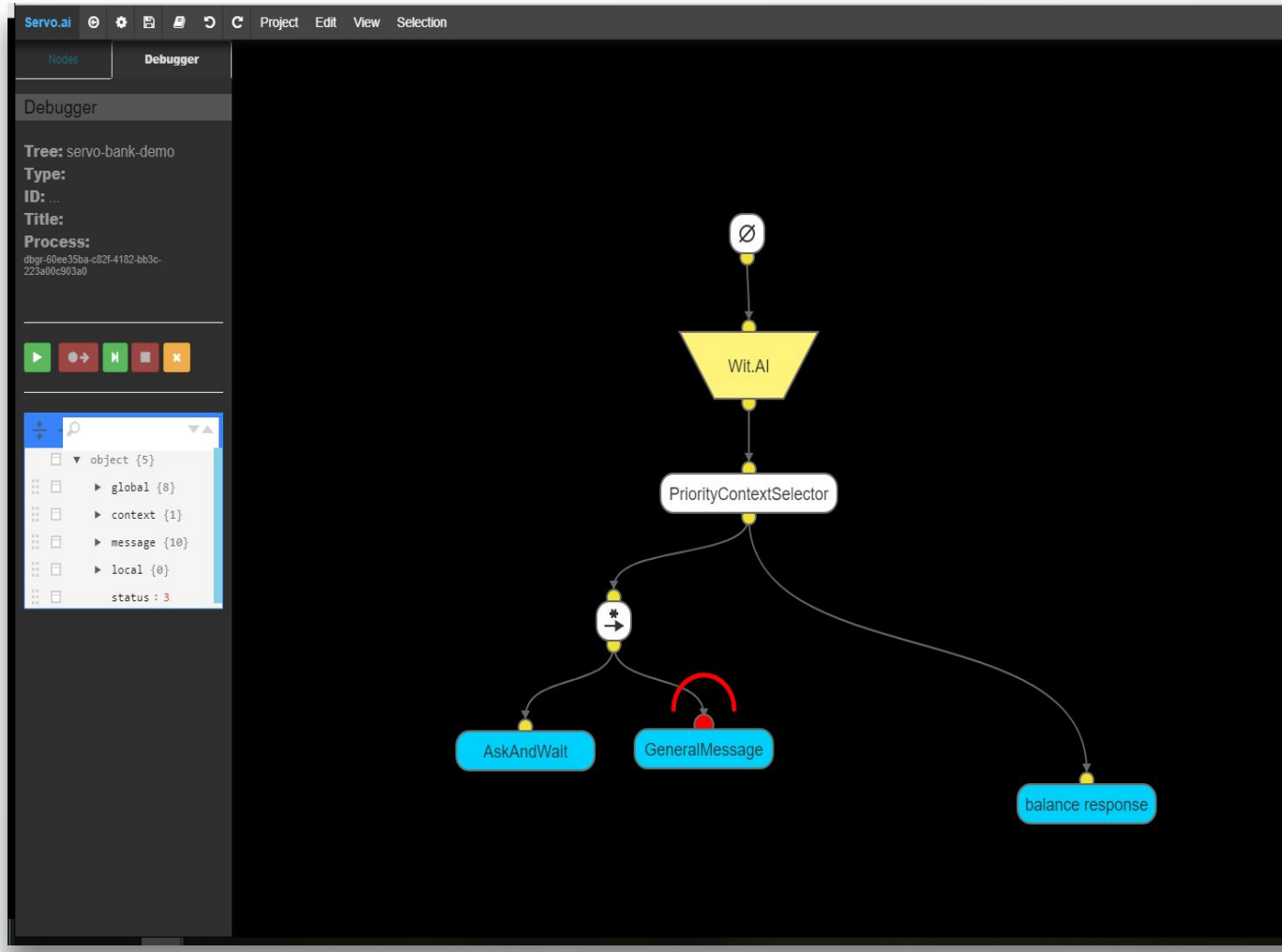
The Solution(s) - 1st Pillar

- Combine **multiple AI/ML models,** automatically selected



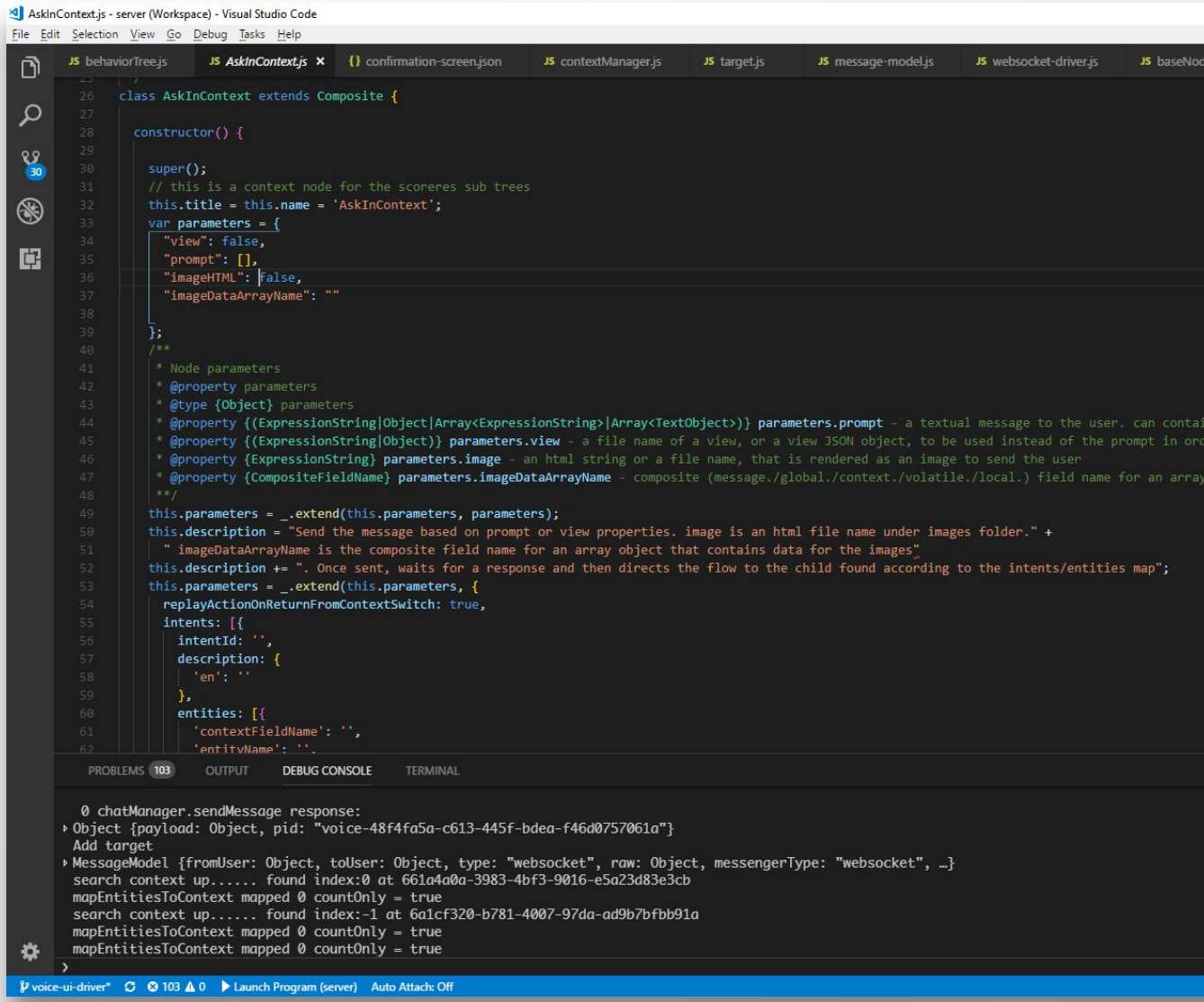
1st Pillar: Orchestration Environment

- No coding needed: **visual development** and debug



1st Pillar: Orchestration Environment

- No coding needed: **visual development** and debug
  - Not just visual!



The Solution(s) - 1st Pillar

- A standardized paradigm: **Behavior Trees**

WIKIPEDIA
The Free Encyclopedia

Main page
Contents
Featured content
Current events
Random article
Donate to Wikipedia
Wikipedia store

Interaction
Help
About Wikipedia
Community portal
Recent changes
Contact page

Tools
What links here
Related changes
Upload file
Special pages
Permanent link
Page information
Wikidata item
Cite this page

