

(51) International Patent Classification:
G06F 17/50 (2006.01)(21) International Application Number:
PCT/KR2008/006901(22) International Filing Date:
21 November 2008 (21.11.2008)

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:
10-2008-0073203 25 July 2008 (25.07.2008) KR(71) Applicant (for all designated States except US): **KOREA RESEARCH INSTITUTE OF BIOSCIENCE AND BIOTECHNOLOGY** [KR/KR]; 52, Eoeun-dong, Yuseong-gu, Daejeon 305-806 (KR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KIM, Tae-hyung** [KR/KR]; #303 SK HUB, Jijok-dong, Yuseong-gu, Daejeon 305-330 (KR). **PARK, Jong-hwa** [KR/KR]; #405 Gadong, Mijo Apt., Mijo-ri, Mijo-myeon, Namhae-gun, Gyeongsangnam-do 668-831 (KR). **LEE, Sung-hoon** [KR/KR]; #105-103, Cheonggu Narae Apt., Jeonmin-dong, Yuseong-gu, Daejeon 305-390 (KR). **KWON, Je-keun** [KR/KR]; #126-21, Sinseong-dong, Yuseong-gu, Daejeon 305-804 (KR). **CHO, Su-an** [KR/KR]; #203

Hyundai Apt., 326-13 Jangdae-dong, Yuseong-gu, Daejeon 305-308 (KR).

(74) Agents: **KANG, Kyung Chan** et al.; K2B International Patent And Law Office, #303 Soohyup Bldg, 917 Dunsan-dong, Seo-Gu, Daejeon 302-828 (KR).

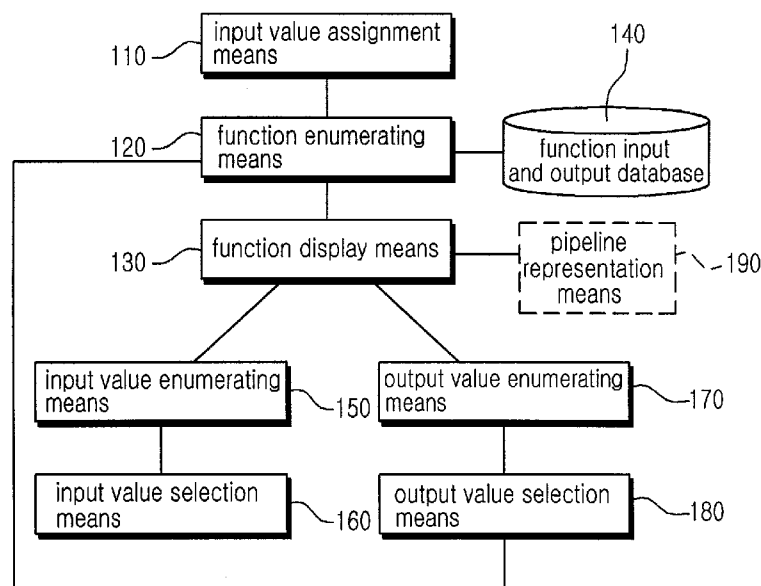
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: BIO INFORMATION ANALYSIS PROCESS AUTO DESIGN SYSTEM AND THEREOF

[Fig. 1]



(57) Abstract: Disclosed is a system for recommending and designing an information analysis process and a method thereof in that the necessary functions and input and output values information can be recommended and a pipeline for analyzing and treating various information can automatically generated during selection thereof, whereby peoples in the biological field can easily utilize a bio information tool without operating the programming works and it can minimize the time for establishing the data analysis process.



Published:

— *with international search report (Art. 21(3))*

【DESCRIPTION】**【Invention Title】**

BIO INFORMATION ANALYSIS PROCESS AUTO DESIGN SYSTEM AND THEREOF.

【Technical Field】

The present invention relates to a system for recommending and designing an information analysis process and a method thereof, and more particularly to a system for recommending and designing an information analysis process and a method thereof in that the necessary functions and input and output values information can be recommended and a pipeline for analyzing and treating various information can automatically generated during selection thereof, whereby peoples in the biological field can easily utilize a bio information tool without operating the programming works.

