

PATENT ASSIGNMENT COVER SHEET

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Stylesheet Version v1.2

EPAS ID: PAT3637584

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| SUBMISSION TYPE: | NEW ASSIGNMENT |
| NATURE OF CONVEYANCE: | ASSIGNMENT |
| CONVEYING PARTY DATA | |
| Name | Execution Date |
| DAVID BRUMLEY | 08/27/2013 |
| SANG KIL CHA | 08/21/2013 |
| THANASSIS AVGERINOS | 08/22/2013 |
| ALEXANDRE REBERT | 08/23/2013 |
| RECEIVING PARTY DATA | |
| Name: | CARNEGIE MELLON UNIVERSITY |
| Street Address: | 4615 FORBES AVE., SUITE 302 |
| Internal Address: | TRANSFER AND ENTERPRISE CREATION |
| City: | PITTSBURGH |
| State/Country: | PENNSYLVANIA |
| Postal Code: | 15213 |
| PROPERTY NUMBERS Total: 1 | |
| Property Type | Number |
| Application Number: | 14827522 |
| CORRESPONDENCE DATA | |
| Fax Number: | (612)339-3061 |
| <i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i> | |
| Email: | request@slwip.com |
| Correspondent Name: | SCHWEGMAN LUNDBERG & WOESSNER, P.A. |
| Address Line 1: | P.O. BOX 2938 |
| Address Line 4: | MINNEAPOLIS, MINNESOTA 55402 |
| ATTORNEY DOCKET NUMBER: | 3663.004US2 |
| NAME OF SUBMITTER: | ALLISON JOHNSON |
| SIGNATURE: | /Allison Johnson/ |
| DATE SIGNED: | 12/01/2015 |
| Total Attachments: 25 | |
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ASSIGNMENT

WHEREAS, David Brumley, Sang Kil Cha, Thanassis Avgerinos and Alexandre Rebert (hereinafter the "Undersigned") have made one or more inventions and other subject matter (hereinafter collectively referred to as the "Invention") which are described in a patent application filed on May 21, 2013, which application was assigned US patent application serial number 13/898,824, and which is titled DETECTING EXPLOITABLE BUGS IN BINARY CODE.

FOR GOOD AND VALUABLE CONSIDERATION, the receipt, sufficiency, and adequacy of which are hereby acknowledged by the Undersigned, the Undersigned do hereby irrevocably and unconditionally:

CONVEY, ASSIGN, AND TRANSFER to Carnegie Mellon University (the "Assignee"), having a place of business at 4615 Forbes Ave., Suite 302, Transfer and Enterprise Creation Carnegie Mellon University, Pittsburgh, PA 15213, the Undersigned's entire right, title, and interest for the United States and all foreign countries and jurisdictions in and to:

the Invention which is disclosed in the above-identified application or applications;

such application or applications, and all divisional, continuing (including continuation-in-part), substitute, renewal, reissue, and all other applications for a patent or patents which have been or shall be filed in the United States (including all provisional and non-provisional applications), and in all foreign countries and jurisdictions based in whole or in part on any of such Invention (including any application for a utility model or an innovation patent application);

all original and reissued patents which have been or shall be issued in the United States and all foreign countries and jurisdictions based in whole or in part on any of such Invention;

including the right to claim priority to the above-identified patent application or applications in relation to subject matter based in whole or in part on the above-identified patent application or applications and any of the foregoing including the right to file foreign applications under the provisions of any convention or treaty;

and including the right to all causes of action, remedies, and other enforcement rights related to the above-identified application or applications, including without limitation the right to sue for past, present, or future infringement, misappropriation, or violation of any and all rights related to the above-identified patent application or applications and any of the foregoing, including the right to obtain and collect damages for past, present, or future infringement;

AUTHORIZE AND REQUEST the issuing authority to issue any and all United States and foreign patents granted on such Invention to the Assignee;

AUTHORIZE AND REQUEST that any attorney associated with U.S. Patent and Trademark Office (USPTO) Customer No. 21186 may (directly or through his/her designee) delete, insert, or alter any information related to the above-identified patent application or applications or any of the foregoing, after execution of this Assignment;

WARRANT AND COVENANT that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been or shall be made to others by the Undersigned, and that the full right to convey the same as herein expressed is possessed by the Undersigned;