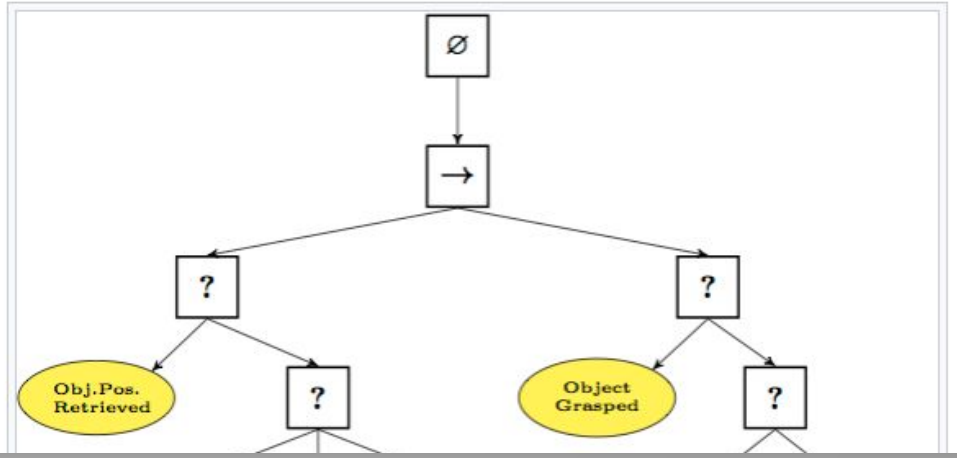
Print/export
Create a book

Behavior tree (artificial intelligence, robotics and control)

From Wikipedia, the free encyclopedia

This article is about behavior trees in AI, games, control systems and robotics. For behavior trees in requirements handling, see Behavior tree.

A **Behavior Tree** (**BT**) is a mathematical model of plan execution used in computer science, robotics, control systems and video games. They describe switchings between a finite set of tasks in a modular fashion. Their strength comes from their ability to create very complex tasks composed of simple tasks, without worrying how the simple tasks are implemented. BTs present some similarities to hierarchical state machines with the key difference that the main building block of a behavior is a task rather than a state. Its ease of human understanding make BTs less error prone and very popular in the game developer community. BTs have shown to generalize several other control architectures.[1] [2]