【Background Art】

Conventionally, since data analysis processes of various information should be established in advance, there is a problem in that this establishment of each data analysis process is often time consuming. Also, because the general users, who do not understand the data analysis method, cannot obtain the desiring results, all users cannot obtain the output data, thereby remarkably deteriorating the efficiency of the analysis.

In the meantime, according to the development of the treating techniques of the bio information and the production of mass data, it is necessary to share the data analysis methods. Accordingly, in order to execute these processes anywhere, the necessity for sharing these methods is gathered strength.

However, in order to provide these data analysis methods and processes to the peoples in the biological field, they should have applied knowledge on the corresponding processes. Accordingly, the programming works on this is often time consuming in comparison with

the study on the biological information.

Therefore, the necessity for developing any system cable of easily utilizing the bio information tool without operating the programming works is gathered strength.

Also, in order to predict new information by using any program on the information database, the development of the related system is very urgent.

【Disclosure】

【Technical Problem】

Accordingly, the present invention has been made to solve the above-mentioned problems occurring in the prior art, and an object of the present invention is to provide a system for recommending and designing an information analysis process and a method thereof in that the necessary functions and input and output values information can be recommended and a pipeline for analyzing and treating various information can automatically generated during selection thereof.

Another object of the present invention is to provide a system for recommending and designing an information analysis process and a method thereof in that each functions and each input and output values information of the functions are stored and accumulated as one unit and the pipeline is formed according to the input and output values, whereby checking out it through the user.

Further another object of the present invention is to provide a system for recommending and designing an information analysis process and a method thereof in that weights of the corresponding functions extracted from the function input and output database are displayed in each function enumerated by the function enumerating means, whereby recommending them to the users.

【Technical Solution】

To accomplish the objects, the present invention provides a system for recommending and designing an information analysis process comprising: a function input and output database for defining input and output values of various functions and storing characteristics of the input and output values of each function; an input value assignment means for assigning an input value information for analyzing by means of a user so as to design the information analysis process; a function enumerating means for extracting at least one function related to the input value information of the input value assignment means or any input value information corresponding to an output value information of an output value selection means from the function input and output database to be enumerated; a function display means for displaying any function selected by the user; an input value enumerating means for extracting the input value information of the function displayed by the function display means from the function input and output database to be enumerated; an input value selection means for selecting and presenting any input value information for analyzing by means of the user from at least one input value information presented by the input value enumerating means; an output value enumerating means for extracting an output value information of the function displayed by the function display means from the function input and output database to be enumerated; the output value selection means for selecting and presenting any output value information for analyzing by means of the user from at least output value information presented by the output value enumerating means; and a pipeline representation means for representing the functions displayed through the function display means so as to confirm them through the user.

【Advantageous Effects】

In the system for recommending and designing the information analysis process and the method thereof, there is an effect in that the necessary functions and input and output values information can be recommended and the pipeline for analyzing and treating various information can automatically generated during selection thereof, whereby minimizing the time for establishing the data analysis process.

Also, there is another effect in that the weights of the corresponding functions extracted from the function input and output database are displayed in each function enumerated by the function enumerating means to recommend them to the users, whereby presenting the optimum selection of the functions to the users.

【Description of Drawings】

The above as well as the other objects, features and advantages of the present invention will be more apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a schematic block diagram illustrating a system for recommending and designing an information analysis process according to the present invention;

FIG. 2 is a schematic block diagram illustrating a process of a characteristic storage means of the function input and output value of a system for recommending and designing an information analysis process according to the present invention;

FIG. 3 is an example view illustrating a record shape stored in a function input and output database through a treatment of a characteristic storage means of the function input and output value of a system for recommending and designing an information analysis

process according to the present invention;

FIG. 4 is an example view illustrating another record shape stored in a function input and output database through a treatment of a characteristic storage means of the function input and output value of a system for recommending and designing an information analysis process according to the present invention;

