1. Name of conveying party(ies): 2. Name and address Rakesh KUMAR (12/15/2004) and Jared Name:	Acuments or the new address(es) below. as of receiving party(les) The MathWorks, Inc. The MathWorks, Inc. Natick Massachusetts States of America Zip: 01760 A address(es) Yes X No	
OMB No. 0851-0027 (exp. 6/30/2008) To the Director of the U.S. Patent an 103447442	U.S. DEPARTMENT OF COMMERCE United States Patent and Trademark Office	
To the Director of the U.S. Patent an 103447442	Natick Massachusetts States of America Zip: 01760 Address(es) Yes X No	
To the Director of the U.S. Patent an 103447442 do 1. Name of conveying party(ies): Rakesh KUMAR (12/15/2004) and Jared CARLSON (12/15/2004) 2. Name and address Additional name(s) of conveying party(ies) attached? Yes X No 3. Nature of conveyance/Execution Date(s): Street Address: Execution Date(s): in parentheses after inventor name 3 Apple Hill Drive X Assignment Merger Change of Name City: Government Interest Assignment State: Country: United S Additional name(s) of conveying party(les) attached? X Assignment State: Country: Merger Change of Name State: Country: United S Additional name(s) Of conveying party License Country: United S Other Application or patent number(s): X This document is being A. Patent Application No.(s) B. Patent No.(s) B. Patent No.(s)	Ass of receiving party(ies) The MathWorks, Inc. The MathWorks, Inc. Natick Massachusetts States of America Zip: O1760 A address(es) Yes Yes X A filed together with a new application.	
1. Name of conveying party(ies): Rakesh KUMAR (12/15/2004) and Jared CARLSON (12/15/2004) Additional name(s) of conveying party(les) attached? Yes X No 3. Nature of conveying party(les) attached? Yes Xassignment Merger Security Agreement Joint Research Agreement State: Country: Government Interest Assignment State: Executive Order 9424, Confirmatory License Country: Other Additional name(s) & attached? 4. Application or patent number(s): X This document is being A. Patent Application No.(s) B. Patent No.(s)	Ass of receiving party(les) The MathWorks, Inc. The MathWorks, Inc. Natick Massachusetts States of America Zip: O1760 A address(es) Yes Yes X A filed together with a new application.	
1. Name of conveying party(les): 2. Name and address Rakesh KUMAR (12/15/2004) and Jared Name: CARLSON (12/15/2004) Internal Address: Additional name(s) of conveying party(les) attached? Yes X Additional name(s) of conveying party(les) attached? Yes X Assignment Merger Yes X No X Assignment Merger Yes Yes Yes X No X Assignment Merger Yes Yes Yes Yes Yes Yes X Assignment Merger Yes Yes Yes Yes <tr< th=""><th>Ass of receiving party(ies) The MathWorks, Inc. The MathWorks, Inc. Natick Massachusetts States of America Zip: O1760 A address(es) Yes Yes X A filed together with a new application.</th></tr<>	Ass of receiving party(ies) The MathWorks, Inc. The MathWorks, Inc. Natick Massachusetts States of America Zip: O1760 A address(es) Yes Yes X A filed together with a new application.	
Rakesh KUMAR (12/15/2004) and Jared Name: Additional name(s) of conveying party(les) attached? Yes No Additional name(s) of conveying party(les) attached? Yes No Street Address: Street Address: Street Address: Street Address: 3 Apple Hill Drive 3 Apple Hill Drive X Assignment Merger Change of Name City: Security Agreement Joint Research Agreement City: Country: Government Interest Assignment State: Country: United S Other Additional name(s) & attached? X This document is being A. Patent Application No.(s) B. Patent No.(s) B. Patent No.(s)	The MathWorks, Inc. The MathWorks, Inc. Natick Massachusetts States of America Zip: O1760 & address(es) Yes Yes X Identical together with a new application.	
CARLSON (12/15/2004) Name:	Natick Massachusetts States of America Zip: 01760 & address(es) Yes X No	
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Other Additional name(s) & attached? 4. Application or patent number(s): x This document is being A. Patent Application No.(s) B. Patent No.(s)	address(es) Yes X No	
4. Application or patent number(s): x This document is being A. Patent Application No.(s) B. Patent No.(s)	-	
Additional numbers attached?	No	
5. Name and address to whom correspondence concerning document should be mailed:6. Total number of a patents involved:		
Name: Kevin J. Canning	(1,21(b) & 3,41) \$ 40.00	
LAHIVE & COCKFIELD, LLP 7. Total fee (37 CFR	to be charged by credit card	
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PATENT REEL: 019877 FRAME: 0169

ASSIGNMENT BY INVENTORS

WE, Rakesh KUMAR and Jared CARLSON, of Framingham, Massachusetts and Arlington, Massachusetts, respectively, in consideration of One Dollar and other valuable consideration paid to us by

The MathWorks, Inc.

a Corporation of Delaware, having its principal place of business at 3 Apple Hill Drive, Natick, Massachusetts 01760, the receipt of which is hereby acknowledged, do hereby sell, assign and transfer unto said

The MathWorks, Inc.

its successors and assigns, the entire interest for the United States of America and all foreign countries including all rights of priority under the International Convention for the Protection of Industrial Property in a certain invention or improvement in

IMPROVED SEARCH DIRECTIONS IN PATTERN SEARCH VIA ROTATION

described in an application

x Executed by us of even date herewith and about to be filed

or

Application No. Not Yet Assigned, filed on Concurrently Herewith

in the United States Patent and Trademark Office, and in all Letters Patent of the United States and all foreign countries which may or shall be granted on said invention, or any parts thereof, or on said application, or any divisional, continuing, reissue or other applications based in whole or in part thereon. And we agree, for ourselves and our executors and administrators, with said Corporation and its successors and assigns but at its or their expense and charges, hereafter to execute all applications, amended specifications, deed or other instrument, and to do all acts necessary or proper to secure the grant of Letters Patent in the United States and in all other countries to said corporation, with specifications and claims in such form as shall be approved by the counsel of said Corporation and to vest and confirm in said corporation, its successors and assigns, the legal title to all such patents.

And we do hereby authorize and request the Commissioner of Patents and Trademarks of the United States to issue such Letters Patent as shall be granted upon said application or applications based thereon to said corporation, its successors and assigns.

And we do further hereby grant the attorneys/agents of Lahive & Cockfield, LLP, the power to insert on this Assignment the filing date and/or application number of said application.

MWS-144

PATENT REEL: 019877 FRAME: 0170

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Pate

12/15/2004 Date:

United States of America) Commonwealth of <u>Massachusetts</u>) ss.: County of <u>Middleset</u>)

On this 15 th day of December	, 2004 before me, the	
the undersigned notary public, personally appeared	Ralesh Kumar	
(name of document signer), proved to me through satisfactory evidence of identification,		
which was MA Driver's license	, to be the person whose name	
is signed on the preceding or attached document in my		

and P. Canara (official signature and seal of notary) June 12, 2009 My commission expires



Carlson 12/15/2004 Date: United States of America Massachusetts Commonwealth of) ss.: Middlesex County of 15^{TÉ} On this day of Accem ber 2004 before me, the the undersigned notary public, personally appeared Carlson (name of document signer), proved to me through satisfactory evidence of identification, MA Dr. uer's licence, to be the person whose name which was is signed on the preceding or attached document in my presence.

and concercical signature and seal of notary) ne 12,2009 My commission expires



, aire

PATENT REEL: 019877 FRAME: 0172

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RECORDED: 09/12/2007