**JOINT DEVELOPMENT AGREEMENT**

**on**

**Efficient data mining for biological computing**

This Joint Development Agreement (hereinafter this “Agreement”) is made and entered into as of the July 1, 2014 (hereinafter “Effective Date”) by and between Nippon Telegraph and Telephone Corporation, a Japanese corporation with its principal place of business at 5-1 Otemachi 1-chome, Chiyoda-ku, Tokyo 100-8116, Japan (hereinafter “NTT”) and New York University, an American university with its principal place of business at 251 Mercer Street, New York, NY 10012, U.S.A. (hereinafter “NYU”)(hereinafter NTT and NYU are referred as the “Party” individually or the “Parties” collectively).

WHEREAS, each Party respectively has been engaged in the development of Efficient data mining for biological computing (hereinafter “New Technology”) and has certain expertise in such area; and

WHEREAS, the Parties wish to jointly conduct the development activities in connection with the New Technology to develop the New Technology in efficient and timely manner.

WHEREAS, NTT’s R&D activities are sponsored by its Operation Companies (as defined below), and Operation Companies are entitled to use such R&D results.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, the Parties agree as follows:

**ARTICLE 1 DEFINITIONS**

1.1 Unless otherwise specified in this Agreement, the following terms shall have the meanings ascribed to them for all purposes of this Agreement:  
  
“Confidential Information” means the Sole Information of the other Party as defined in Article 8.1 and the Joint Information as defined in Article 8.2;  
  
“Joint Development” means development activities in connection with the New Technology jointly conducted by the Parties in accordance with this Agreement;  
  
“Invention(s)” means any invention, improvement, utility model and design;  
  
“Operation Companies” means subsidiaries of NTT specified in Exhibit 1;  
  
“Patent(s)” means any patent, utility model rights and design patent granted upon Invention(s);  
  
“Patent Application(s)” means application for Patent(s);  
  
“Project Manager” means the person respectively appointed by the Parties in accordance with Article 15;  
  
“***utilize***” as used in Article 10 means to reproduce, modify, perform, display, publicly transmit, distribute, transfer, translate, make derivative works and otherwise use any works, and includes to have third party reproduce, modify, perform, display, publicly transmit, distribute, transfer, translate, make derivative works and otherwise use any works on behalf of the Parties or Operation Companies as applicable; and  
  
“***work*** ” as used in Article 7 means to use, make, sell, offer to sell, import and export the Invention, and includes to have third party use and make the Invention on behalf of the Parties or Operation Companies as applicable.

**ARTICLE 2 PURPOSE AND SCOPE**

2.1 The purpose of the Joint Development is to develop the New Technology through the cooperation between the Parties.

2.2 The scope of the Joint Development is to perform necessary development activities to achieve the purpose specified above through investigating and resolving related subjects/problems.

2.3 The Parties shall carry out this Joint Development by respectively and/or jointly performing tasks assigned to them in accordance with the development plan attached hereto as Exhibit 2 (hereinafter “Development Plan”).

2.4 The Parties may amend the Developmental Plan in writing if such amendment is deemed necessary upon the mutual consultation between the Parties.

**ARTICLE 3 RESULTS AND PUBLICATION**

3.1 During the course of the Joint Development, each Party shall notify to the other Party regarding results and/or findings (such as but not limited to products, techniques, or information) derived from this Joint Development (hereinafter “Results”) from time to time, and the Parties shall determine the classification and treatment of Results, such as confidentiality and publication, upon consultation between the Parties.

3.2 The NYU shall prepare the final report on Results (“Report”) and submit it to NTT before the termination or expiration of this Agreement. The Report shall be treated as Joint Works　(as defined in Article10.1).

3.3 Unless otherwise permitted in this Agreement, either Party shall not make available to the public all or part of the existence and content of this Joint Development and Results without prior written consent from the other Party.

**ARTICLE 4 PERFORMANCE**

4.1 During the course of the Joint Development, the Parties shall perform the tasks assigned to them with due care, including but not limited to utilizing their technological knowledge and skill.

4.2 During the course of the Joint Development, the Parties shall periodically hold meetings to discuss various subjects related to the Joint Development, including but not limited to sharing current progress, results/findings, and problems encountered during the course of Joint Development. Details of such meetings, such as but not limited to frequency, venue, and timing shall be determined through consultation between the Parties.

**ARTICLE 5 EXPENSES**

5.1 NTT shall reimburse the NYU for costs and expenses incurred in the Joint Development, including but not limited to the expenses for personnel, materials, computer use and travel (hereinafter ”Expenses”), but in no event the amount of Expenses shall exceed [amount of Expense].

