Customer Service AI Chatbots Need to Raise the Bar on Quality

Effective conversational customer service

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54% of US online consumers
expect interactions with customer service chatbots
to **negatively affect their quality of life.**

-- Forrester Infographic, Jan. 2019

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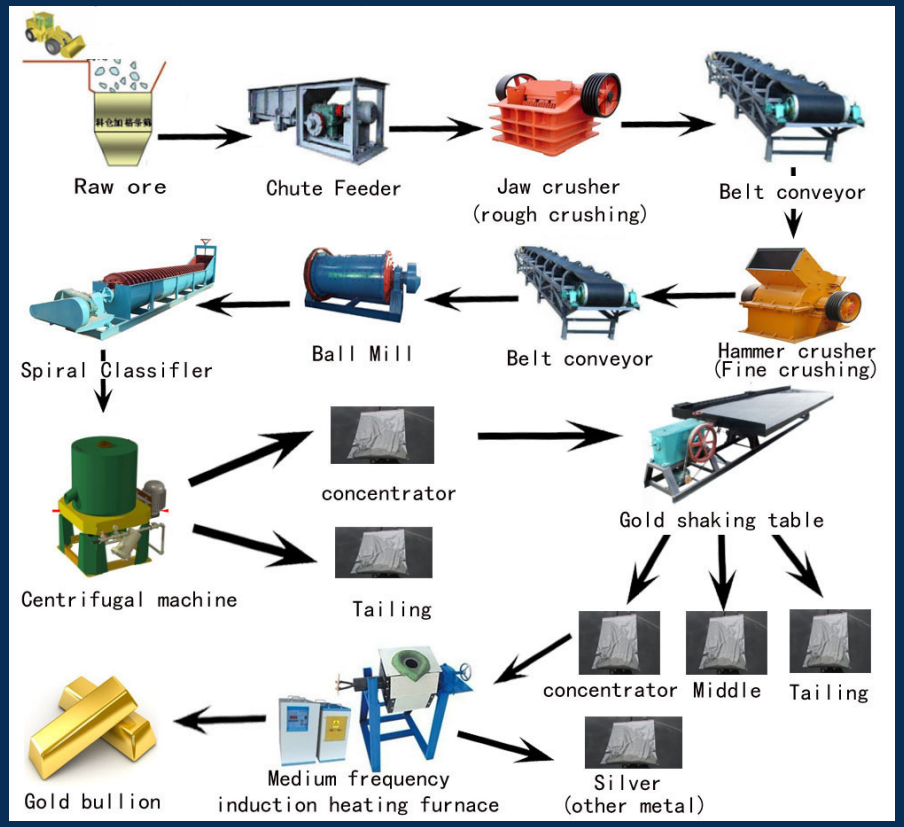
Many Chatbots are either Simpletons Or Just Bad

Most projects wildly underestimate the complexity of testing chatbots.

A Gold Rush happens when similar optimists think the gold is just laying on the ground…



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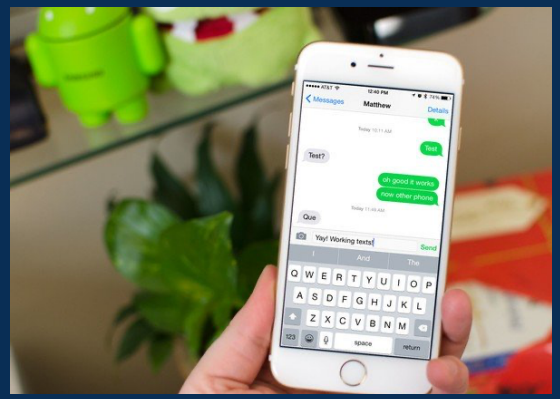
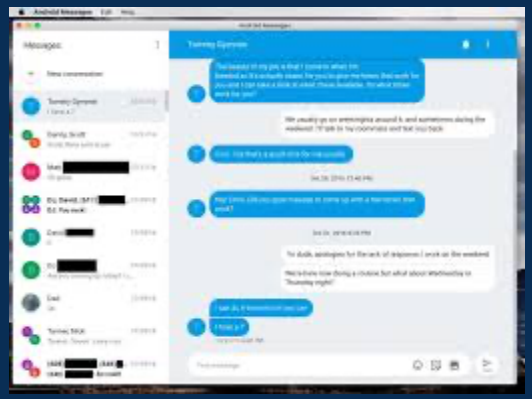
The Bot Problem Space

