SMS Applications

Lecture 6: CSE 490c
Administrivia

• Reading Assignment – CGNet Swara

| Lecture 6 | Monday, October 8 | SMS Applications II |
| Lecture 7 | Wednesday, October 10 | Voice Applications |
| Lecture 8 | Friday, October 12 | USSD, SimApps, Thin Sims |
| Lecture 9 | Monday, October 15 | Mobile Money |
Progress!

```csharp
private List<MessageResource> getNewMessages(List<string> oldSid) {
    List<MessageResource> newMessages = new List<MessageResource>();

    var messages = MessageResource.Read();
    foreach (var record in messages) {
        if (!oldSid.Contains(record.Sid)) {
            newMessages.Add(record);
            oldSid.Add(record.Sid);
        }
    }

    return newMessages;
}
```
SMS Applications

• Server capable of sending and receiving SMS messages
• Interaction with service through a basic mobile phone

• Use cases
• SMS Gateway Technology
• Practical challenges
SMS Applications

• One way push messages
  • Maternal health messaging
• Two way SMS
  • Adherence reminders
• Data Reporting
  • Monthly report of refrigerators temperature of every vaccine refrigerator in a country
• Querying
• Market Matching
Reporting

• Data collection from the field
  • Regular reporting: Health Indicators from facility reported monthly
  • Survey: Price of a commodity from different markets
  • Event reports: Details of Dengue Fever cases

• Solution
  • Send a structured SMS message which is parsed by receiver
  • Messages can be validated by sender phone number

• Example
  • Malaria stock reporting
  • SMS for life
  • Y4B3R0G2Q99
Reporting Apps for Feature Phones

• Java Program for data entry
• SMS as transport layer
Querying

- User sends text and system responds
- Market price queries
  - Send commodity name and market, get current price
- One bus away
  - Send route and location, get bus time
- Sports scores
  - Send team and date, get result
- Free form
  - Send question, get answer
- Wikipedia
  - Send keyword start of entry
- News
  - Send keyword, get headline associated with keyword
Market matching

• Similar to query, but match buyers and sellers
• System receives buy and sell messages – many different versions
  • Kudu:

3.1 SMS

Users can send a toll-free SMS to 8228 using any of the following templates:

buy [crop] [quantity] [unit price]
sell [crop] [quantity] [unit price]
price [crop]
SMS Gateways

• Send and receive SMS messages
• Processing of the SMS messages
• Managing relationships with TelCo
DIY Gateways
Gateway Services

• Companies managing applications for SMS
  • Sending / Receiving SMS
  • Managing Telco Relations

• Business models
  • Reselling services
  • Managing applications and services
Access Telco APIs as a Web Service

Simplified REST API Workflow
<?php

// Be sure to include the file you’ve just downloaded
require_once('AfricasTalkingGateway.php');

// Specify your authentication credentials
$username = "MyAppName";
$apiKey = "MyAppApiKey";

// Specify the numbers that you want to send to in a comma-separated list
$recipients = "+25471XXXXY, +254733YYYYZ"

// Of course we want our recipients to know what we really do
$message = "I’m a lumberjack and its ok, I sleep all night and I work all day"

// Create a new instance of our awesome gateway class
$gateway = new AfricasTalkingGateway($username, $apiKey);

// That's it, hit send and we'll take care of the rest.
$results = $gateway->sendMessage($recipients, $message);

// Here is a sample of how to fetch all messages using a while loop

$lastReceivedId = 0;

while (count($results) > 0) {
    $results = $gateway->fetchMessages($lastReceivedId);
    foreach($results as $result) {
        echo "From: " . $result->from;
        echo "To: " . $result->to;
        echo "Message: " . $result->text;
        echo "Date Sent: " . $result->date;
        echo "Link Id: " . $result->linkId;
        echo "Id: " . $result->id;
        echo "\n";
        $lastReceivedId = $result->id;
    }
}
Gateways vs DIY

• DIY for small projects, no-budget projects
• Multi country or production projects probably need a Gateway service
  • Need to factor in cost savings in not having to manage the tech
• Telco issues such as managing short codes are problematic
  • Cost challenges for medium size projects
Thoughts on SMS

• Strengths
  • Universal
  • Simple messaging can be valuable in an application
  • Local implementations are possible

• Negative
  • Literacy, Input mechanisms, and Special Formats are a challenge
  • Carrier issues
  • Cost
Future of SMS

• SMS is being replaced by other messaging platforms
  • Messaging applications should probably consider multiple technologies
• Communication applications platforms
  • Twilio, Africa’s talking, Telerivit
• Later discussion
  • Chatbots (Messaging + AI)
Interactive Voice Response (IVR)

• Voice versus text
• Structure of Voice Applications
• Examples