5.2 Promptly after the execution of this Agreement, the NYU shall send the invoice for Expenses to NTT, and within thirty (30) days after receiving the appropriate invoice, NTT shall arrange the payment of the Expenses to the NYU by wire transfer to the bank account designated by the NYU.

5.3 The NYU shall be solely responsible for accounting of the Expenses. Immediately after the expiration or termination of this Agreement, the NYU shall send NTT the statement of account for Expenses actually incurred in the course of the Joint Development. NTT may inspect the NYU’s accounting documents and evidences for Expenses and the NYU shall cooperate with such inspection in good faith.

5.4 In case there is any unused portion of the Expenses upon expiration or termination of this Agreement, the NYU shall promptly refund such unused portion of the Expenses to NTT upon receipt of the invoice from NTT.

**ARTICLE 6 INVENTIONS**

6.1 **Sole Invention.** In the event any Invention is made by the employee(s) of each Party solely and without use of or reference to any information disclosed by the other Party in the course of Joint Development (hereinafter “Sole Invention”), such Party shall own all rights and title in and to such Sole Invention and the Patent(s) granted thereon (hereinafter “Sole Patent”). Such Party (or inventor(s) of such Sole Invention, as the case may be) may file Patent Application on such Sole Invention in its own name, if such Sole Invention is reasonably considered to be patentable. Such Party shall notify the other Party in writing of the filing number and date of the Patent Application, the jurisdiction in which the application is filed, the title of the invention, and the name(s) of the inventors, with a copy of the patent specification filed within sixty (60) days from the filing date.

6.2 **Joint Invention.** In the event any Invention is (a) jointly made by employees of the Parties or (b) individually made by the employee(s) of each Party based on any information disclosed by the other Party (hereinafter “Joint Invention”), the Parties shall jointly own all rights in and to such Joint Invention and the Patent(s) granted thereon (hereinafter “Joint Patent”). Details pertaining to the ownership ratio of each Party therein, filing, prosecution and maintenance of the Joint Patent and Patent Application relating thereto, and sharing of requisite cost involved shall be timely discussed and agreed between the Parties in writing.

**ARTICLE 7 LICENSING OF PATENTS**

7.1 **Sole Patent.** Each Party shall grant to the other Party and Operation Companies non-exclusive, licenses to ***work*** the Sole Invention and Sole Patent　(whether patented or patent pending) for their respective business. Details for such licenses, such as but not limited to royalty, shall be discussed in good faith between the NYU, NTT, and Operation Companies, as the case may be.

7.2 **Joint Patent.** The Parties and Operation Companies may ***work*** Joint Inventions and Joint Patent (whether patented or patent pending) without any restriction or payment obligation. Provided, however, that neither Party may grant any license to any third Party other than Operation Companies on Joint Invention and Joint Patent (whether patented or patent pending) or otherwise dispose, abandon or assign its interest therein without prior written consent of the other Party.

7.3 **Background Patent.**  For the purpose of this Agreement, “Background Patent” means all Patents and Patent Applications owned or controlled by either Party, (a) which was conceived or reduced to practice either prior to the commencement of this Joint Development or outside the scope of this Joint Development, and (b) which is introduced to the Joint Development or otherwise supplied by each Party during the Joint Development. Background Patent shall remain with the Party introducing or supplying the same and shall remain unfettered by this Agreement. Nothing in this Agreement shall be construed as grant of license, whether implied or expressed, to the other Party or Operation Companies regarding Background Patent. Terms and conditions for such license shall be determined by consultation between the NYU, NTT, and relating Operation Companies, as the case may be.

## **Article 8. CONFIDENTIAL INFORMATION**

8.1 **Sole Information.** ”Sole Information” means any information with respect to the Joint Development which is disclosed, whether in writing, orally, visually or by any other means, by either Party (hereinafter “Discloser”) to the other Party (hereinafter “Recipient”), including but not limited to trade secrets, know-how, ideas, concepts, designs, drawings, software, flow charts, diagrams, cost structure, target price, product name, sales plan and business opportunities; provided, that (a) if communicated in writing or any other tangible form, Sole Information shall be conspicuously marked as "NTT Confidential" or “New York University Confidential” as applicable at the disclosure to Recipient, and (b) if communicated orally, visually or in any other intangible form, it shall be designated as such at the disclosure and notified in writing of the same to Recipient within thirty (30) days of the disclosure; provided, further, that Sole Information protectable hereunder shall not be construed to include information that:

(i) is or subsequently becomes generally available to the public through no fault or breach of Recipient;

(ii) Recipient demonstrates has been rightfully in its possession prior to the disclosure of Confidential Information to Recipient by Discloser;

(iii) is or will be independently developed by Recipient without using any received Confidential Information;

(iv) Recipient rightfully obtains or will obtain without restrictions from a third party who has the right to transfer or disclose it; or

(v) Discloser subsequently agrees, in writing, not to treat as Confidential Information..