FIG. 5 is an example view illustrating function records stored in a characteristic storage means of the function input and output value;

FIG. 6 is an example view illustrating a relationship between functions for treating input and output values of a system for recommending and designing an information analysis process according to the present invention;

FIG. 7 is an example view illustrating a pipeline presented by a pipeline representation means from function records stored in a function input and output database;

FIG. 8 is an example view illustrating a weight of a weight display means of a system for recommending and designing an information analysis process according to the present invention;

FIG. 9 is an example view illustrating functions based on defined input and output values and characteristics thereof of a system for recommending and designing an information analysis process according to the present invention; and

FIG. 10 is an example view illustrating pipelines of a system for recommending and designing an information analysis process according to the present invention.

【Best Mode】

To accomplish the objects, the present invention provides a system for recommending and designing an information analysis process comprising: a function input and output database for defining input and output

values of various functions and storing characteristics of the input and output values of each function; an input value assignment means for assigning an input value information for analyzing by means of an user so as to design the information analysis process; a function enumerating means for extracting at least one function related to the input value information of the input value assignment means from the function input and output database to be enumerated; a function display means for displaying any function selected by the user; an input value enumerating means for extracting the input value information of the function displayed by the function display means from the function input and output database to be enumerated; an input value selection means for selecting and presenting any input value information for analyzing by means of the user from at least one input value information presented by the input value enumerating means; and a pipeline representation means for representing the functions displayed through the function display means so as to confirm them through the user.

To accomplish the objects, another embodiment of the present invention provides a system for recommending and designing an information analysis process comprising: a function input and output database for defining input and output values of various functions and storing characteristics of the input and output values of each function; an input value assignment means for assigning an input value information for analyzing by means of an user so as to design the information analysis process; a function enumerating means for extracting at least one function related to the input value information of the input value assignment means or any input value information corresponding to an output value information of an output value selection means from the function input and output database to be enumerated; a function

display means for displaying any function selected by the user; an input value enumerating means for extracting the input value information of the function displayed by the function display means from the function input and output database to be enumerated; an input value selection means for selecting and presenting any input value information for analyzing by means of the user from at least one input value information presented by the input value enumerating means; an output value enumerating means for extracting an output value information of the function displayed by the function display means from the function input and output database to be enumerated; the output value selection means for selecting and presenting any output value information for analyzing by means of the user from at least one output value information presented by the output value enumerating means; and a pipeline representation means for representing the functions displayed through the function display means so as to confirm them through the user.

Preferably, the system for recommending and designing the information analysis process further comprises a weight display means for extracting weights of the corresponding functions from the function input and output database and displaying them in each function enumerated by the function enumerating means.

Preferably, the system for recommending and designing the information analysis process further comprises an input value request means for requesting another input value to the user in case that the selected function demands another input value.

Preferably, the function input and output database comprises a function record for storing the input and output information of each function in the form of one record and an input value weight record for giving weights to each function related to one input value

information to be stored.

To accomplish the objects, the present invention provides a method for recommending and designing the information analysis process comprising steps of: assigning an input value information for analyzing by means of an user so as to design the information analysis process; extracting at least one function related to the input value information of the input value assigning step or any input value information corresponding to an output value information of an output value selecting step from a function input and output database to be enumerated; displaying any function selected by the user; extracting the input value information of the function displayed by the function display step from the function input and output database to be enumerated; selecting and presenting any input value information for analyzing by means of the user from at least one input value information presented by the input value enumerating step; extracting an output value information of the function displayed by the function display step from the function input and output database to be enumerated; selecting and presenting any output value information for analyzing by means of the user from at least output value information presented by the output value enumerating step; and representing the functions displayed through the function display step so as to confirm them through the user.

Preferably, the method further comprises steps of extracting weights from the function input and output database and displaying them in each function enumerated by the function enumerating step.

A preferred embodiment of the invention will be described in detail below with reference to the accompanying drawings.