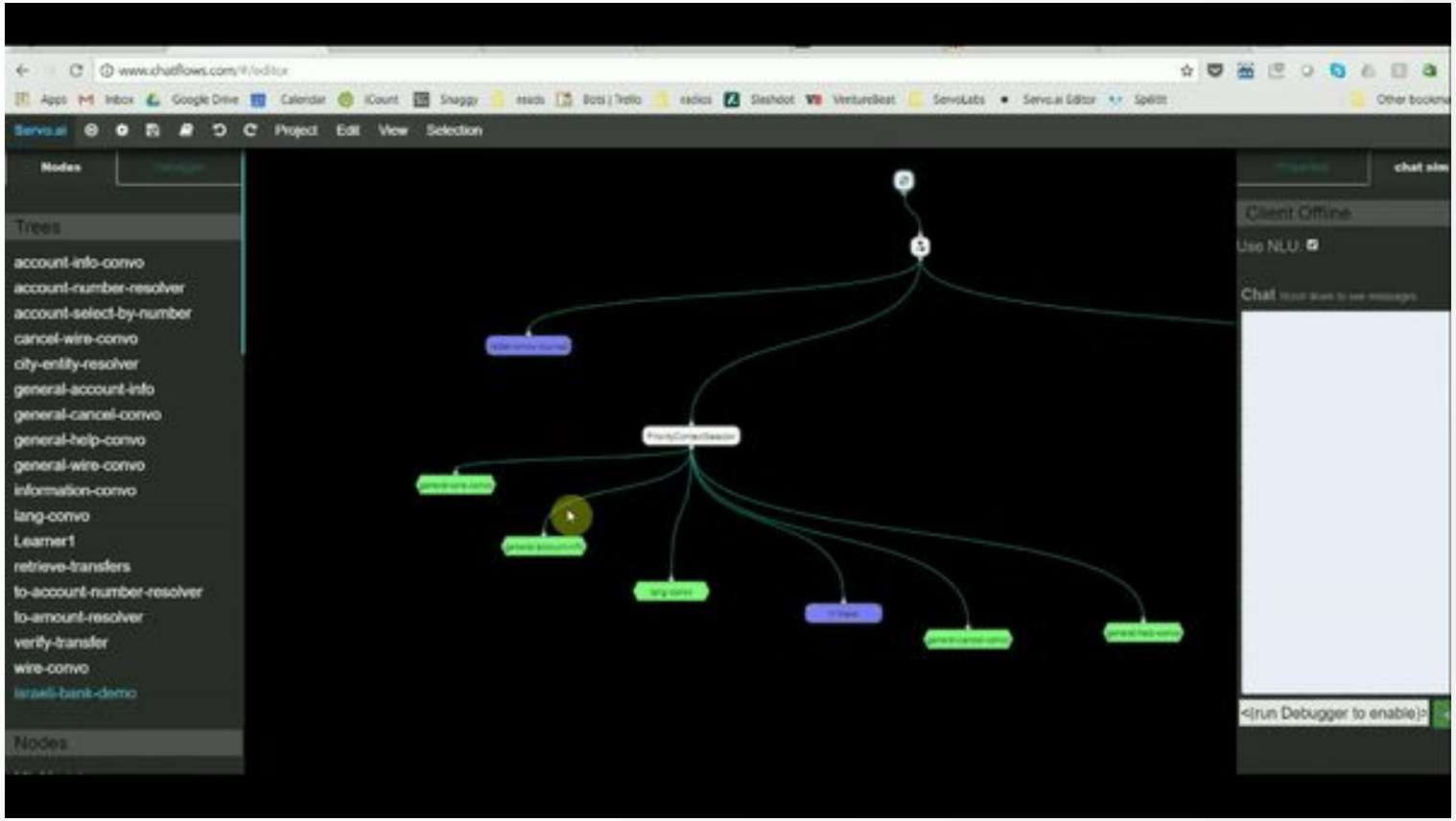
2nd Pillar: context detection

Automatic Context Recognition

- A proprietary patent-pending algorithm
- Eg: engine identifies a balance query during wire-transfer and switch context

3rd Pillar: AI sharing and resharing

- **Easy** drag-and-drop **reuse and share** of full AI modules
- The vision: community-contributed sub-(sub-)behaviors
- Example:
  - A voice bot specialized in location-related dialogs
  - Is re-used inside a banking bot to find branches



The business

servo.ai Business

Status

We plan to officially launch the platform on Q4 2018.

Currently:

- In paid POC stage with 2 US clients
- Signed agreements with strategic integrator partner

Business Model

Multi license:

- AGPL - Free for commercial / Personal use. Mandates share of code and bot structure
- Low subscription fees for non sharing bot structure. (Small business / IoT devices)
- Servo (Fully paid - enterprise):
  - Allowing internal, non-copyleft changes
  - Enterprise - oriented features
  - Support (≠professional services)

The business

- **2 Goals:**
  - Widespread developer adoption
  - Recurring revenues
- **2 Go-to-market:**
  - B2B
  - Developers