8.2 **Joint Information.** “Joint Information” means any information newly and jointly created or acquired by the Parties in the course of the Joint Development to the extent such information is determined, after mutual consultation, by the Parties to be new and confidential and such information does not fall under any of the exceptions (i) through (v) of Article 8.1. The Parties shall mark such information “NTT/New York University Confidential” whenever they reduce the same to writing.

8.3 Each Party shall keep the Confidential Information in strict confidence and, without prior written consent of the other Party, may not publish, disclose, divulge or leak the Confidential Information or any portion thereof to any third party during the term of this Agreement and for a period of 3 years thereafter. Notwithstanding the foregoing, the Parties may disclose, and reproduce, forward and/or transmit for the purpose of such disclosure, the Confidential Information to the officers and employees of the Parties to the extent necessary for their businesses, provided that such officers and employees shall be bound by the confidentiality obligations equivalent to those provided for herein.

8.4 Each Party hereby acknowledges and agrees that the confidentiality obligations hereunder shall not affect in any way each Party’s right to appoint and dismiss, at its sole discretion, any officers and employees to and from involvement to the Joint Development.

8.5 Either Party may disclose Confidential Information if required by any judicial or governmental request, requirement or order; provided that such Party shall promptly notify the other Party in writing of the circumstances prior to such disclosure, and take all reasonable steps to limit the disclosure only to the extent necessary to comply with such requirement.

## **ARTICLE 9 USE OF CONFIDENTIAL INFORMATION**

9.1 Each Party may use the Sole Information of the other Party, Joint Information, and other data and documents containing the Confidential Information, and the idea, concept and technology contained in the Confidential Information, for the development of its products and services or for any other business activities of each Party at its sole discretion and without payment obligation to the other Party. The immediately preceding provision shall apply to the Operation Companies, provided that the Operation Companies using such information shall be bound by the confidentiality obligations equivalent to those of NTT provided for hereunder. Notwithstanding the foregoing, neither Party nor Operation Companies may use certain Sole Information developed by Discloser independently from the Joint Development and designated in writing at the time of disclosure as requiring specific prior written consent of Discloser for any use (hereinafter “the Designated Confidential Information”), without such consent of Discloser.

9.2 Each Party may have a third party use the Sole Information of the other Party, Joint Information, other data and documents containing the Confidential Information, and the idea, concept and technology contained in the Confidential Information, for the purpose of developing its products and services or conducting any other business activities of each Party at its sole discretion and without payment. Further, the Operation Companies may have third parties use the Sole Information of the other Party, Joint Information, other data and documents containing the Confidential Information, and the idea, concept and technology contained in the Confidential Information, for the purpose of developing their products and services or conducting any other business activities of Operation Companies at their sole discretion and without payment . In no event such license to the third party may affect the right of each Party and the Operation Companies granted or reserved hereunder. Notwithstanding the provisions of this Article 9.2, however, that whenever the Designated Confidential Information is involved, prior written consent thereto by its Discloser shall be obtained pursuant to the Article 9.1.

9.3 In the event either Party or any of the Operation Companies desires to cause any third party to use Confidential Information pursuant to Article 9.2 above, such party may disclose relevant Confidential Information to such third party to the extent necessary for such use, provided that either Party or relevant Operation Company shall procure such third party to agree in writing to abide by the confidentiality obligations equivalent to those provided for herein.

9.4 For the avoidance of doubt, to the extent Confidential Information is copyrightable work, Article 10 shall also apply to the use of such information and grant of license thereon.

## **ARTICLE 10 COPYRIGHTS**

10.1 Copyrights (including the rights to make derivative works and the original author’s rights to such derivative works) and any other rights in and to the works jointly created by the Parties in the course of Joint Development (hereinafter “Joint Works”) shall be jointly owned by the Parties.

10.2 Subject to Article 3.2, 3.3, 8 and 9, the Parties and Operation Companies may ***utilize*** whole or part of the Joint Works at their sole discretion and without payment; provided, however, if each Party desires to grant a right in the Joint Works to third parties (excluding Operation Companies), such Party shall obtain prior consent from the other Party.

