PROJECT STATUS REPORT 5

NOISE AND ECHO CANCELLATION IN A TELECONFERENCE DATE: 13TH MAY 2015

PROJECT STATUS SUMMARY

Our goal in this project is to appropriately apply noise cancellation in such a way which enables the system to extract only the voice signal removing as much noise as possible for a great teleconference experience.

To complete the project successfully, our project group and tasks are divided into 3 parts: Android group, Theory group and Management group.

The project schedule is perfectly in line with the schedule and we are confident to complete the project within due date. If required, the members are also planning to accelerate the progress by working weekends and extended hours in the next few weeks.

WORK PLANNED TILL 13TH MAY, 2015

<u>Android Part:</u> As stated in the previous report, we have already completed all the android tasks before our own set deadline, and thus we didn't plan to work much on this part, rather refining our works to implement real time version of the algorithms.

Theory Part: The main goal was be to make research on below points:

- Non-linear algorithms: Make an efficient non-linear model and test them in MATLAB
- Wiener Filtering: Fixing the non-causal filter and implement the causal filtering more efficiently while trying to improve the FIR as much as we can.
- Single-microphone speech enhancement techniques.

<u>Management Part:</u> Following up the progress of the group was set as the core responsibility of the management group.

WORK COMPLETED TILL 13TH MAY, 2015

<u>Android Part:</u> As all the tasks were successfully completed on last week, we worked to refine our outcome on this part while trying to implement a real time version of the algorithms in a more efficient way. We have also made an interface for the android device to look it more vibrant and lively.

Theory Part: There have been different areas where we worked:

- Speech enhancement using a minimum mean-square error short-time spectral estimator
- Wiener Filtering: non-causal

<u>Management Part:</u> Every members work progress was monitored and followed-up as required to finish everything within the set timeline and integrated to the progress report.

WORK PLANNED FOR NEXT WEEK

The main goal will be to make research on next points:

- Non-linear algorithms:
- Add non-causality to LMS

OPEN ISSUES

Solve unstable behavior in non-causal filtering

RISK ANALYSIS

The update of the risk analysis remains as the one in the project plan (see the table below).

Nr	Risk	P	C	R	Action
1	Do not find a good theoretical model	1	4	4	Read more literature
2	Do not pass the mid-term evaluation	1	4	4	Re-schedule the TRP
3	Problems with real time	2	4	8	Help and re-schedule TRP

As per the above table, the risk number 1 & 2 are less likely to affect our project outcome because we have good theoretical model with good performance and we have already completed all the 7 android tasks assigned for the mid-term evaluation.

Currently our main concern is the third risk factor, which might take a lot of time, but we are working hard to eliminate this risk factor as much as we can.

KEY PERFORMANCE INDICATORS (KPI'S)

To have a better understanding of the progress of the project the Gantt chart and the working hours of every individual compared to resource allocation table is attached as annexures below:

Project in Wireless Communication - Project Schedule EQ2400

Project Lead: Xavier Bush
Project Start Date: 3-25-2015 (Wednesday)
Tipping Week: 7