FIG. 1 is a schematic block diagram illustrating a system for recommending and designing an information analysis process according

to the present invention.

As shown in FIG. 1, the system for recommending and designing the information analysis process according to the present invention includes a function input and output database 140 for defining input and output values of various functions and storing characteristics of the input and output values of each function, an input value assignment means 110 for assigning an input value information for analyzing by means of an user so as to design the information analysis process, a function enumerating means 120 for extracting at least one function related to the input value information of the input value assignment means 110 or any input value information corresponding to an output value information of an output value selection means 180 from the function input and output database 140 to be enumerated, a function display means 130 for displaying any function selected by the user, an input value enumerating means 150 for extracting the input value information of the function displayed by the function display means 130 from the function input and output database 140 to be enumerated, an input value selection means 160 for selecting and presenting any input value information for analyzing by means of the user from at least one input value information presented by the input value enumerating means 150, an output value enumerating means 170 for extracting an output value information of the function displayed by the function display means 130 from the function input and output database 140 to be enumerated, the output value selection means 180 for selecting and presenting any output value information for analyzing by means of the user from at least output value information presented by the output value enumerating means 170, and a pipeline representation means 190 for representing the functions displayed through the function display means so as to confirm them through the

user.

Here, a characteristic storage means of the function input and output value (not shown) serves to define the input and output values and store the plurality of functions, the plurality of input and output values, and the characteristics of the input and output values of each function.

Accordingly, in order to utilize the function input and output database 140, the defined functions and the characteristics of the input and output values should be stored in advance.

In order to design the desiring information analysis process, the user stores the input value information for analyzing in the function input and output database 140 through the input value assignment means 110. Then, at least one function related to the input value information inputted through the users is extracted and enumerated from the function input and output database 140 through the function enumerating means 120.

Also, at least one function related to any input value information as the output value information of the output value selection means 180 is extracted and enumerated from the function input and output database 140 through the function enumerating means 120. Here, where the output value information of one function corresponds to the input value information of another function, the pipeline between them can be formed. Further description on this will be described in detail below.

Continuously, the functions selected by the users are displayed by means of the function display means 130.

Also, the input value information of the function displayed by the function display means 130 is extracted and enumerated from the function input and output database 140 through the input value

enumerating means 150.

Moreover, the input value information for analyzing by means of the user is selected and presented from at least one input value information presented by the input value enumerating means 150 through the input value selection means 160.

Furthermore, the output value enumerating means 170 serves to extract the output value information of the function displayed by the function display means 130 from the function input and output database 140 to be enumerated and the output value selection means 180 serves to select and present the output value information for analyzing by means of the user from at least output value information presented by the output value enumerating means 170.

Accordingly, the user can check out the result in consideration of the functions and the input and output values and characteristics thereof through the pipeline representation means 190 as shown in FIG. 10.

As shown in FIG. 9, the pipeline can be illustrated as the plurality of functions according to the defined input and output values and characteristics. Here, the input and output value information between the functions is not showed in the FIG. 9. However, it can be represented as occasion demands.

FIG. 2 is a schematic block diagram illustrating a process of a characteristic storage means of the function input and output value of a system for recommending and designing an information analysis process according to the present invention.

Here, the word "function" as a verified module serves to perform a specific function and can be written through a computer program.

Also, the function is a minimum unit of the pipeline.

The pipeline is designated as an executing program. Also, the pipeline consisting of at least two functions performs the desiring

operation of the user.

Moreover, the input value information means one input data inputted into the function and the output value information means one output data outputted through the function.

For example, as shown in FIG. 2, the reference numerals 10 and 40 mean the input value information, the reference numerals 20 and 50 mean the functions, and the reference numerals 30 and 60 mean the output value information.

More concretely, if the function name is a "GetFASTA" and the related function serves to receive a gene ID of a mouse and extract the corresponding gene sequence from a Refsequ database (a kind of a Bio information database), the input value information 10 of the "GetFASTA" 20 is the gene ID of the mouse and the output value information 30 thereof is the gene sequence corresponding to the input value information 10.

