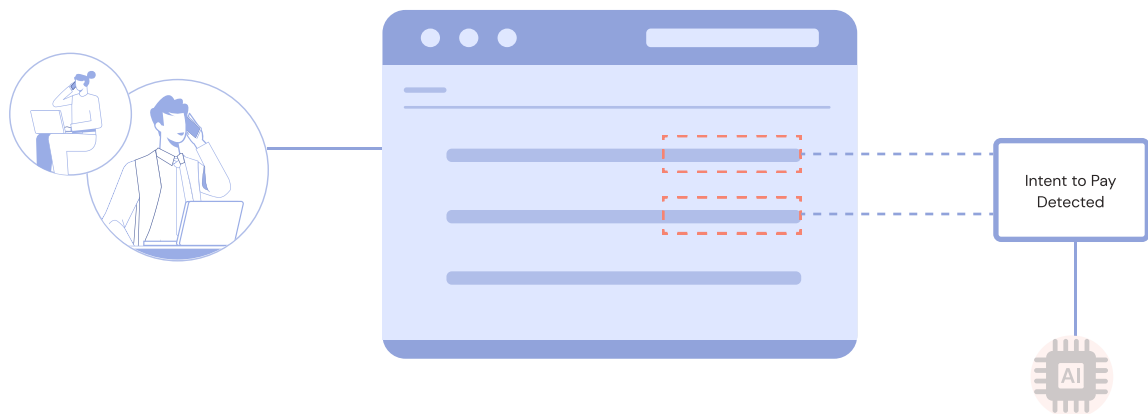




## CASE STUDY —

# Accelerating growth for autonomous receivables platform with a *conversational AI solution*



### Services rendered

Product Design  
Product Engineering  
Continuing Design

### Tech stack

Python, Flask, Rasa, BERT,  
Open AI GPT 3, Google's  
Universal Sentence Encoder,  
TensorFlow, Duckling, Spacy

## At a Glance

Zemoso created an Artificial Intelligence (AI) and Natural Language Processing (NLP) solution that efficiently processes unstructured voice data for a FinTech unicorn. Our engineering pods self organized and built a solution leaps ahead of the industry standards, delivering over 80% accuracy in results.

## The data problem emerging in Fintech

By 2025, McKinsey Global Institute predicts that data will be embedded in every decision, interaction, and process. As organizations become increasingly data-driven, they'll collect, analyze, and report on not only numbers but also text and images. Cue ChatGPT and Large Learning Models.

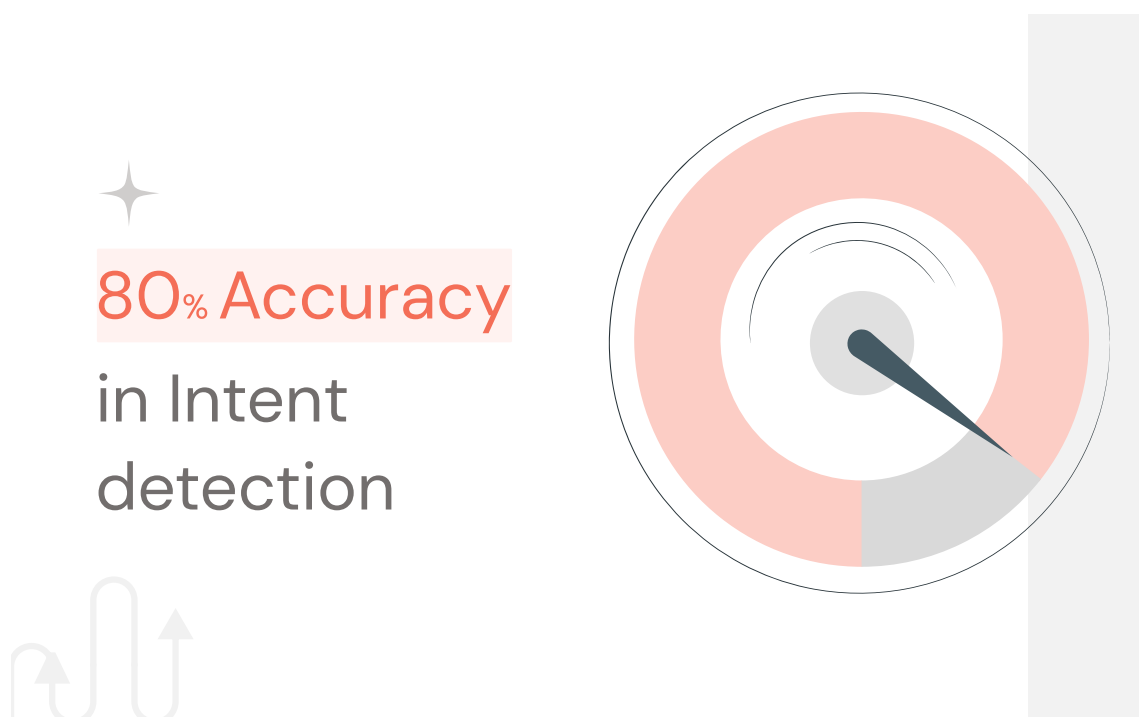
The world recently woke up to the fact that gaining valuable insights from qualitative aspects of customer interactions is as essential for growth as is from quantitative aspects of engagement. And learning models can do that for you: you just have to have enough data to train it and give it the right cues to track. Manual note-taking and interpretation is time-consuming, subjective, and can ignore vital cues. This problem becomes even more complex when there are thousands of interactions with different speech and cultural cues to analyze.

