

# Assessment of Autism Spectrum Disorders

*using speech motor function and sample collection using cloud based android app*

*Submitted By*

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2013EET2369*

*Submitted To*

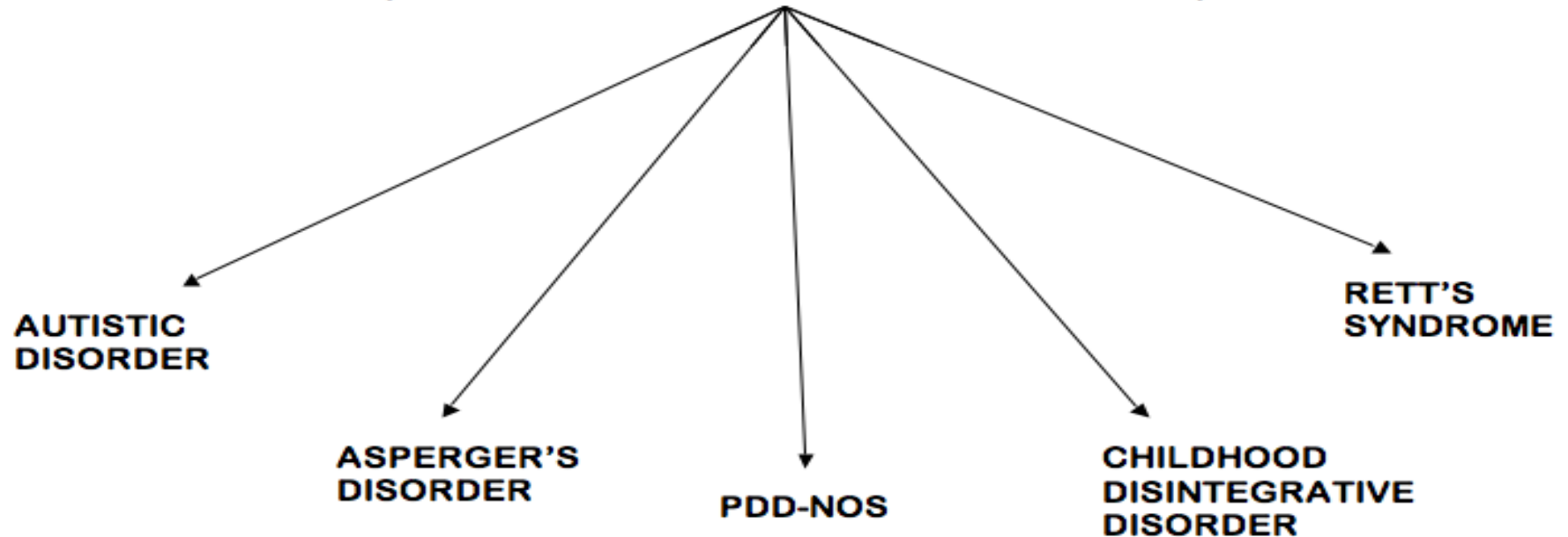
*Dr. Santanu  
Dept. of*

# Introduction

- ❖ Persistent deficits in social communication and social interaction across multiple contexts.
- ❖ Restricted, repetitive patterns of behavior, interests, or activities.
- ❖ Symptoms must be present in the early developmental period (typically recognized in the first two years of life).
- ❖ Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