Week 8 5 - 11 - 15

Week 7

5 - 4 - 15

Week 9 5 - 18 - 15

Week 10 5 - 25 - 15

Week 11 6 - 1 - 15

Week 12 6 - 8 - 15 Week 13

6 - 15 - 15

Week 14 6 - 22 - 15

										11-1	
			Prede			Cal.		Work			
WBS	Task	Lead	cessor	Start	End	Days	Done	Days	M T W T F S S M	TW	
1	Android Group (AG)									
1.1	Task 1	Jonas		Wed 4-01-15	Mon 4-06-15	6	100%	8			
1.2	Task 2	Moham	nmad		Mon 4-06-15		100%	8			
1.3	Task 3	Moham	nmad	Wed 4-01-15	Mon 4-06-15	6	100%	8			
1.4	Task 4	Thomas	s	Wed 4-01-15	Mon 4-06-15	6	100%	8			
1.5	Task 5	All AG		Tue 4-07-15	Sat 4-25-15	19	100%	2			
1.6	Task 6	All AG		Tue 4-07-15	Sat 4-25-15	19	100%	2			
1.7	Task 7	All AG		Tue 4-07-15	Sat 4-25-15	19	100%	6			
1.8	Full Implementation	ΔΙΙ ΔΟ	2	Sun 4-26-15	Mon 6-01-15	37	55%	26			
1.8.1	Transfer from MATLA			Our 4-20-13	WOT 0-01-13	31	-00 /0	20			
1.8.2	Optimizing code	ID to 7 the	aroid								
1.8.3	Error handling solution	ons									
1.8.4	Placement of cancell		or Rx)								
1.8.5	Real time tests		,								
1.8.6	Real time optimizing										
2	Theory Group (TG)		All AG								
2.1	Theory Model			Wed 4-01-15	Sun 4-05-15	5	100%	3			
2.1.1	Noise Cancellation M	/lodel					,	-			
2.1.2	Echo Cancellation M										
2.1.3	LMS Implementation										
2.1.4	LMS Implementation										
2.1.5	Other Algorithms res										
2.2	First Tests		All AG	Mon 4-06-15	Wed 4-08-15	3	100%	3			
2.2.1	LMS tests										
2.2.2	RLS tests										
2.2.3	Other Algorithms test	ts									
	Alg. Optimization &										
2.3	solutions			Thu 4-09-15	Wed 4-22-15	14	70%	10			
2.3.1	LMS Optimization										
2.3.2	RLS Optimization										
	Transfer to Android 8	Š.									
2.4	Optimization		All AG	Thu 4-23-15	Mon 6-01-15	1	50%	28			
•	Management Group)									
3	(MG)	V '		W- 10.05.45	14/- 14 04 45	0	4000/	_			
3.1	Project Paln Progress Report 1	Xavier Animes	a b		Wed 4-01-15 Wed 4-15-15		100%				
3.2	Progress Report 1	Animes			Wed 4-15-15 Wed 4-22-15			10			
3.4	Progress Report 3	Animes			Wed 4-22-15 Wed 4-29-15		100%	5			
3.4	Progress Report 4	Animes			Wed 4-29-15 Wed 5-06-15		100%	5			
3.6	Progress Report 5	Animes			Wed 5-06-15 Wed 5-13-15		100%	5			
3.6	Progress Report 6	Animes			Wed 5-13-15 Wed 5-20-15		0%	5			
3.8	Progress Report 7	Animes			Wed 5-20-15 Wed 5-27-15		0%	5			
3.9	Final Report	Xavier	21.1		Tue 5-26-15			24			
3.5	Individual	Aaviel		111u 4-20-15	1 ue 3-20-15	34	0 /0	24			
4	Assignments										
4.1	Reflective Diary 0	All men	nbers	Wed 3-25-15	Wed 4-01-15	8	100%	1			
4.2	Reflective Diary 1	All men			Wed 4-15-15						
4.3	Reflective Diary 2	All men			Wed 4-22-15			1			
4.4	Reflective Diary 3	All men			Wed 4-29-15	7	100%	1			
4.5	Reflective Diary 4	All men			Wed 5-06-15		100%	1			
4.6	Reflective Diary 5	All men			Wed 5-13-15	7	100%	1			
4.7	Reflective Diary 6	All men			Wed 5-20-15		0%	1			
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Annex 2	Cost/hour (SEK)	Day	05-07-15	05-08-15	05-09-15	05-10-15	05-11-15	05-12-15	13/5	Total
Animesh		Outcome (h)	5				3	4	5	17
Das	400	Plan (h)	4				6	6	6	22
		Outcome (h)	5	5			6	6	6	28
Jonas Sedin	400	Plan (h)	4	4			6	6	6	26
Mohammad		Outcome (h)	4	2			5	5	5	21
Abdulla	400	Plan (h)	5	2		5	5	5	5	27
Thomas		Outcome (h)	2	6		3	8	7	6	32
Gaudy	400	Plan (h)		6	1	1	6	6	6	26
		Outcome (h)	2	3			3	4	5	17
Xavier Bush	400	Plan (h)	4				6	6	6	22
		Outcome (h)								115
		Plan (h)								123