Voice-based Social Computing Platforms in the Developing World

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Today..

- Introduction to voice technologies
- CGNet Swara
  - Citizen journalism and civic engagement
- Sangeet Swara
  - Voice-based social media system
- IVR Junction
  - Toolkit for building voice interventions
- Respeak
  - Voice-based crowdsourcing system
- Voice-based health interventions
1600 languages
0.3 cent per SMS
1 cent per minute

3000 languages
1-2 cent per SMS
4-6 cents per min

Extreme Poverty Rate

India
- 1981: 429M
- 1990: 400M
- 1999: 205M
- 2010: 414M

Sub-Saharan Africa
- 1981: 429M
- 1990: 400M
- 1999: 205M
- 2010: 414M
Voice Remains Primary Interface for Mobile Subscribers

Most subscribers lack smart phones

- Smart Phone: ~10%
- Feature Phone: 50-70% (e.g., music player)
- Basic Phone: 30-50%

Only 1 in 5 people have Internet
Literacy and Language Barriers

Non-Literate

Literate in English

Literate in Other Language

Language Known
Interactive Voice Response
Google and Twitter have launched a service which circumvents the ban on net services in Egypt.

The so-called speak-to-tweet system allows people caught up in the unrest to post messages without any need to use an internet connection.

The service, which is already live, allows people to dial an international telephone number and leave a voicemail message.

The message is then sent out as a tweet with the hashtag #egypt.
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Chhattisgarh, India

- Lowest HDI
- ~50% population is under poverty
- Teledensity < 10%
- Computers < 4.6%
  - Internet (1.2%)
  - Non-Internet (3.4%)
- Epicenter of Naxalite movement
- Poor governance
CGNet Swara
A Voice Portal for Citizen Reporting

- Anyone can report news, issues, etc. in local language
- Submissions are reviewed by moderators over the Web
- Appropriate submissions are published:
  - For playback on audio channel
  - For browsing on Web
- Activists follow-up on reports

6000+ reports and 600,000+ calls in 5 years
CGNet Swara
A Voice Portal for Citizen Reporting

**Posts per Day**
(>4,200 total posts)

**Calls per Day**
(>280,000 total calls)
Categorizing the Reports

- Grievance: 25%
- Performance: 23%
- News: 23%
- Opinion: 21%
- Information: 19%
- Appeal: 19%
- Interview: 14%
Who is Reporting?

- > 700 contributors
  - Top 10% responsible for 51% of posts
- Often social activists, but with limited voice
  - Earning $100-200 / month
- Who is not reporting?
  - The poorest of the poor
    - Lack of awareness
    - Fear of repercussions
Who is Listening?

- 18000 unique callers
- Top 10% responsible for 61% of calls
Father wanders for due NREGA wages, son dies in hospital...

Manish Rai from Ambikapur says some days back I had heard an interview on CGnet Swara with a labourer called Pitbasu who had completed 100 days work in NREGA but had not been paid any wages. Today by chance I met him in the hospital and found that while Pitbasu was making rounds for his due NREGA wages his son died in the hospital. Is there any provision in NREGA to punish officials who has caused this grave incident? NREGA laws should be so strong that no one should wait for their wages as has happened with Pitbas. Fore more on the story please contact Manish at 09826538904

POSTED ON: JAN 14, 2011, BY MANISH RAI

Post a Comment

To record your comment, please call and leave a message at +91-80-4113 7280. Recording your comment in audio format will ensure that it is accessible to all CGNet Swara users, most of whom lack Internet access and access the reports via phone.
Father struggles to get NREGA wages, son dies in hospital

Supriya Sharma, TNN, Jan 21, 2011, 10.04pm IST

RAIPUR: A week after he lost his ailing son, and ten months after he worked on a village road project, Pitbasu Bhoi finally got the ten thousand rupees he had earned under the Mahatma Gandhi National Rural Employment Program (MNREGA).

"Of what use is the money now? I have just immersed my son’s ashes. When I needed the money to save his life, I did not have it," says Bhoi.

The disabled man, in his forties, along with his wife and two children, worked under MNREGA for six months to earn Rs 7,000 to treat his son’s disease. But what he got was just Rs 3,000.

"I poured the money into the lake," says Bhoi, who is now in debt and afraid to apply again for MNREGA, as his son’s death might be considered as interference in the project."
Borewell stopped working long back, we need to walk long for water, pls help...

My name is Kurasam Rambabu. I am calling from Ramaraopeta village in Dummugudem mandal, Khammam district of Andhra Pradesh. In our village bore well is not working from so many days. We complained to the mandal officers many times but they didn't respond. We are struggling for safe drinking water. For water we need to walk very long. Please help us. For more Mr Rambabu can be reached at 07893421794

POSTED ON: SEP 10, 2012, BY KURASAM RAMBABU

Post a Comment

To record your comment, please call and leave a message at +91-80-4113 7280. Recording your comment in audio format will ensure that it is accessible to all CGNet Swara users, most of whom lack Internet access and access the reports via phone.
Petitioned Sri Siddarth Jain I.A.S

Collector, Khammam: Fix the Borewell in Ramaraopeta village

Petition by
Swaraj For Change
Ghaziabad, India

Victory
October 2012

1. More than 2800 signed the petition sending thousands of emails to the Collector asking him to take immediate action to fix the Borewell in Ramaraopeta village.
2. The District Collector of Khammam also received several phone calls from petition signers asking him to fix the Borewell.
3. On October 13th, a day after the petition was launched, the collector sent the engineers to inspect the Borewell and take it for repairs.
4. Within two weeks, the Borewell was fixed and the entire village has access to drinking water.
Malaria Deaths in Chhattisgarh: Official Government Figures

CGNet Swara starts
Malaria Deaths in Chhattisgarh: Official Government Figures

CGNet Swara starts
Song from 3 days festival in Odisha where girls only enjoy and do no work...