# Autism Spectrum Disorder(ASD)

## **PERVASIVE DEVELOPMENTAL DISORDERS (AUTISM SPECTRUM DISORDERS)**



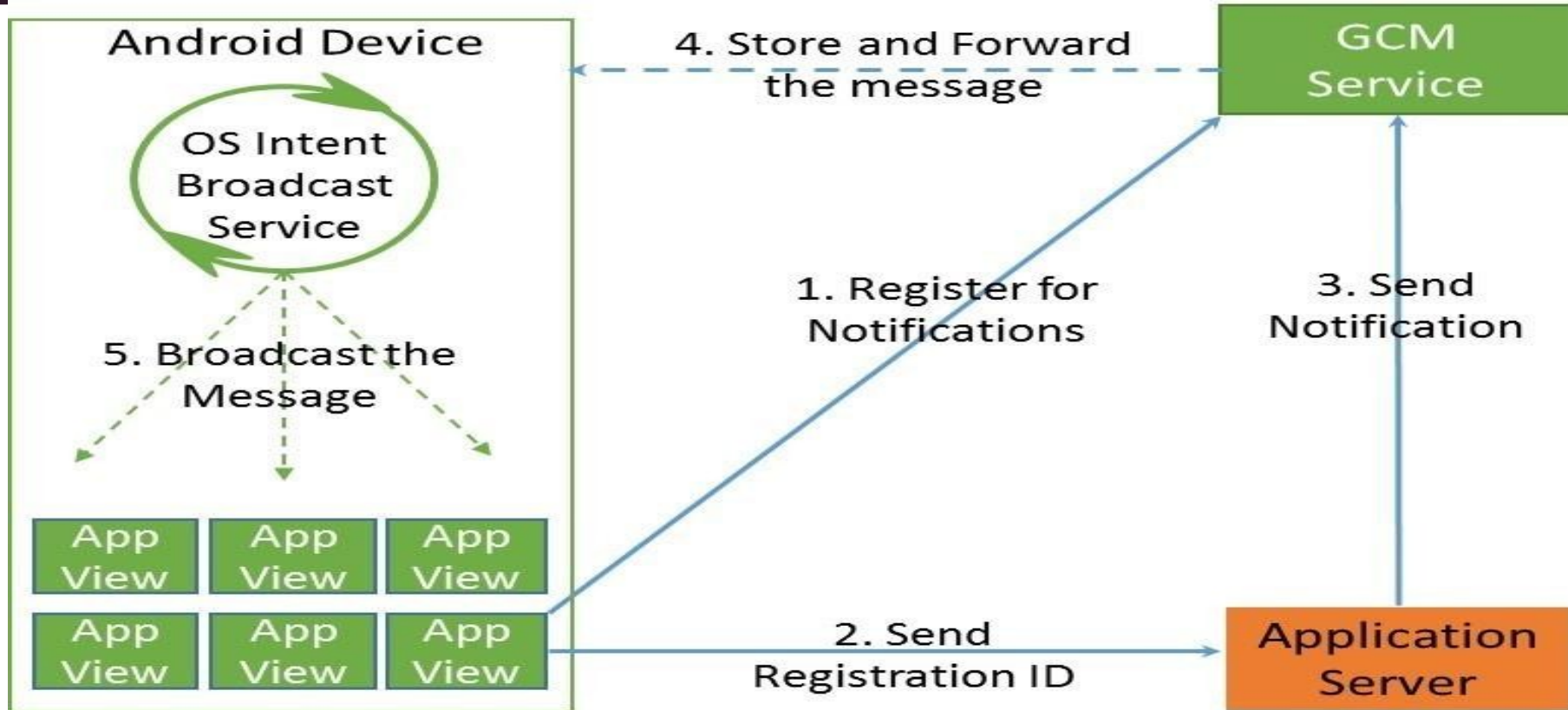
# Milestones in Diagnosis of ASD

- ❖ Speech Sample Collection using Cloud based Android Applications
- ❖ Feature Extraction from Speech Sample
- ❖ Analysis of Speech Motor Function
- ❖ Behavioural And Diagnostic Measures
- ❖ Classification of speech samples of toddlers

# Google Cloud Messaging for Android

- Send data from servers to users' Android powered-devices
- Send “send to sync” messages
- Send messages with Payload
- push back notifications.

# GCM Architectural Overview





GCM

Full Name:



Internet Connection Error

Please connect to working  
Internet connection

OK



GCM

Full Name:

harshit

Email:

harshit.knit@gmail.com

Login





GCM

**Your device registered with GCM**

Sep 18, 2014 10:00:56 AM

**Now You can record your Speech samples using this android app**

Sep 18, 2014 10:02:21 AM

**You can also Upload your speech samples using this android app**

Sep 18, 2014 10:03:30 AM

**thanks for uploading speech samples.**

Sep 18, 2014 10:03:51 AM

**We will notify you with results as soon as we process your speech samples**

Sep 18, 2014 10:04:25 AM



**Your device registred with GCM**

Sep 18, 2014 10:00:56 AM

**Now You can record your Speech samples using this android app**

Sep 18, 2014 10:02:21 AM

**You can also Upload your speech samples using this android app**

Sep 18, 2014 10:03:30 AM

**thanks for uploading speech samples.**

Sep 18, 2014 10:03:51 AM

**We will notify you with results as soon as we process your speech samples**

Sep 18, 2014 10:04:25 AM

Upload File

Record Speech



10:05



## AudioRecordingActivity



Activity to record audio.