10.3 Each Party shall reserve copyrights in and to its any and all works other than the Joint Works (hereinafter “Reserved Works”). The Party owing such Reserved Works shall grant to the other Party and Operation Companies unwarranted, irrevocable, non-exclusive and non-transferable licenses to ***utilize*** the Reserved Works to the extent such Reserved Works are necessary for the implementation of the Results. Details for such licenses, such as but not limited to royalty, shall be discussed in good faith between the NYU, NTT and relevant Operation Company, as the case may be.

10.4 In the event each Party wishes to incorporate software owned by any third party (hereinafter “Third Party Software”) to the Joint Works, such Party shall promptly notify the other Party of such facts prior to incorporating such Third Party Software. Unless otherwise agreed by the Parties, the rights and titles in and to such Third Party Software shall be reserved by such third party, and the Parties shall ***utilize*** the Third Party Software in accordance with the license terms and conditions attached to the Third Party Software.

**ARTICLE 11 NO RESTRICTION**

11.1 Nothing in this Agreement shall be construed as a representation or agreement that the Parties will not conduct development activities similar to this Joint Development. Subject to Article 7, 8, 9 and 10 hereof, each Party shall be free to conduct joint development activities with third parties at its sole discretion.

**ARTICLE 12 NO WARRANTY**

12.1 EACH PARTY REPRESENTS AND WARRANTS THAT IT HAS THE RIGHT TO ENTER THIS AGREEMENT AND TO PERFORM TASKS ASSGINED TO IT IN ACCORDANCE WITH THIS AGREEMENT. EXCEPT FOR THE FOREGOING, ALL TECHNOLOGY, PRODUCT, SERVICE, IFORMATION OR ANY OTHER MATERIALS PROVIDED HEREUNDER IS PROVIDED “AS IS” AND WITHOUT ANY REPRESENTATION, WARRANTY, IMPLIED OR OTHERWISE, REGARDING ITS ACCURACY OR PERFORMANCE AND, IN PARTICULAR, WITH RESPECT TO THE NON-INFRINGEMENT OF TRADEMARKS, PATENTS, COPYRIGHTS OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS, OR ANY OTHER RIGHTS OF THIRD PARTIES. NOTWITHSTANDING THE FOREGOING, NEITHER PARTY SHALL DISCLOSE ANY INFORMATION TO THE OTHER PARTY IN VIOLATION OF CONFIDENTIAL OBLIGATIONS WITH THIRD PARTIES.

**ARTICLE 13 LIMITATION OF LIABILITY**

13.1 IN NO EVENT SHALL EITHER PARTY BE LIABLE TO THE OTHER PARTY FOR ANY INCIDENTAL, INDIRECT, SPECIAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, REGARDLESS OF THE NATURE OF THE CLAIM, INCLUDING, WITHOUT LIMITATION, LOST PROFITS, COSTS OF DELAY, ANY FAILURE OF DELIVERY, BUSINESS INTERRUPTION, COSTS OF LOST OR DAMAGED DATA OR DOCUMENTATION OR LIABILITIES TO THIRD PARTIES ARISING FROM ANY SOURCE, EVEN IF A PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THIS LIMITATION UPON DAMAGES AND CLAIMS IS INTENDED TO APPLY WITHOUT REGARD TO WHETHER OTHER PROVISIONS OF THIS AGREEMENT HAVE BEEN BREACHED OR HAVE PROVEN INEFFECTIVE.

**ARTICLE 14 NO COMMITMENT**

14.1 Nothing in this Agreement shall be construed as any legally binding commitment of either Party, whether expressed or implied, such as but not limited to the procurement or supply of goods, quoting price or delivery terms, or entering into any business relationship between the Parties.

**ARTICLE 15 PROJECT MANAGER**

15.1 Either Party shall respectively appoint a Project Manager, who shall be responsible for the coordination between the Parties with respect to the Joint Development.

15.2 The Project Manager of the Parties and their contact information shall be as follows:

NTT: Shohei Uchikawa

NTT Software Innovation Center

3-9-11, Midori-cho Musashino-shi, Tokyo 180-8585 Japan

+81 422 59 6852

+81 422 59 3739

NYU: [Name]

[Title]

[Address]

[Telephone Number]

[Fax Number]

15.3 Any notice, request or demand hereunder shall be addressed to the Project Manager of either Party or other person designated by the Parties in writing. Such notice, request or demand shall be in writing given by a facsimile or prepaid registered airmail letter. All notices, request or demand hereunder shall be deemed to have been received on the day when received.

15.4 Either Party may, at any time during the term of this Agreement, change its Project Manager by giving written notice to the other Party.