COVENANT, that when requested and without compensation, but at the expense of the Assignee, in order to carry out in good faith the intent and purpose of this Assignment, the Undersigned shall (1) execute all provisional, non-provisional, divisional, continuing (including continuation-in-part), substitute, renewal, reissue, and all other patent applications for the Invention; (2) execute all rightful oaths, declarations, assignments, powers of attorney and other papers for the Invention; (3) communicate to the Assignee all facts known to the Undersigned relating to the Invention and the history thereof; (4) cooperate with the Assignee in any interference, reexamination, reissue, opposition, dispute, or litigation involving any of the applications or patents for the Invention; and (5) take such further actions as the Assignee shall reasonably consider necessary or desirable for vesting title to such Invention in the Assignee, or for securing, maintaining and enforcing proper patent protection for the Invention;

COVENANT, that should any provision of this agreement be held unenforceable by an authority of competent jurisdiction, such a ruling shall not affect the validity and enforceability of the remaining provisions. To the extent that any such provision is found to be unenforceable, the Undersigned, when requested and without compensation shall act in good faith to substitute for such provision a new provision with content and purpose as close as possible to the provision deemed unenforceable.

THIS AGREEMENT IS TO BE BINDING on the heirs, assigns, representatives, and successors of the Undersigned, and is to extend to the benefit of the successors, assigns, and nominees of the Assignee.

AGREED as of the date of my signature below:

Assignment

Docket No: 3663.004US1

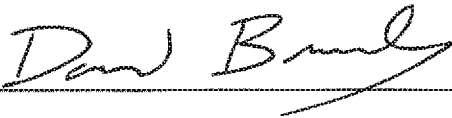
Assignors: David Brumley et al.

Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE

Page 3 of 6

Assignor:

(Signature):



Name: David Brumley

City/State: Pittsburgh, PA

Date:

August 27, 2013

Assignment

Docket No: 3663.004US1

Assignors: David Brunley et al.

Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE

Page 4 of 6

Assignor:

(Signature):

Name: Sang Kil Cha

City/State: Pittsburgh, PA

Date:

Assignment
Assignors: David Brunley et al.
Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE
Page 5 of 6

Docket No: 3663.004US1

Assignor:

(Signature):

Name: Thanassis Avgerinos
City/State: Pittsburgh, PA

Date:

Assignor:

(Signature):

Name: Alexandre Rebert

City/State:

Date:

ASSIGNMENT

WHEREAS, David Brumley, Sang Kil Cha, Thanassis Avgerinos and Alexandre Rebert (hereinafter the "Undersigned") have made one or more inventions and other subject matter (hereinafter collectively referred to as the "Invention") which are described in a patent application filed on May 21, 2013, which application was assigned US patent application serial number 13/898,824, and which is titled DETECTING EXPLOITABLE BUGS IN BINARY CODE.

FOR GOOD AND VALUABLE CONSIDERATION, the receipt, sufficiency, and adequacy of which are hereby acknowledged by the Undersigned, the Undersigned do hereby irrevocably and unconditionally:

CONVEY, ASSIGN, AND TRANSFER to Carnegie Mellon University (the "Assignee"), having a place of business at 4615 Forbes Ave., Suite 302, Transfer and Enterprise Creation Carnegie Mellon University, Pittsburgh, PA 15213, the Undersigned's entire right, title, and interest for the United States and all foreign countries and jurisdictions in and to:

the Invention which is disclosed in the above-identified application or applications;

such application or applications, and all divisional, continuing (including continuation-in-part), substitute, renewal, reissue, and all other applications for a patent or patents which have been or shall be filed in the United States (including all provisional and non-provisional applications), and in all foreign countries and jurisdictions based in whole or in part on any of such Invention (including any application for a utility model or an innovation patent application);

all original and reissued patents which have been or shall be issued in the United States and all foreign countries and jurisdictions based in whole or in part on any of such Invention;

including the right to claim priority to the above-identified patent application or applications in relation to subject matter based in whole or in part on the above-identified patent application or applications and any of the foregoing including the right to file foreign applications under the provisions of any convention or treaty;

and including the right to all causes of action, remedies, and other enforcement rights related to the above-identified application or applications, including without limitation the right to sue for past, present, or future infringement, misappropriation, or violation of any and all rights related to the above-identified patent application or applications and any of the foregoing, including the right to obtain and collect damages for past, present, or future infringement;

AUTHORIZE AND REQUEST the issuing authority to issue any and all United States and foreign patents granted on such Invention to the Assignee;

AUTHORIZE AND REQUEST that any attorney associated with U.S. Patent and Trademark Office (USPTO) Customer No. 21186 may (directly or through his/her designee) delete, insert, or alter any information related to the above-identified patent application or applications or any of the foregoing, after execution of this Assignment;