1. Modality: Voicebot vs. Chatbot





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The Bot Problem Space

2. Multiple Digital Channels for Chatbots
   - Enterprise Website
   - Facebook Messenger
   - WhatsApp
   - WeChat
   - Apple Business Chat
   - etc.

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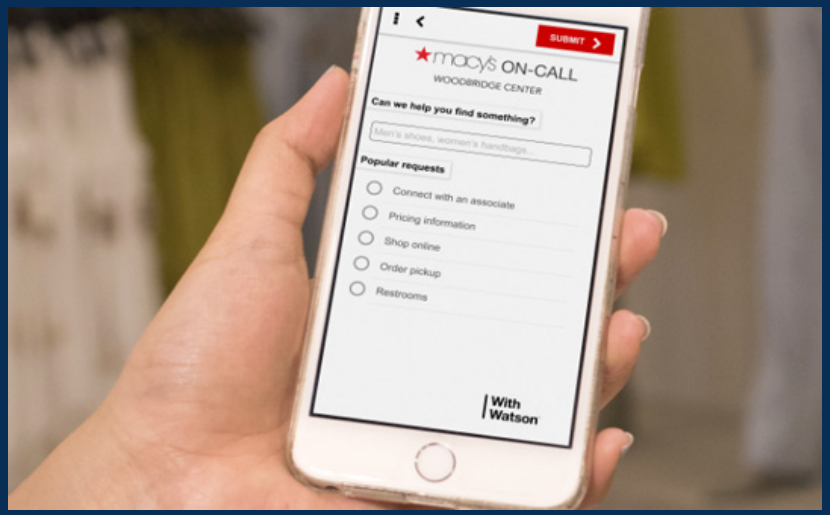
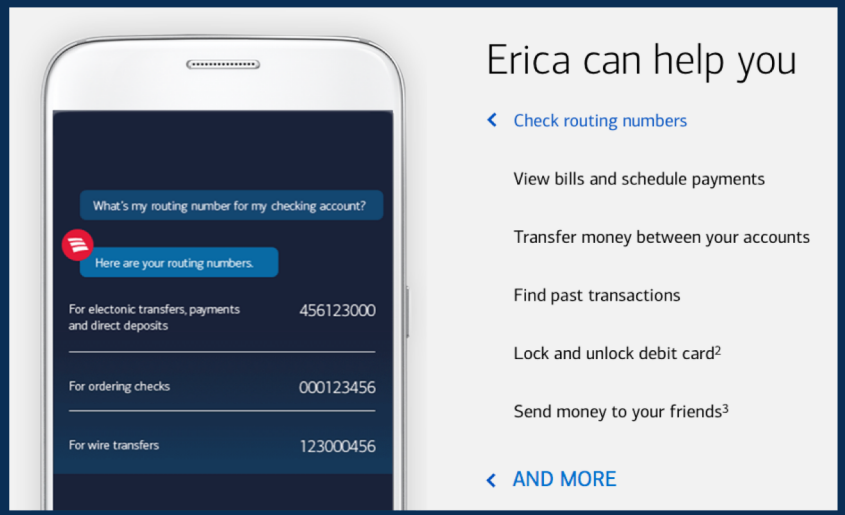
The Bot Problem Space

3. Channel-specific efforts can grow into a Cross-Channel Bot Persona





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The Bot Problem Space

4. Speed, speed, speed!
   - Adoption is driven by an expectation of efficiency, which we <u>must deliver</u>
   - Conversational is cool, but Customers just want to “get it over with”
   - Escalation to Agent with context needs to be fast and accurate