**ARTICLE 16 TERM AND TERMINATION**

16.1 This Agreement shall become effective on the Effective Date and shall continue in full force until December 31, 2014.

16.2 Notwithstanding the foregoing, upon mutual consultation in good faith, either Party may terminate this Agreement by giving thirty (30) days written notice to the other Party if the Party reasonably believes that (a) the purpose of this Joint Development has been achieved or (b) performance of this Joint Development has become impossible or impracticable.

16.3 Article 3.2, 3.3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17 and 18 shall survive the termination or expiration of this Agreement.

**Article 17 EXPORT CONTROL**

17.1 Any technology, product or information exchanged between the Parties or created in connection with the Joint Development shall be exported or re-exported to any country, in compliance with applicable export control laws and regulations of relevant countries (“Export Control Laws”). Either Party shall cooperate with the other Party, if requested, in taking actions necessary to comply with Export Control Laws.

17.2 NTT shall cause Operation Company to comply with obligations contemplated in Article 17.1.

**ARTICLE 18 MISCELLANEOUS**

18.1 Neither this Agreement nor any rights or obligations hereunder shall be assigned or transferred by either Party whether in part or in whole, except with the prior written consent of the other Party.

18.2 No failure or delay of one Party to require performance by the other of any provision of this Agreement shall in any way adversely affect such Party’s right to require full performance of such provision after that. No waiver by one Party of a breach of any provision of this Agreement shall be considered to be a waiver by such Party of any succeeding breach of such provision.

18.3 This Agreement, including its validity, interpretation and enforceability, shall be governed by the laws of Japan, excluding choice-of-law rules.

18.4 In the event any difference or dispute arises between the Parties in connection with this Agreement or the subject matter thereof, the Parties shall amicably settle such dispute by mutual consultation in good faith.

18.5 In the event any difference or dispute is not amicably settled between the Parties pursuant to Article 18.4 above, such dispute shall be finally settled, without submission to ordinary court, by arbitration in Tokyo in accordance with the Commercial Arbitration Rules of the Japan Commercial Arbitration Association. The arbitration shall be conducted by three (3) arbitrators and in English. The award rendered by the arbitrators shall be final and binding upon the Parties. Judgment upon the award may be entered in any court having jurisdiction thereof. Notwithstanding the foregoing, Discloser may seek injunctive relief against Recipient from any other judicial or administrative authority pending the resolution of such dispute to protect its Confidential Information or other intellectual property.

18.6 If any provision or any portion of this Agreement shall be held void or unenforceable, the remaining provisions of this Agreement and the remaining portion of any provision held void or unenforceable in part shall continue in full force and effect.

18.7 This Agreement constitutes the entire agreement between the Parties with respect to the subject matter hereof and supersedes all prior or contemporaneous oral or written agreements between them relating thereto.

18.8 This Agreement may not be amended or modified except by the written agreement signed by dully authorized representatives of the Parties.

18.9 Any matters not contemplated in this Agreement shall be solved by consultation in good faith between the Parties.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their duly authorized representatives.

**Nippon Telegraph and Telephone Corporation**

By:

Name: Kazuhiko Kushima

Title: Executive Director, Service Innovation Laboratory Group, Nippon Telegraph and

Telephone Corporation

Date：

**[NYU]**

By:

Name:

Title:

Date：

**Exhibit 1 Operation Companies**

Nippon Telegraph and Telephone East Corporation

Nippon Telegraph and Telephone West Corporation

NTT Communications Corporation

NTT DATA Corporation

NTT DOCOMO, Inc.

**Exhibit 2 Development Plan**

1. **Project Title**

**Efficient data mining for biological computing**

1. Project Title

Efficient data mining for biological computing

1. Scope of the Joint Development

This Joint Development conducts research on efficient data mining approaches for biological computing. The object of this project is to find out theoretical and/or methodological observation for realizing efficient biological computing. We validate the obtained observations through evaluation experiments.

1. Deliverables

* Theoretical and/or methodological observations on efficient data mining approaches for biological computing.
* Sample codes for evaluation experiments and experiment results.
* Final report.

1. Tasks of the Parties

NYU

* Project organization and management
* Discussion
* Provision of benchmark data for the performance of this Joint Development
* Provision of computing environments for the performance of this Joint Development

NTT

* Research planning
* Research on efficient data mining approaches for biological computing
* Evaluation experiment

1. Members

NYU

* Prof. Dennis Shasha: Project Manager of this Joint Development
* Researchers employed by NYU

NTT

* Mr. Shohei Uchikawa: Project Manager of this Joint Development
* Dr. Yasuhiro Fujiwara: Distinguished Technical Member