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To the Director of the U.S. Patent and Trademark Office: Please record the attached original documents or copy thereof.						Mail Stop Assignment Recordation Services	
1. Name of conveying party(ies): 1. Beom-Sig Cho 2. Jang-Seok Chol				2. Name and address of receiving party: Name: Samsung Electronics Co., Ltd.			
Additional name(s) of conveying parties attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				Internal Address:			
3. Nature of conveyance:				Street Address: 416, Maetan-dong, Yeongtong-gu			
<input checked="" type="checkbox"/>	Assignment	<input type="checkbox"/>	Merger	City: Suwon-si			
<input type="checkbox"/>	Security Agreement	<input type="checkbox"/>	Change of Name	State: Gyeonggi-do		Country: South Korea	Zip Code:
<input type="checkbox"/>	Joint Research Agreement	<input type="checkbox"/>	Government Interest Assignment	Additional name(s) & Address(es) attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
<input type="checkbox"/>	Executive Order 9494, Confirmatory License	<input type="checkbox"/>	Other:				
Execution Date(s):		December 23, 2010					
4. Application number(s) or patent number(s): If this document is being filed together with a new application, the execution date of the application:							
A. Patent Application Number:				B. Patent Number(s):			
12/983,509							
Additional numbers attached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No							
5. Name and address of party to whom correspondence concerning document should be mailed:				6. Total number of applications and patents involved: 1			
Name:	Patrick D. Muir	(tel): 703-757-7880 (fax): 703-757-7447 (e-mail): mailroom@muirpatentconsulting.com		7. Total fee (37 CFR 1.21(h) and 3.41): \$ 40 <input type="checkbox"/> Enclosed (Please charge deficiency or credit overpayment to deposit account 50-4574) <input checked="" type="checkbox"/> Authorized to be charged to deposit account <input type="checkbox"/> None required (government interest not affecting title)			
Internal Address:	Muir Patent Consulting, PLLC						
Street Address:	9913 Georgetown Pike, Suite 200, P.O. Box 1213						
City:	Great Falls						
State:	VA	Zip:	22066	8. Deposit Account No.: 50-4574			
9. Statement and signature. To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.							
Signed:		/Bradley Edelman/				January 3, 2011	
		Bradley Edelman, Reg. No. 57,648				Date	
Total number of pages including cover sheet, attachments and documents:						2	

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Attorney Docket No.: SAM-316  
ID2009100391

## ASSIGNMENT

We, Beom-Sig Cho and Jang-Seok Choi ("Assignors"), have an interest in the invention entitled:

### METHOD OF OPTIMIZING DATA TRAINING IN SYSTEM INCLUDING MEMORY DEVICES

which is the subject of a United States or International application for patent entitled above and naming the undersigned inventor

☐ in a Provisional Patent Application No. \_\_\_\_\_;  
☐ in a Non-Provisional Application along with a Declaration signed today with this assignment;  
☐ in a Non-Provisional Application where the Declaration was signed on \_\_\_\_\_;  
☒ in a Non-Provisional Application filed on 1/3/2011, and assigned Serial No. 12/983,529 or PCT International Application No. \_\_\_\_\_;  
☐ in U.S. Patent No. \_\_\_\_\_, issued \_\_\_\_\_.

Samsung Electronics Co. LTD., 416, Maetan-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea, ("Assignee"), is desirous of acquiring Assignor's interest in the invention.

Assignors acknowledge receipt and adequacy of good and valuable consideration in exchange for this Assignment, and assign to Assignee and its successors in interest, the full and exclusive right, title and interest to any and all inventions, developments and improvements disclosed or described in the patent application listed above ("the invention"), in the United States of America and all foreign countries, including the right to claim priority under the laws of the United States, the Paris Convention, and any foreign countries, for the full term of the patent, including extensions of time, the same as if held by Assignors had this Assignment not been made. This Assignment includes the assignment of the right to recover for past infringements of, or liabilities for, any of the rights related to the invention.

Assignors covenant and agree to cooperate with Assignee and execute all instruments or documents requested for the making and prosecution of any applications of any type for patent in the United States and in all foreign countries including, but not limited to the following: provisional, continuation, continuation-in-part, divisional, renewal or substitute, reissue, re-examination, or extension. Assignors covenant and agree to cooperate with Assignee in any litigation regarding the invention, patents or applications regarding the invention, and render all necessary assistance deemed essential to Assignee's full protection and title in and to the invention hereby transferred without further or other compensation than that provided in this Assignment; the undersigned agree that the attorneys of record in said application shall hereafter act on behalf of said Assignee.

Assignors covenant that no assignment, sale or agreement or encumbrance has been or will be entered into which would conflict with this Assignment.

Assignors request the Commissioner of Patents and Trademarks to issue said Letters Patent of the United States of America to Assignee, and request that any official of any country or countries foreign to the United States, whose duty it is to issue or grant patents and applications, issue said Letters Patent, Utility Model Registration or Inventor's Certificate to Assignee.

Assignors hereby grant the firm of MUIR PATENT CONSULTING, PLLC the power to insert on this assignment any further identification that may be necessary or desirable in order to comply with the rules of any issuing authority, including the United States Patent and Trademark Office, for recordation of this document.

BEOM-SIG CHO (signature)  
(1) CHO, Beom-Sig

DEC/23/2010  
Date

JANG SEOK CHOI (signature)  
(2) CHOI, Jang-Seok

DEC/23/2010  
Date

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