“Shilpi from Odisha is telling us about Raja festival which is celebrated each year in the month of June. On these three days girls do not work and make merry after wearing good clothes and eating good food. She is singing a song in Odiya which girls sing on these days asking them to enjoy the festival.”

http://cgnetswara.org/index.php?id=22097
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http://cgnetswara.org/index.php?id=22097
Swara Yatra and Workshops

Magarwada, Pandariya, CG
15 August 2014
Dindori, Madhya Pradesh
12-14 August 2014
Swara Yatra and Workshops

Tilda, Chattisgarh (Women Workshop)
8-20 August 2014
As he travels, the app searches for a signal.
Swara Smartphone App

156 posts (125 with photos) in 4.5 months
Research Questions

• Facebook/Twitter alternative for as-yet disconnected communities?

• How to design a scalable and sustainable IVR intervention?
  – Challenges in moderation
  – Challenges in cost of calls
Goals

1. Design, build and deploy a voice-based social media system
   – Measure engagement qualitatively and quantitatively

2. Solve the moderation challenge
   – Using the community moderation

3. Solve the cost challenge
   – Motivate users to pay for the calls
Sangeet Swara
A Community-Moderated Voice Forum for Songs, Poems, Jokes, & Cultural Content

1. Access Analytics on User’s Posts
2. Record New Post
3. Listen, Rate and Share Posts
4. Access a Post Directly
Sangeet Swara
A Community-Moderated Voice Forum for Songs, Poems, Jokes, & Cultural Content

Traffic in 1.5 months
- 25,000 calls
- 5,400 posts (by 500 people)
- 140,000 ratings (by 1,500 people)

First introduction to social media system for $10 mobile phones owners
Emergent Ownership and Use by the Visually Impaired

“I am a blind person so I couldn't get educated. I want to thank you because you enabled all blind persons to get in touch and share. No matter how much I praise, it won't be enough.”

“You are like my father, my god, I want to thank you again and again, this small kid wants to respect you from the bottom of the heart. I want to welcome you again and again.”

“Swara has influenced the country and the world.”
Instrumental Benefits

“I get a lot of knowledge by using Sangeet Swara. Some people record questions, which increases our knowledge. We get to listen to things we have never heard. We learn new vocabulary and sometimes new accent as well. I feel great when people give me feedback, be it good or bad. I consciously think of ways to improve my messages.”
Moderation

- Relative to “experts”:
  - 98% agreement on categorizing 50 posts
  - 98% agreement on gender of 50 posts
  - 90% agreement on quality of 10 posts

<table>
<thead>
<tr>
<th>Task Type</th>
<th>Offered</th>
<th>Done</th>
<th>Response Rate</th>
<th>Accuracy</th>
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<td>1551</td>
<td>91%</td>
<td>98%</td>
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<tr>
<td>Gender Categorization</td>
<td>2000</td>
<td>1895</td>
<td>94.7%</td>
<td>98%</td>
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Call Cost

Advertisements?
Revisiting Goals

1. Design, build and deploy a voice-based social media system
   - Measure engagement qualitatively and quantitatively
   - Isolated 😞

2. Solve the moderation challenge
   - Using the community moderation

3. Solve the cost challenge
   - Motivate users to pay for the calls
IVR Junction: Connecting Unheard Voices to Global Social Media

Phone call

Facebook

YouTube

SkyDrive

Internet

Junction
Distributed Architecture

Operating Cost /Call Cost (India figures):  
2x cheaper if you have users in multiple states  
6x cheaper if you have users in multiple countries
Competitive Advantages

• **First** and **the only** system to seamlessly integrate IVR with Internet Services
• Easy for organizations to Set-up
• Distributed Architecture

**Affordable**  **Scalable**  **Resilient**
Protect Indian Women Voice Petition
Giving Voice to the Protestors in India

IVR Junction has enabled women rights activists from all economic backgrounds and varied literacy levels to raise their voice for advocating women safety and empowerment.
Vehicle for Civic Engagement and Political Stability in Somaliland

http://www.youtube.com/iladhageyso
Golaha Wakiilada oo maanta ansiiyay Xeerka Booliska.
Read More »
Transcription

How to make it Faster, Cheaper and Accurate

Budget: $1/min     6 Day: $1.50/min    1 Day: $2.50/min

CastingWords
Respeak

Segmentation Engine

Segment 1

MA

O/P 1

ASR

Segment 2

MA

O/P 2

Merge Engine

Segment N

MA

O/P N

MA = Merge Algorithm
Voice and Global Health

• Research projects
  • HealthLine: IVR system for providing information to health workers in Pakistan
  • Disseminating information to urban sex workers in India
  • Using automated voice calls to improve adherence to iron supplements during pregnancy

• Commercial initiatives
  • Patient Management System by Awaaz.De
  • MOTECH suite by Grameen Foundation
Future: Challenges and Opportunities

- Speech recognition for resource constrained languages
- Cost
  - Advertisements?
  - Crowd work?
  - Subsidy by MNOs or government
Thank you!

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