As another example of the function, if the function name is a "RunBlastToRefseq" 50 and the related function serves to receive a gene ID of a mouse and output any gene sequence of a mankind similar to that of the mouse from the Refsequ database (a kind of a Bio information database), the input value information 40 of the "RunBlastToRefseq" 50 is the gene ID of the mouse and the output value information 60 thereof is the gene sequence of the mankind corresponding to the input value information 40.

As described above, the plurality of input and output values and the characteristics of the input and output values corresponding to the specific function can be defined and stored through the characteristic storage means of the function input and output value.

By way of easy explanation, if there is any function for finding a name of a friend, the characteristic of the input value information 10

of the corresponding function 20 is “name” and “one person” and the characteristic of the output value information 30 thereof is “name” and “many persons” . Also, if there is another function for finding a address of a person, the characteristic of the input value information 40 of the corresponding function 50 is “name” and “many persons” and the characteristic of the output value information 60 thereof is “address” and “many things” .

Here, since the characteristic of the output value information 30 of one function 20 is the same as that of the input value information 40 of other function 50, the pipeline for connecting the functions 20 and 50 to each other is formed.

So to speak again, after definition of the input and output values, the characteristic storage means of the function input and output value (not shown) serves to store and accumulate the plurality of functions, the plurality of input and output values, and the characteristics of the input and output values of each function and then, store them in the function input and output database to be managed.

Also, the word “information” presented in the present invention means any information of a standardized shape defined by the projector of the system of the present invention. Moreover, the information includes the input and output values and the characteristics of the input and output values.

For example, the phrase “a name card” includes the characteristics “a name, “a telephone number” , “an address” , “an email” etc., and the data values “HONG, Gil-Dong” , “02-222-1111” , “111 Yeoksam-dong, Gangnam-gu, Seoul” , honggd@abc.co.kr.

Also, the user can check out the pipeline through the monitor of the computer thereof by means of the pipeline representation means 190.

FIG. 3 is an example view illustrating a record shape stored in a function input and output database through a treatment of a characteristic storage means of the function input and output value of a system for recommending and designing an information analysis process according to the present invention.

As shown in FIG. 3, it can know the record shape of the function, the input and output values, and the characteristics of the input and output values. Each of the input and output values and the characteristics of the input and output values may be at least one.

FIG. 4 is an example view illustrating another record shape stored in a function input and output database through a treatment of a characteristic storage means of the function input and output value of a system for recommending and designing an information analysis process according to the present invention.

As shown in FIG. 4, it can know the record shape of the function and the input value information. Here, the function corresponding to one input value information may be at least one.

FIG. 5 is an example view illustrating function records stored in a characteristic storage means of the function input and output value.

As shown in FIG. 5, it can understand the shape of the function records stored through the treatment of the characteristic storage means of the function input and output value.

Accordingly, if the plurality of functions, the plurality of input and output values, and the characteristics of the input and output values of each function can be accumulated in the function input and output database, the pipeline representation means 190 serves to form the pipeline according to the input and output values.

As described above, since the output value information 30 of the "GetFASTA" 20 is the gene ID of the mouse and the input value

information 40 of the "RunBlastToRefseq" 50 is the gene ID of the mouse, the output value information 30 of the "GetFASTA" 20 can become the input value information 40 of the "RunBlastToRefseq" 50. That is, the following function of the "GetFASTA" 20 is the "RunBlastToRefseq" 50 and the "GetFASTA" 20 and the "RunBlastToRefseq" constructs one pipeline by means of the pipeline representation means 190.

FIG. 6 is an example view illustrating a relationship between functions for treating input and output values of a system for recommending and designing an information analysis process according to the present invention.

As shown in FIG. 6, the concepts of FIG. 5 can be implemented by "B" of FIG. 6.

Here, it can be defined as the pipeline representation means 190.

FIG. 7 is an example view illustrating a pipeline presented by a pipeline representation means from function records stored in a function input and output database.