B2B Go To Market

An AI Orchestration Platform

for Augmenting Enterprise Applications

using Voice, Vision and UI Automation

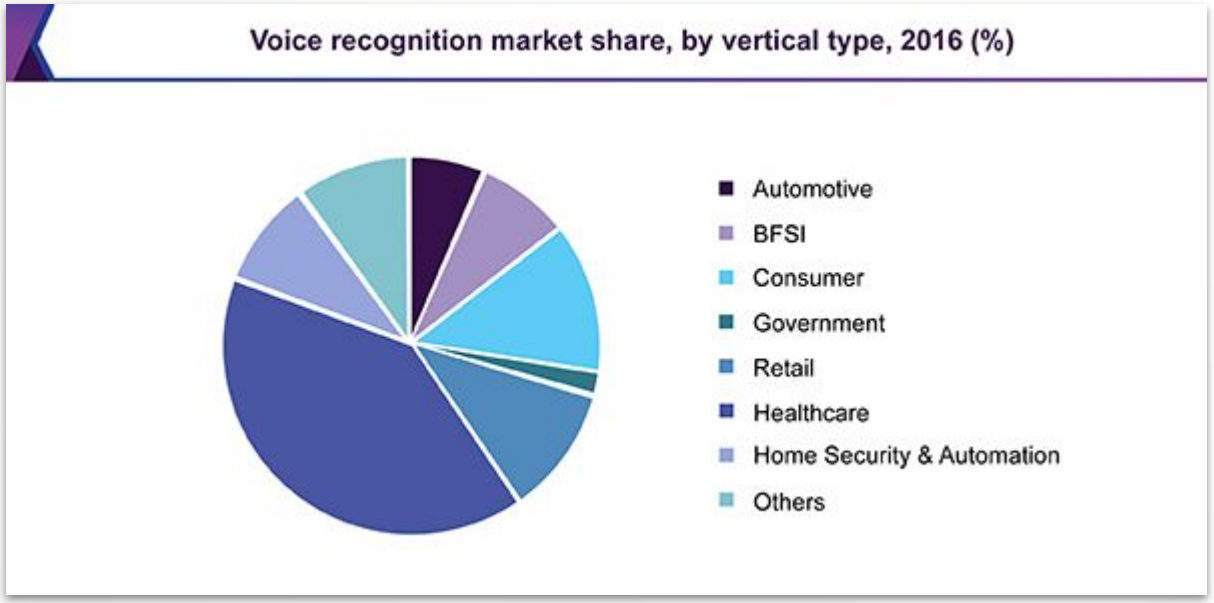
for

Improving Customer Experience and

Increasing Engagement

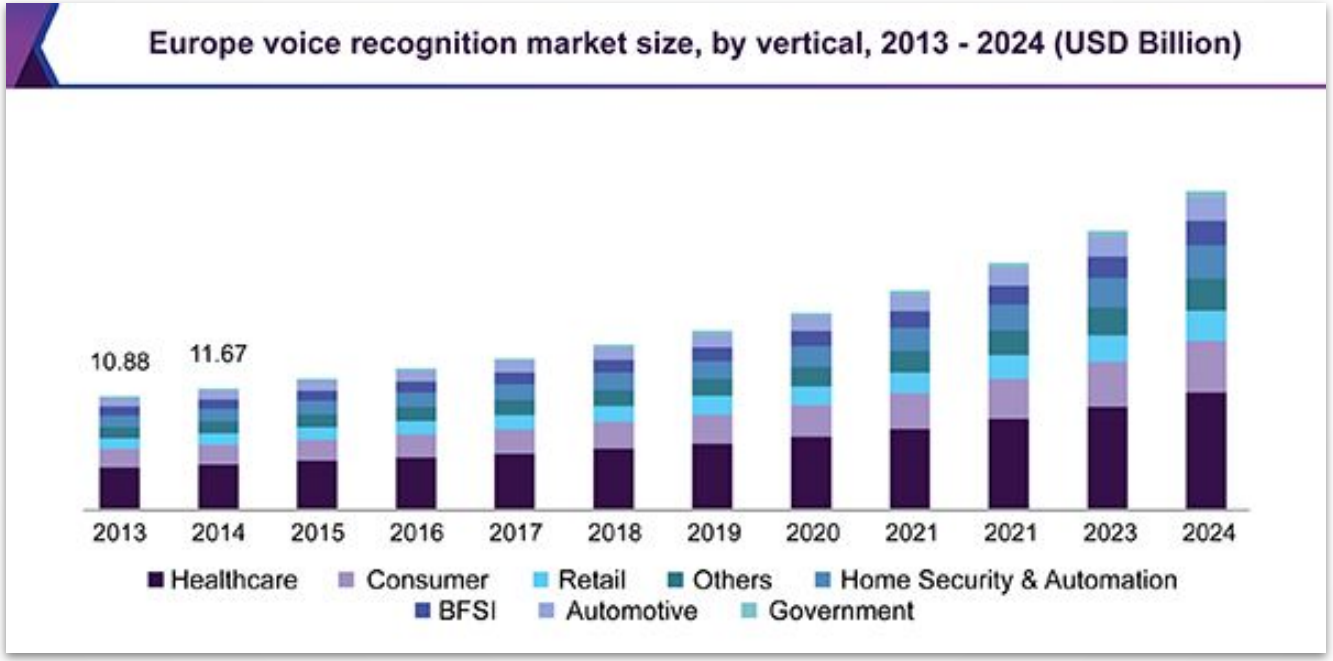
Voice Recognition Market

- Valued at USD 55.17 billion in 2016 (1)
- Still *"lack the ability to understand the context of the language to interpret the content in its true sense"*



Voice Recognition Market

- 11% CAGR until 2024 [(1)]



B2C Goto Market

- **Servo Developer Community:**
  - Behavior marketplace
  - Social AI development
- **Grassroot reach through developer marketplaces**
  - Platforms: Wix, Wordpress, Magento, Shopify, Drupal...
  - IDE marketplaces: Visual Studio, Eclipse, JIRA
  - AI connectors: Tensorflow, Watson, LUIS

Competitor Analysis

	servo.ai	Snips	Smartly AI	Pullstring	Mycroft		VIV				
On-Premise / Edge											
Cloud											
Hybrid Voice/UI											
Automatic context mapping											
Automation engine											
Open source community											
Non NLU AI model support											

Appendix

About Us

To Summarize

Competitor Analysis - Conversation and automation products