## FinTech disrupter's obstacle in innovation

Our FinTech client wanted to increase speed of collections with an account receivable platform that automates and provides collection teams incredible efficiencies. However, with collection agents handling hundreds, and sometimes thousands, of daily interactions and generating millions of records, it is challenging to track commitments, amounts, and other critical customer data from verbal exchanges. To address this problem, Zemoso developed Textractive, an Artificial Intelligence (AI) and Natural Language Processing (NLP) solution that efficiently extracts essential information such as important dates, transaction amounts, payment nature, purpose, and intent from these verbal conversations, allowing our client to work more effectively.

## Partnership outcomes

- Provided over 80% accuracy in results, as we continued to improve the algorithm with new training samples and smarter detection
- Delivered the first version within 3 months



## Textractive at a glance

We built a conversational intelligence solution to help collection agents make calls, take notes, and schedule follow up calls. Textractive, Zemoso's proprietary conversational AI assistant integrates with the autonomous receivables systems and assists collection call agents with their day-to-day tasks. It summarizes the conversation between collection agents and the customer, minimizes errors, and boosts productivity. It currently processes inputs in English, French, Spanish, German, and Russian

## Breaking down the industry context

The global stem cell market size was U.S. \$11.92 billion in 2021 and is expected to grow 11.3% every year. Cellino entered that market with an incredible vision: making personalized stem cell-derived therapies scalable and accessible. To achieve that, the team realized that they needed to solve the personalized stem cell generation problem on three fronts:

- With biology – on the stem cell engineering front
- With precision – on the laser physics front
- With automation – on the machine learning front

Ultimately, it came down to this: Cellino wants to fully automate the manufacturing of induced pluripotent stem cell (iPSC)-based cell therapies. In the words of their CEO and Co-founder, they wanted to “democratize and industrialize the future of regenerative medicine for patients in need.”

So, there we were. Helping Cellino execute on that third front: automation and scaling of iPSC reprogramming processes.