As shown in FIG. 7, the pipeline can be presented by the pipeline representation means 190 from the function records stored in the function input and output database.

FIG. 8 is an example view illustrating a weight of a weight display means of a system for recommending and designing an information analysis process according to the present invention.

As shown in Fig. 8, a record can be constructed based on the input and output value information of the functions.

More concretely, the proceeding function 70 and the following functions 90 and 95 are existed based on the input and output values information 80. Here, the input and output values information 80 is the same as the output value of a function 1 (70) and the input values

of functions 3 and 4(90 and 95).

In the meantime, where a plurality of proceeding functions is existed in the pipelines having the functions and the input and output values information, any weights between the proceeding functions and the input and output values information are given.

That is, the weights of the functions extracted from the function input and output database 140 are displayed in each function enumerated by the function enumerating means 120.

As shown in FIG. 8, where the proceeding functions 70 and 75 are existed before the input and output values information 85, a "weight 30" between the proceeding functions 1 (70) and the input and output values information 85 (the output value of the functions 1 and 4; the input values of function 4) and another "weight 500" between the proceeding functions 2 (75) and the input and output values information 85 are given.

As shown in a third drawing of FIG. 8, if the input value information of the functions 1 and 2 is "A", the weight is extracted from the function input and output database 140 through the weight display means and then, a function of high frequency can be presented, so that the user can refer to it as to which of the functions 1 and 2 is selected.

Accordingly, the user can select the function of high frequency or the function of low frequency with reference to the weight.

Here, the "weight" can mean the frequency number or can be defined at his discretion.

Also, the "weight" can be automatically treated. However, it can be interactively presented and selected by the user in case that the "weight" is not used.

In the present invention, the function of high frequency can be

automatically selected with reference to the weight. However, the user can select the corresponding function selected with reference to a recent function or the shortest distance thereof etc.

Also, the system for recommending and designing an information analysis process according to the present invention further includes an input value request means for requesting another input value to the user in case that the selected function demands another input value. That is, where a plurality of input values is existed in the corresponding function, it demands another input value to the user according to the branching points thereof.

In other words, if at least two input values for executing one function are required, all of the input values should be given.

As shown in FIG. 10, where the branching points hereof are occurred, multi pipelines can be generated.

Accordingly, where the branching points thereof are occurred through the input value request means, it demands at least two input values to user, thereby giving the necessary input values.

A method for recommending and designing the information analysis process according to the present invention includes steps of: assigning an input value information for analyzing by means of an user so as to design the information analysis process; extracting at least one function related to the input value information of the input value assigning step or any input value information corresponding to an output value information of an output value selecting step from a function input and output database 140 to be enumerated; displaying any function selected by the user; extracting the input value information of the function displayed by the function display step from the function input and output database 140 to be enumerated; selecting and presenting any input value information for analyzing by

means of the user from at least one input value information presented by the input value enumerating step; extracting an output value information of the function displayed by the function display step from the function input and output database 140 to be enumerated; selecting and presenting any output value information for analyzing by means of the user from at least output value information presented by the output value enumerating step; and representing the functions displayed through the function display step so as to confirm them through the user.

Here, the characteristic storage means of the function input and output value (not shown) serves to define the input and output values and the characteristics of the input and output values and store the plurality of functions, the plurality of input and output values, and the characteristics of the input and output values of each function to be accumulated. Also, where the plurality of functions, the plurality of input and output values, and the characteristics of the input and output values of each function are accumulated, the pipeline is illustrated through the pipeline representation means 190 according to the input and output values information.

Also, where the input value information for analyzing by means of the user is assigned, at least one function related to the input value information of the input value assigning step or any input value information corresponding to the output value information of the output value selecting step is extracted and enumerated from the function input and output database 140 through the function enumerating means 120. The result treated through the function display means 130 for displaying it is illustrated through the pipeline representation means 190.