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Developing AI-based Bots: Common Pain Points

Enterprises struggle in a few key areas:

1. **Understanding** – Individuals want to be understood the first time, despite the many possible intents a customer base has
2. **Automation** – Common to find manual efforts that should be automated
3. **Testing E2E Connected Journeys** – omnichannel customer service
   - Web ► Chatbot ► Chat Agent
   - Whatsapp ► Chatbot ► Outbound Phone Call
   - Voice Call ► SMS ► Web page ► Chatbot ► Chat Agent
   - …

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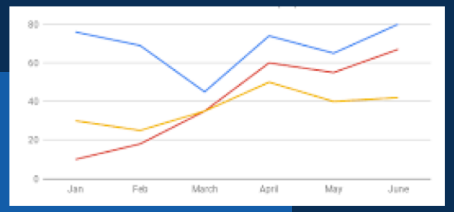
Chatbot Pain Points

1. **Understanding** – Intent/Utterance Testing produces trackable accuracy metrics for each intent



Example: Credit Card business unit of Retail Bank

"I want to make a payment of $300 from my checking account"

- *Intent Accuracy*
- *Correct Entity Value Capture*
  - PayAmount = $300,
  - PayAccount = Checking

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Chatbot Pain Points

2. **Automation** – Development sluggishness stems from manual efforts
   a. Incomplete or old functional regression test suite
   b. Inadequate training data
   c. Inadequate testing data – not in optimal range of 10-100x more testing data
   d. No integration into CI/CD – no “build & test” or no “deploy & test” automation

Example Payroll/HR Bot project

- 60-85% coverage of intents
- Training data regularly changed for Watson
- Testing/Training Ratio in the 2-3x range
- API test cases but no end-to-end testing with web site and agents

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Chatbot Pain Points

3. End to End Assurance

a. Bot-to-Human Escalation: violations of “the right agent, right now” rule
b. Incorrect context transfer, requiring customers to explain themselves again
c. Disconnection of customer as journey adds or hops channels

Example roadside assistance project

- 11 major systems integrated together to form solution
- Stranding someone broken down on the side of the road? Disaster
- Many trigger conditions that mandate a human agent within a few seconds
- Journey initiation on Voice, mobile web and native mobile app

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Why Not Create Bots to Test Bots?

Testing can be automated via a Customer Bot and a Customer Service Bot

- Sizable set of intents
- Broad range of entity values
- Variations in human expression
- Self-service options are becoming more consequential & risky
- Measure speed of response

There are, however, some risks:

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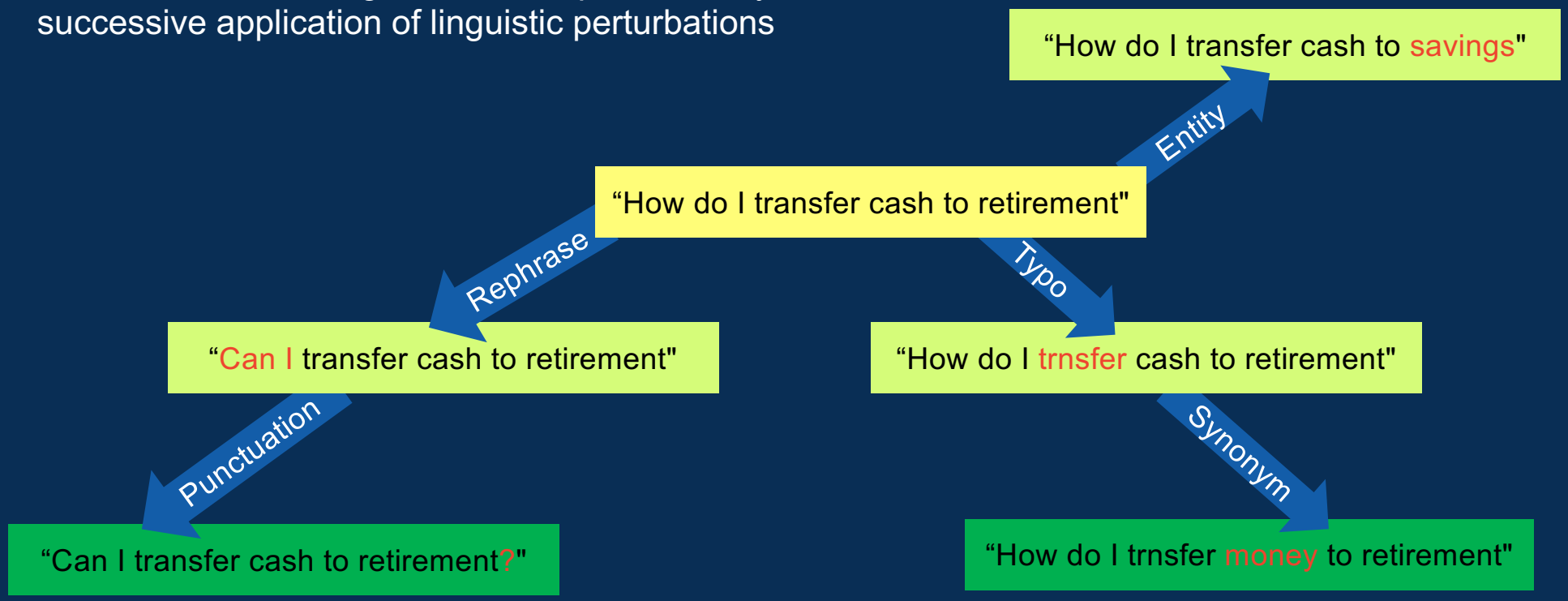
Conversational Forces

- Gold-standard training utterance is perturbed by successive application of linguistic perturbations



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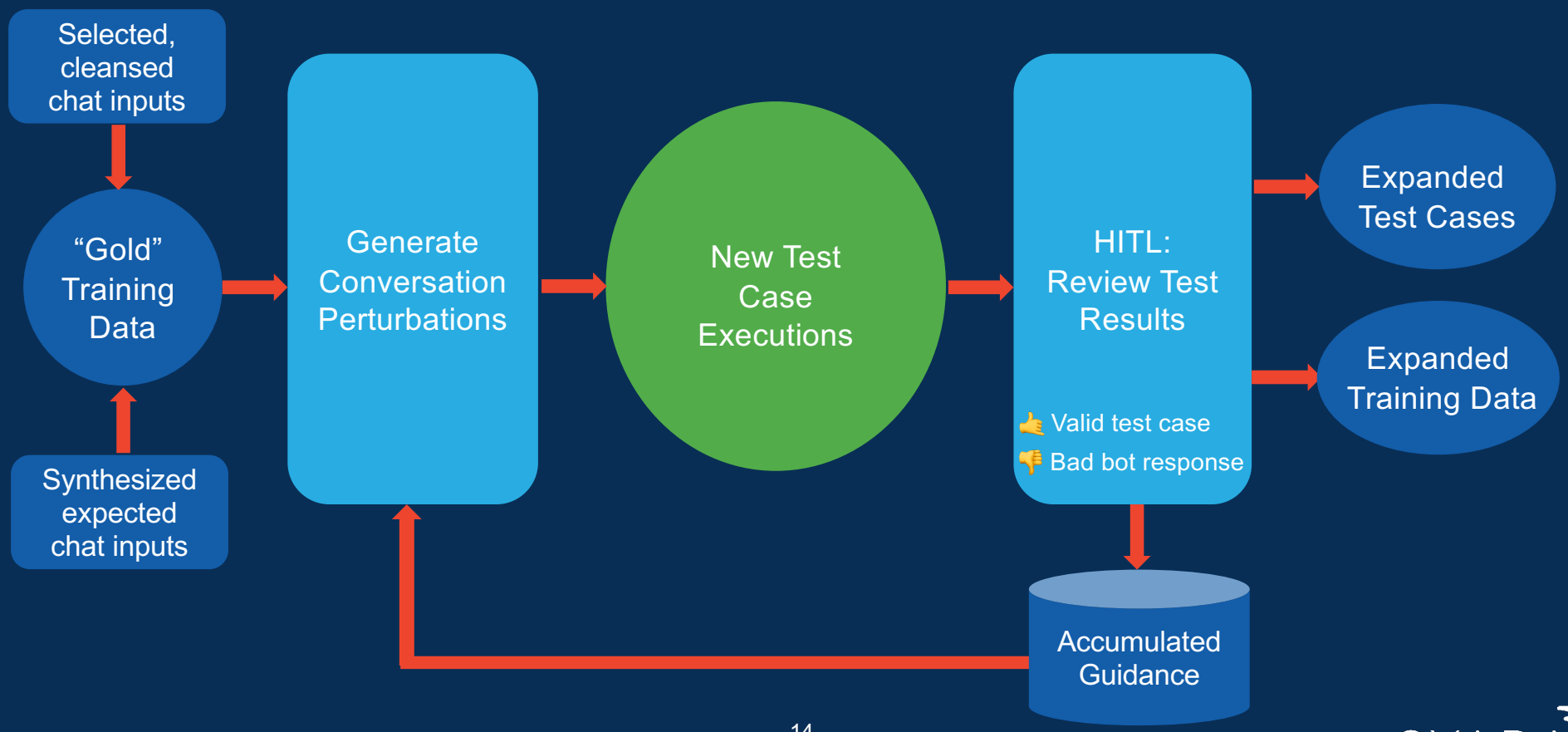
Machine-Generating Bot Conversations



