Reliance Jio

Kaumudi Nivarthi
Oracle Cloud Infrastructure
Reliance Jio

- 350+ million subscribers
- Largest mobile network operator in India
- Third largest in the world
- Wide range of services: TV, Gaming, News, ...
Hello Jio

- Hello Jio is an artificial intelligence–powered virtual assistant voice assistant
- Works both in Hindi and English
- Handled a peak DAU of 2.5 million users during launch of prime
- Answered nearly ~300 million utterances from 25+ domains to 150 million unique users with 97% accuracy (2018)

Jio Engage

- Engage in multiple interactive activities
- Earn Gratification through loyalty points and brand offers/coupons/vouchers
- Get access to offers from nearby stores
- In 2018 IPL nearly ~101 million users participated and won the team the Mobile World Congress award and 30+ awards to date

JioMeet

- Conference from any device, anytime, anywhere
- Enterprises can connect with up to 100 participants in a conference using the JioMeet app
- End-to-end unified collaboration platform (Chat/Audio/Video/Web Conferencing services) for Enterprises and Retail users
Gamification Statistics

<table>
<thead>
<tr>
<th>Month</th>
<th>Campaign</th>
<th>Gratification</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr'18</td>
<td>JCPA IPL</td>
<td>60 Days</td>
<td>94Mn</td>
</tr>
<tr>
<td>Jan'19</td>
<td>Ind vs Aus</td>
<td>7 Days</td>
<td>1.6Mn</td>
</tr>
<tr>
<td>Mar'19</td>
<td>JCPA IPL</td>
<td>60 Days</td>
<td>155Mn</td>
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<tr>
<td>Jun'19</td>
<td>WCPA</td>
<td>48 Days</td>
<td>15Mn</td>
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<tr>
<td>Jul'19</td>
<td>SuperSquad</td>
<td>45 Days</td>
<td>1Mn</td>
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<tr>
<td>Oct'17</td>
<td>KBC</td>
<td>84 Days</td>
<td>9Mn</td>
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<tr>
<td>Oct'18</td>
<td>Bigg Boss</td>
<td>105 Days</td>
<td>0.8Mn</td>
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<tr>
<td>Jun'19</td>
<td>KBC Kannada</td>
<td>45 Days</td>
<td>0.4Mn</td>
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</table>
Jio Interact – VideoBot

Impact of VideoBot

- World’s first AI based video call platform which won nearly 15+ awards last year.
- In 2018 answered nearly ~50 million utterances from 10+ bots to 25 million unique users with 99% accuracy.
- Handled a peak DAU of 10 million users during the launch. 3 patents are in application status.

Techstack for Jio Interact (VideoBot)

VideoBot’s HLA consists of:
- SparkML as backbone with Ensemble model for NLP
- Containerisation with docker and kubernetes
- Open source real time garbage detection and monitoring
# Machine Learning for Jio Services

<table>
<thead>
<tr>
<th>Workload</th>
<th>ML Model</th>
<th>Oracle Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech to Text</td>
<td>Has ~100 million trainable parameters that gets optimised per iteration</td>
<td>2.4X Faster</td>
</tr>
<tr>
<td>Text to Speech</td>
<td>Consists of trainable parameters on the order of millions to generate voice map of speakers</td>
<td>30-50% Faster</td>
</tr>
<tr>
<td>Natural Language Processing</td>
<td>Multiple layers of Bidirectional LSTM and Dense layers with few hundred thousand parameters to train</td>
<td>Faster Training Faster Scaling of VideoBots</td>
</tr>
</tbody>
</table>
• Speech interfaces is enabling hands-free operation and brings a human dimension to JioPhone

• A cluster with 2 nodes of 8 GPUs each connected through 50 GBPS NIC/single node cluster with 16 GPUs/more memory allocated to each GPU reduces significantly the training time of the model

Milestone Over past 40 years

Synchronous recognition processes audio
Reliance Jio is offering 1GB of free additional 4G data to its subscribers on scanning a barcode from Dairy Milk chocolate wrapper.

On MyJio app, subscribers of Jio services are eligible of getting 1GB of free data by simply clicking a picture of a Dairy Milk Wrapper.

<table>
<thead>
<tr>
<th>Facts</th>
<th>Total Visits (User Nos)</th>
<th>Total Uploads (User Nos)</th>
<th>Successful (User Nos)</th>
<th>Claimed (in GB)</th>
<th>Donated (in GB)</th>
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<tbody>
<tr>
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<td>5,66,077</td>
<td>3,45,258</td>
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</table>

100 Million Notifications during Cadburys’ campaign in 25 days
Problem

• Gap - common platform to enable machine learning and deep learning at production scale.
Artificial Intelligence at Scale

Solution

• **Robust Oracle Cloud Infrastructure as backbone**
• We are building AI platform to implement vertical targeted products build on top of our proprietary deep learning innovations across domains
• Focus is platform should allow an enterprise to derive, define, develop and deploy AI models at hyper-scale in production

Approach: Pluggable “Building Blocks” to entire AI stack
BM.GPU3.8 – 8 Way NVIDIA Volta SXM2, NVLINK, HGX-1 Open Compute
52 Skylake CPU cores, 50 Gbps

BM.GPU2.2 – 2 Way NVIDIA Pascal
Perfect for Visualization or Inferencing

Attach up to 1 PB of NVME backed block storage to “Feed the Beast”

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“We achieve a 10X cost reduction compared with our existing solution, and get DDoS Prevention built in.

Oracle’s NVMe performance is 1,000X better than our existing solution SSD, allowing 10X more connections on the same machine shape.”

Gaurav Duggal
Vice President
Jio Reliance
Oracle Cloud Infrastructure Benefits

Cost advantage
• 10X cost reduction with excellent predictability and no hidden charges
• Minimal charges for network throughput compared to AWS
• DDoS Prevention is built in the OCI network for free

Customer Excellence
• Dedicated account representative to help migrate solutions and get maximum advantage from hardware
• Customer wellness team, OCI pursuit and product engineering teams work in coherence to quickly solve any problem at hand

Performance
• 10x I/O advantage for better NoSQL and Redis throughput
• 10x GPU NIC performance compared to AWS
• Persistent NVMe protected data in case of a server reboot or a crash
• NVMe performance is 1,000X better than AWS SSD, allowing 10X more connections on the same machine shape
Thank you

Kaumudi Nivarthi