To start recording press "Record" button, to stop recording press "Stop" button.

Record

Stop

Format (.mp4)



## AudioRecordingActivity



Activity to record audio.

To start recording press

### Choose Audio Format

MPEG 4



3GPP



Record

Stop

Format (.mp4)



## UploadActivity

File Upload

Get AudioFile

Start Upload

Selected File path : NONE

### Choose path



/mnt/sdcard/



Pictures



backups



Ringtones



WhatsApp



AudioRecorder



Digital Editions



download

Cancel



## UploadActivity

File Upload

Get AudioFile



Uploading files to server.

....

Start Upload



## UploadActivity

File Upload

Get AudioFile

n Response from server : n The audio file  
hangouts\_message.ogg has been uploaded.  
your file has been uploaded to your user directory :  
uploads/hangouts\_message.ogg

Selected File paths : /mnt/sdcard/Ringtones/  
hangouts\_message.ogg

Upload Complete. Check the server  
uploads directory.

Start Upload



**phpMyAdmin**

(Recent tables) ... ▾

localhost » u889539269\_gcm » gcm\_users

✓ Showing rows 0 - 3 ( 4 total, Query took 0.0001 sec)

```
SELECT *  
FROM `gcm_users`  
LIMIT 0, 30
```

☐ Profiling [[Inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP Code](#)] [[Refresh](#)]

Show : Start row:  Number of rows:  Headers every  rows

Sort by key:

+ Options

				id	gcm_regid	name	email	created_at
<input type="checkbox"/>				13	APA91bG5B0kgYgFP8NLNUJtfOe-H0orHNNlEskFhdkhzOAKw0...	harshit	harshit.knit@gmail.com	2014-09-18 04:30:48
<input type="checkbox"/>				4	APA91bH69EPcyOkkUqpAPnzkgUWVRxeNbDs_F0cHMVfrDxzcjx...	mohit	hudda10@gmail.com	2014-09-10 09:26:09
<input type="checkbox"/>				8	APA91bG9rnpbCli7x1jiTEkZiPLtuGEGDdirID7b1nYgjyz7la...	prateek	prateek@gmail.com	2014-09-11 16:59:10
<input type="checkbox"/>				7	APA91bG9rnpbCli7x1jiTEkZiPLtuGEGDdirID7b1nYgjyz7la...	prateek	enggprateek.gupta@gmail.com	2014-09-11 16:09:40

☐ Check All / Uncheck All With selected: Change Delete Export

Show : Start row:  Number of rows:  Headers every  rows

Query results operations

Mozilla Firefox

http://disease...n.url.ph/gcm/ +

diseaseprediction.url.ph/gcm/ Google

book and novels ▾ coding events ▾ coding tutorial ▾ english ▾ How to ▾ iit ▾ Interview Que ▾ learn coding ▾ localhost ▾ video courseware ▾

# No of Devices Registered: 4

<p><b>Name:</b> harshit</p> <p><b>Email:</b> harshit.knit@gmail.com</p> <p><u>hii</u></p> <p>Send Push Notification</p>	<p><b>Name:</b> mohit</p> <p><b>Email:</b> hudda10@gmail.com</p> <p>Type push message here</p> <p>Send Push Notification</p>	<p><b>Name:</b> prateek</p> <p><b>Email:</b> prateek@gmail.com</p> <p>Type push message here</p> <p>Send Push Notification</p>	<p><b>Name:</b> prateek</p> <p><b>Email:</b> enggprateek.gupta@gmail.com</p> <p>Type push message here</p> <p>Send Push Notification</p>
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# Category For Classification

- Autism Spectrum Disorder(ASD)
- Developmental Delay(DD)
- Typical Development(TD)

# Speech Sampling

- ADOS
- PCI
- Speech Modulation Spectrum
  - ❖ Spectral Modulations
  - ❖ Temporal Modulations
  - ❖ Spectro-Temporal Modulations

# Speech Motor Function

## Articulatory feature

- ❖ Syllabic Rhythm
- ❖ Formant Transitions
- ❖ Place Of Articulations

## Number of Vocalizations

- ❖ no of continuous speech sounds

# Behavioural And Diagnostic Measure

- Autism diagnostic interview-revised (ADI-R)
- Autism Diagnostic Observation Schedule (ADOS)
- Mullen Scales of early Learning (RL,EL,FM)
  - Vineland Adaptive behaviour Scales: Receptive Language Subdomain (RL,EL)

# Bibliography

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