WARRANT AND COVENANT that no assignment, grant, mortgage, license or other agreement affecting the rights and property herein conveyed has been or shall be made to others by the Undersigned, and that the full right to convey the same as herein expressed is possessed by the Undersigned;

COVENANT, that when requested and without compensation, but at the expense of the Assignee, in order to carry out in good faith the intent and purpose of this Assignment, the Undersigned shall (1) execute all provisional, non-provisional, divisional, continuing (including continuation-in-part), substitute, renewal, reissue, and all other patent applications for the Invention; (2) execute all rightful oaths, declarations, assignments, powers of attorney and other papers for the Invention; (3) communicate to the Assignee all facts known to the Undersigned relating to the Invention and the history thereof; (4) cooperate with the Assignee in any interference, reexamination, reissue, opposition, dispute, or litigation involving any of the applications or patents for the Invention; and (5) take such further actions as the Assignee shall reasonably consider necessary or desirable for vesting title to such Invention in the Assignee, or for securing, maintaining and enforcing proper patent protection for the Invention;

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AGREED as of the date of my signature below:

Assignment

Docket No: 3663.004US1

Assignors: David Brunley et al.

Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE

Page 3 of 6

Assignor:

(Signature): _____

Name: David Brunley

City/State: Pittsburgh, PA

Date: _____

Assignment

Docket No: 3663.004US1

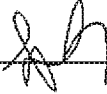
Assignors: David Brumley et al.

Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE

Page 4 of 6

Assignor:

(Signature):



Name: Sang Kil Cha

City/State: Pittsburgh, PA

Date:

8/21/2013

Assignor:

(Signature):

Name: Thanassis Avgerinos

City/State: Pittsburgh, PA

Date:

Assignment
Assignors: David Brumley et al.
Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE
Page 6 of 6

Docket No: 3663.004US1

Assignor:

(Signature):

Name: Alexandre Rebert

City/State:

Date:

ASSIGNMENT

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and including the right to all causes of action, remedies, and other enforcement rights related to the above-identified application or applications, including without limitation the right to sue for past, present, or future infringement, misappropriation, or violation of any and all rights related to the above-identified patent application or applications and any of the foregoing, including the right to obtain and collect damages for past, present, or future infringement;

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Assignment
Assignors: David Brumley et al.
Title: DETECTING EXPLOTTABLE BUGS IN BINARY CODE
Page 3 of 6

Docket No: 3663.004US1

Assignor:

(Signature):

Name: David Brumley
City/State: Pittsburgh, PA

Date:

Assignment
Assignors: David Brumley et al.
Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE
Page 4 of 6

Docket No: 3663,004US1

Assignor:

(Signature):

Name: Sang Kil Cha
City/State: Pittsburgh, PA

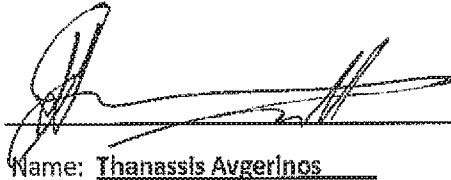
Date:

Assignment
Assignors: David Brumley et al.
Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE
Page 5 of 6

Docket No: 3663.004US1

Assignor:

(Signature):



Name: Thanassis Avgerinos

City/State: Pittsburgh, PA

Date:

08/22/2013

Assignment

Assignors: David Brumley et al.

Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE

Page 6 of 6

Docket No: 3663.004US1

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(Signature):

Name: Alexandre Rebert

City/State:

Date:

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AGREED as of the date of my signature below:

Assignment
Assignors: David Brumley et al.
Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE
Page 3 of 6

Docket No: 3663.004US1

Assignor:

(Signature):

Name: David Brumley
City/State: Pittsburgh, PA

Date:

Assignment
Assignors: David Brumley et al.
Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE
Page 4 of 6

Docket No: 3663.004US1

Assignor:

(Signature):

Name: Sang Kil Cha
City/State: Pittsburgh, PA

Date:

Assignment
Assignors: David Brumley et al.
Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE
Page 5 of 6

Docket No: 3663.004US1

Assignor:

(Signature):

Name: Thanassis Avgerinos
City/State: Pittsburgh, PA

Date:

Assignment

Docket No: 3663.004US1

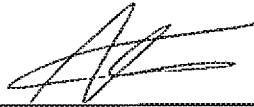
Assignors: David Brumley et al.

Title: DETECTING EXPLOITABLE BUGS IN BINARY CODE

Page 6 of 6

Assignor:

(Signature):



Name: Alexandre Rebert

City/State: Pittsburgh, PA

Date:

08/23/2013