Alpha Presentation
Self-Service Support Chatbot for Google Cloud
The Capstone Experience
Team Google
Brandon Hu
Emma Hettinger
Keerthana Byreddy
Kyle Kraski
Tyler Weisner
Department of Computer Science and Engineering
Michigan State University
Fall 2020
Project Overview

- 4 components:
  - Chatbot
  - Analytics Dashboard
  - Interrogator Script
  - AI Model

- Reduce time to issue resolution
- Provide insight on the usefulness of current documentation
System Architecture
## Scrapped Documents In Datastore

### Entities

**Create Entity** ☐  **Import** ☐  **Export** ☐  **Delete** ☐

#### QUERY BY KIND

**Kind**

TroubleshootingSuggestion  ☐

**Filter Entities**

<table>
<thead>
<tr>
<th>Name/ID</th>
<th>Date</th>
<th>Keyword</th>
<th>Section</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>id=450364369552384</td>
<td>2020-10-18 (12:39:27.831 EDT)</td>
<td>remove an instance from the instance group</td>
<td>gcloud</td>
<td><a href="https://cloud.google.com/compute/docs/ins">https://cloud.google.com/compute/docs/ins</a>...</td>
</tr>
<tr>
<td>id=450416265362240</td>
<td>2020-10-18 (12:23:39.652 EDT)</td>
<td>manage your services</td>
<td>Fedora CoreOS</td>
<td><a href="https://cloud.google.com/compute/docs/im">https://cloud.google.com/compute/docs/im</a>...</td>
</tr>
<tr>
<td>id=4504397703537644</td>
<td>2020-10-18 (12:41:07.402 EDT)</td>
<td>managed instance</td>
<td>API</td>
<td><a href="https://cloud.google.com/compute/docs/ins">https://cloud.google.com/compute/docs/ins</a>...</td>
</tr>
<tr>
<td>id=4504486576741376</td>
<td>2020-10-18 (12:48:39.200 EDT)</td>
<td>build highly available deployments</td>
<td>Stateful managed instance groups</td>
<td><a href="https://cloud.google.com/compute/docs/ins">https://cloud.google.com/compute/docs/ins</a>...</td>
</tr>
<tr>
<td>id=4504592608230592</td>
<td>2020-10-18 (12:44:53.495 EDT)</td>
<td>update all the vms</td>
<td>OS image upgrades for MIGs</td>
<td><a href="https://cloud.google.com/compute/docs/ins">https://cloud.google.com/compute/docs/ins</a>...</td>
</tr>
<tr>
<td>id=4504597721506816</td>
<td>2020-10-18 (12:21:13.422 EDT)</td>
<td>solutions</td>
<td>Solutions</td>
<td><a href="https://cloud.google.com/compute/docs/im">https://cloud.google.com/compute/docs/im</a>...</td>
</tr>
<tr>
<td>id=45047033830639920</td>
<td>2020-10-18 (12:53:03.312 EDT)</td>
<td>permissions</td>
<td>Permissions</td>
<td><a href="https://cloud.google.com/compute/docs/ins">https://cloud.google.com/compute/docs/ins</a>...</td>
</tr>
<tr>
<td>id=4505145916359552</td>
<td>2020-10-18 (12:32:09.169 EDT)</td>
<td>update ubuntu operating systems</td>
<td>Ubuntu</td>
<td><a href="https://cloud.google.com/compute/docs/im">https://cloud.google.com/compute/docs/im</a>...</td>
</tr>
<tr>
<td>id=4505821249538600</td>
<td>2020-10-18 (12:14:34.124 EDT)</td>
<td>top traffic</td>
<td>Sending email with Mailjet</td>
<td><a href="https://cloud.google.com/compute/docs/tut">https://cloud.google.com/compute/docs/tut</a>...</td>
</tr>
<tr>
<td>id=4506037208520382</td>
<td>2020-10-18 (12:03:32.818 EDT)</td>
<td>transfer files</td>
<td>Transferring files using gcloud</td>
<td><a href="https://cloud.google.com/compute/docs/ins">https://cloud.google.com/compute/docs/ins</a>...</td>
</tr>
<tr>
<td>id=4506220949299884</td>
<td>2020-10-18 (12:13:32.175 EDT)</td>
<td>products and pricing</td>
<td>Products and pricing</td>
<td><a href="https://cloud.google.com/compute/docs/dis">https://cloud.google.com/compute/docs/dis</a>...</td>
</tr>
<tr>
<td>id=45064958543454208</td>
<td>2020-10-18 (12:53:57.765 EDT)</td>
<td>view startup agent logs</td>
<td>Viewing startup agent logs</td>
<td><a href="https://cloud.google.com/compute/docs/co">https://cloud.google.com/compute/docs/co</a>...</td>
</tr>
<tr>
<td>id=4507144636334080</td>
<td>2020-10-18 (12:57:54.415 EDT)</td>
<td>turn on auto-scaling</td>
<td>Scale-in controls with autoscaler mode</td>
<td><a href="https://cloud.google.com/compute/docs/au">https://cloud.google.com/compute/docs/au</a>...</td>
</tr>
<tr>
<td>id=4507370077565680</td>
<td>2020-10-18 (12:33:57.322 EDT)</td>
<td>api</td>
<td>API</td>
<td><a href="https://cloud.google.com/compute/docs/ins">https://cloud.google.com/compute/docs/ins</a>...</td>
</tr>
<tr>
<td>id=4508298573220560</td>
<td>2020-10-18 (12:41:36.943 EDT)</td>
<td>scalable apps</td>
<td>Choosing regional managed instance groups</td>
<td><a href="https://cloud.google.com/compute/docs/ins">https://cloud.google.com/compute/docs/ins</a>...</td>
</tr>
</tbody>
</table>
Chatbot Conversation In DialogFlow