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Machine Learning Opportunities

- Conversational Variations
- Test Case Generation
- Coverage-directed phased test execution
- Popular Journey Sampling
- Root Cause Prediction

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Building a Virtual Customer

Create a collection of Virtual Customers to cover every intent

1. Build a sparse coverage matrix: Intent by Persona

Intent	Platinum Customer	Gold Customer	Silver Customer	Suspected Fraudster
Place order	SKU: 23 QTY: 40	SKU: 1021 QTY: 3	SKU: 441 QTY: 12	SKU: 441 QTY: 0
Order Status	OrderID: 23	OrderID: 78	-	OrderID: 78
Cancel order	OrderID: 23	-	Order: 313	-
Return order	OrderID: 21 SKU: 121 QTY: 10	OrderID: 622 SKU: 497 QTY: 1	-	-

2. Intent-specific tests advertise entity bindings
3. Success patterns for bot response documented in intent-specific test cases

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Summary: AI-Powered Customer Experience Testing

- Combinatorics of intents, entities, workflows, styles of expression, and data-driven variations all point to a need for bot-like test automation
- New breeds of testers & tuners emerge to oversee more sophisticated testing
- Virtual Customers still have a lot to learn
- Success metrics are not the same for every chatbot team
  - Containment
  - Correctly routed
  - Intent Resolution
  - Customer Satisfaction (e.g., NPS)

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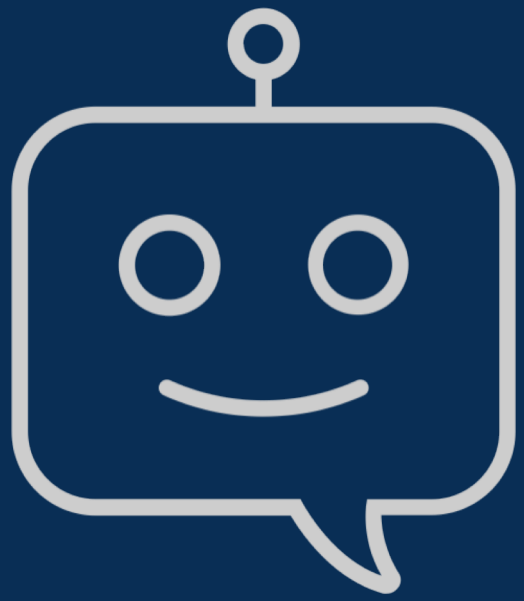

CYARA Kicks Bot

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