## How Textractive works?

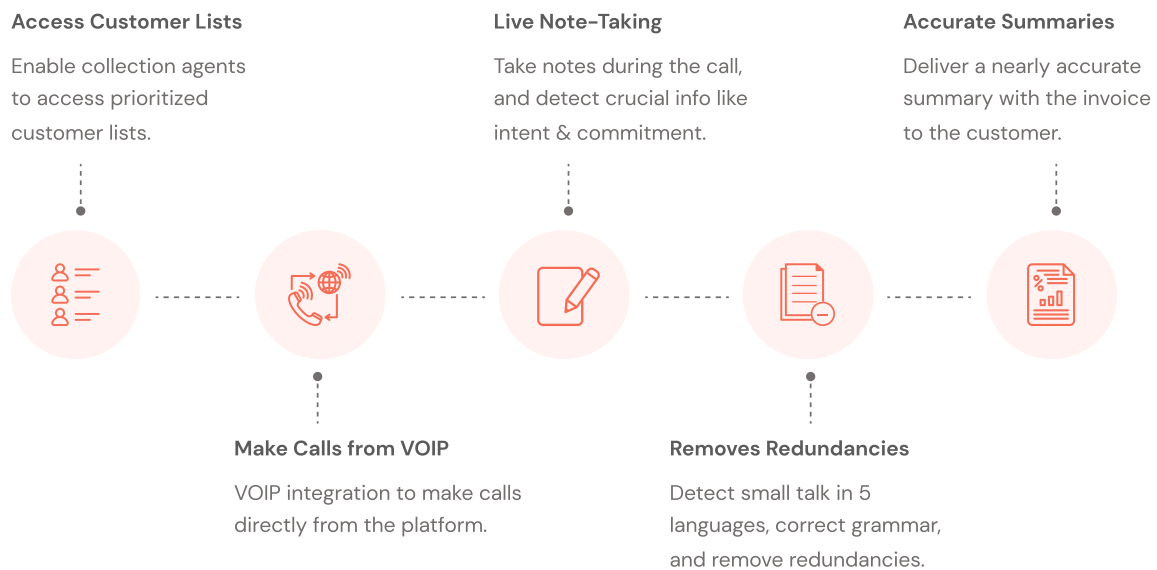
Textractive is designed to speed up the process of selecting, calling, and following up with customers by collection agents.

Here's how Textractive works:

- Textractive provides collection agents with seamless access to prioritized customer lists.
- It integrates with Voice-over-Internet Protocol (VOIP) phones to enable calling directly from the platform.
- Textractive takes live notes during the call, detecting important information such as the customer's intent, and promise of payment.
- It detects small talk in 5 languages, corrects grammar and punctuation, and removes redundancies.

- At the end of the call, it marks the call as approved, and delivers a summary with the invoice to the customer with near-perfect accuracy.

With Textractive, collection agents can complete tasks much faster, eliminating the need to spend 25 minutes prioritizing calls and follow-up tasks. The result is a more efficient collection process for our clients.



## Our engineering approach

Our engineering pod's first challenge was to determine the best suited tech stack to train and deliver this product on a fast-track timeline without losing accuracy. Here's how we made it possible:

**API server:** To ensure secure access to Textractive, we incorporated API key authentication as the first step in our workflow, authenticating agent IDs. Our Application Programming Interface (API) server, built using Python and Flask, performs the ID validation, authentication, and data pipeline functions.

**Define custom data pipelines:** We chose Rasa, the open-source conversational AI platform, to define pipelines for entities and intents, allowing us to customize our data pipelines to meet our clients' unique needs. Rasa's plug-in-based architecture seamlessly integrated with our overall product architecture, making it our top choice. Additionally, Rasa's flexibility allowed us to swap out ML models as needed, from BERT to Open AI GPT 3.

■ **Training the ML model:** Zemoso analyzed some client–customer conversations to identify the major categories of intent, entities involved, and the amount of the transaction. They then classified and labeled the collected samples, and generated more sample conversations for different types of intents based on the results. Using these samples, Zemoso trained a Machine Learning (ML) model.

■ **Intent detection:** We utilized Google's Universal Sentence Encoder to encode text into high-dimensional vectors that could be classified based on intent or greetings. As a pre-trained ML model, it required less training and offered high accuracy. It enabled us to establish context by deciphering the meaning of ambiguous language in text and accelerated our go-to-market strategy.

■ **Categorization:** We employed Deep Neural Network (DNN) from TensorFlow for classification. TensorFlow is an end-to-end open source library for Machine Learning (ML), widely used in the Google community.

■ **Entity detection:** We used various techniques such as regular expressions, rules engine, and ML methods like Conditional Random Fields (CRF) that take context into account. We used Meta's high scale Duckling library to detect and extract entities like time, ordinals, dates, numbers, and currency.

## ■ Bringing it all together

Textrative's integration with the client's platform has been a success. We leveraged our expertise in machine learning, deep neural networks, and natural language processing to deliver a solution that provided them a significant competitive advantage in the market.

This FinTech unicorn has been able to process vast amounts of unstructured conversational data with Textrative with speed and accuracy. This kind of streamlining and amplification is significantly innovative for product companies that enable, automate, and optimize for service providers.

To hire your custom product pod, write to [sales@zemosolabs.com](mailto:sales@zemosolabs.com) today!