User:
Hi! What did you break that brought you to me?

Assistant:
I'm having an issue with my instance.

User:
Is your issue with creating your instance, connecting to your instance, starting up your instance, network traffic to or from your instance being dropped, firewall rules, or is it due to something else?

Assistant:
Creating my instance.

User:
Did you receive an error?

Assistant:
Yes.

User:
What error did you receive?

Assistant:
notFound.

User:
See this document: https://cloud.google.com/compute/docs/troubleshooting/troubleshooting-instances#vm-not-created

Assistant:
If you receive a notFound or does not exist in zone error when requesting new resources, it means that the zone does not offer the resource or machine type that you have requested. See Regions and zones to find out which features are available in each zone.

User:
Would you like to submit a support ticket, exit, or ask another question?

Assistant:
I want to submit a support ticket.

User:
Do you want to open a support ticket or end our conversation?

Assistant:
support ticket.

Okay I am sorry I could not help you. I will send you notes of our conversation that you can paste into a support ticket here: https://enterprise.google.com/supportcenter/managecases
Interrogator Script Command and Results

```
hubrando@cloudshell:~/msu-spartan/interrogator-script (msu-spartan-289723)$ gcloud compute ssh hubrando@brandon-interrogator-script --zone=us-central1-a Linux brandon-interrogator-script 4.19.0-11-cloud-amd64 #1 SMP Debian 4.19.146-1 (2020-09-17) x86_64

The programs included with the Debian GNU/Linux system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.
hubrando@brandon-interrogator-script:$ ls
g ee_output.txt
hubrando@brandon-interrogator-script:$ cat gee_output.txt
no traceroute in /usr/sbin or /bin relying on PATH
:echo ####### GEE #######

GEE: GEE: GEE:
:grep -q network
:echo
:[ 1 = 1 ]
:echo ## Network
### Network
:sbin/ifconfig
en0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1460
    inet 10.128.0.4 netmask 255.255.255.255 broadcast 10.128.0.4
    inet6 fe80::4001:aff:fe89:4 prefixlen 64 scopeid 0x20<link>
    ether 42:01:0a:80:00:04 txqueuelen 1000 (Ethernet)
    RX packets 718 bytes 164589 (160.7 Kib)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 642 bytes 88254 (86.1 Kib)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 33 bytes 6722 (6.5 Kib)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 33 bytes 6722 (6.5 Kib)
```

The Capstone Experience

Team Google Alpha Presentation
Chatbot Configuration Dashboard
What’s left to do?

1. Implement elastic search to help us go beyond the web scrapped solutions in regards to GCE issues
2. Implement the AI API model to train the suggestions offered by the bot
3. Ask for feedback from the customer
4. Functionality of the interrogator script
Questions?