Pragmatic approach to building bots

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Co-Founder

Voicy.ai
The need for a conversational UI

Trends in UI
• Real CI → Web UI → Mobile UI → Virtual CI

Guiding Principles
• Reduce Cognitive Load
• Brand Relevance
• Intuitive, Interactive and Intelligent

Chat ⇒ new browser
• Chatbot ⇒ new website
Types of conversational bots

- **Entertainment/ Social Bots**
- **Task Specific Bots**
  - Master Bot Handoff
- **Information Bots**
- **VPA/ Concierge Bots**
  - Domain Knowledge
Bot Architectures

Bot Taxonomy

Rule Based Models

Pattern-Based Heuristics
AIML/ChatScript

Intelligent Models

Retrieval Based
(ML Classifiers)

Generative Model

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Pattern-Based Heuristics

AIML

<categor y>
<pattern>WHAT ARE YOU</pattern>
<template>
<think><set name="topic">Me</set></think>
I am the latest result in AI, which can reproduce the capabilities of the human brain with greater speed and accuracy.
</template>
</category>

CHATSCRIPT

s: (~like ~fruit ![~animal _bear] ) Vegan, you too...
Retrieval Based Model

User Message

Predefined Responses

Retrieval Based Model

Response

Contexts (Personal & Physical)
Generative Model

User Message

Generative Model

Response

Previous Messages
Building a generative model

Neural Conversational Model

LSTM ENCODER

LSTM DECODER

Need Training Data

How are you <EOL>

I am good <EOL>

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Machine Learning and Response Generation

There is no silver bullet
Building a generative model

Deep Reinforcement Learning

Bot

User (world)

State, Stimulus, Situation

Reward, Gain, Payoff, Cost

Action, Response, Control

How deep reinforcement learning can help chatbots, Li Deng (Microsoft) Aug 2016

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In data lies the power

“Data is the fuel we feed into training machine learning models that can create powerful network effects at scale”
– John Melas-Kyriazi
The stages of reaching to full AI Experience

- Button/ Menu based navigation
- Entity Recognition/ Keyword Mapping
- Adding Contexts (Persistence, Levels)
- Multiple Intents Recognition
- Full NLP with complex human-like interaction
# Developing Chatbots: Building blocks

<table>
<thead>
<tr>
<th>Type of deployment</th>
<th>Prerequisites</th>
<th>Cost structures</th>
<th>Service types</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Business/Goal/Platforms/Volume</td>
<td>• Integrations/NLL/Monitoring/Security</td>
<td>• Outsource/In-house/Self-service/Managed</td>
<td>• Messages/Interactions/Bots</td>
</tr>
</tbody>
</table>

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## Case study: Voicy.ai for SMBs

![CUSTOMER DATA](image)

### Table

<table>
<thead>
<tr>
<th>Food</th>
<th>Retail</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSR/ QSR/ FCR</td>
<td>Boutique</td>
<td>Fitness</td>
</tr>
<tr>
<td>Coffee shop/</td>
<td>Convenience</td>
<td>Spa</td>
</tr>
<tr>
<td>Café</td>
<td>Store</td>
<td></td>
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<tr>
<td>Bakery</td>
<td>Grocery</td>
<td>Hair/ Nail Salon</td>
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<tr>
<td>Bar</td>
<td>Liquor Store</td>
<td>Home &amp; Repair</td>
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<tr>
<td>Food Truck</td>
<td>Vape shop</td>
<td>Professional</td>
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<tr>
<td>Frozen Yoghurt</td>
<td>Jewelry</td>
<td>Catering</td>
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<tr>
<td>Pizza/ Deli</td>
<td>Florist</td>
<td></td>
</tr>
</tbody>
</table>

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Case study: Voicy.ai for SMBs

How can I improve profitability?

Conversion rate
C-Sat
Loyalty

Customer Engagement Costs
Case study: Voicy.ai for SMBs
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Questions?

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