At this time, the input value information of the function displayed by

the function display step is extracted and enumerated from the function input and output database 140. Here, the input value information for analyzing by means of the user is selected and presented from at least one input value information presented by the input value enumerating step.

Also, the output value information of the function displayed by the function display step from the function input and output database 140 is extracted and enumerated. Then, the output value information for analyzing by means of the user is selected and presented from at least output value information presented by the output value enumerating step.

Finally, the user can check out the functions displayed through the function display step in the form of the pipeline.

The method for recommending and designing the information analysis process according to the present invention further includes steps of extracting weights from the function input and output database 140 and displaying them in each function enumerated by the function enumerating step

That is, where a plurality of proceeding functions is existed in the pipelines having the functions and the input and output values information, any weights between the proceeding functions and the input and output values information are given, thereby providing them to the users.

In the present invention, the data of the information field obtained through the characteristic storage means of the function input and output value can be stored in the database and the result using the same can be provided to the users. Also, the system for recommending and designing the information analysis process according to the present invention can be applied to another field except the bio

information field. The present invention is not limited to any field thereof.

While this invention has been described in connection with what are presently considered to be the most practical and preferred embodiments, it is to be understood that the invention is not limited to the disclosed embodiments and the drawings, but, on the contrary, it is intended to cover various modifications and variations within the spirit and scope of the appended claims.

【Industrial Applicability】

The present invention relates to a system for recommending and designing an information analysis process and a method thereof in that the necessary functions and input and output values information can be recommended and a pipeline for analyzing and treating various information can automatically generated during selection thereof, whereby peoples in the biological field can easily utilize a bio information tool without operating the programming works.

【CLAIMS】**【Claim 1】**

A system for recommending and designing an information analysis process comprising:

a function input and output database for defining input and output values of various functions and storing characteristics of the input and output values of each function;

an input value assignment means for assigning an input value information for analyzing by means of an user so as to design the information analysis process;

a function enumerating means for extracting at least one function related to the input value information of the input value assignment means from the function input and output database to be enumerated;

a function display means for displaying any function selected by the user;

an input value enumerating means for extracting the input value information of the function displayed by the function display means from the function input and output database to be enumerated;

an input value selection means for selecting and presenting any input value information for analyzing by means of the user from at least one input value information presented by the input value enumerating means; and

a pipeline representation means for representing the functions displayed through the function display means so as to confirm them through the user.

【Claim 2】

A system for recommending and designing an information analysis process comprising:

a function input and output database for defining input and output values of various functions and storing characteristics of the input

and output values of each function;

an input value assignment means for assigning an input value information for analyzing by means of an user so as to design the information analysis process;

a function enumerating means for extracting at least one function related to the input value information of the input value assignment means or any input value information corresponding to an output value information of an output value selection means from the function input and output database to be enumerated;

a function display means for displaying any function selected by the user;

an input value enumerating means for extracting the input value information of the function displayed by the function display means from the function input and output database to be enumerated;

an input value selection means for selecting and presenting any input value information for analyzing by means of the user from at least one input value information presented by the input value enumerating means;

an output value enumerating means for extracting an output value information of the function displayed by the function display means from the function input and output database to be enumerated;

the output value selection means for selecting and presenting any output value information for analyzing by means of the user from at least output value information presented by the output value enumerating means; and

a pipeline representation means for representing the functions displayed through the function display means so as to confirm them through the user.

【Claim 3】

A system for recommending and designing an information analysis process as set forth in claims 1 or 2, further comprising a weight display means for extracting weights of the corresponding functions from the function input and output database and displaying them in each function enumerated by the function enumerating means.

【Claim 4】

A system for recommending and designing an information analysis process as set forth in claim 3, further comprising an input value request means for requesting another input value to the user in case that the selected function demands another input value.

【Claim 5】

A system for recommending and designing an information analysis process as set forth in claims 1 or 2, wherein the function input and output database comprises a function record for storing the input and output information of each function in the form of one record and an input value weight record for giving weights to each function related to one input value information to be stored.

【Claim 6】

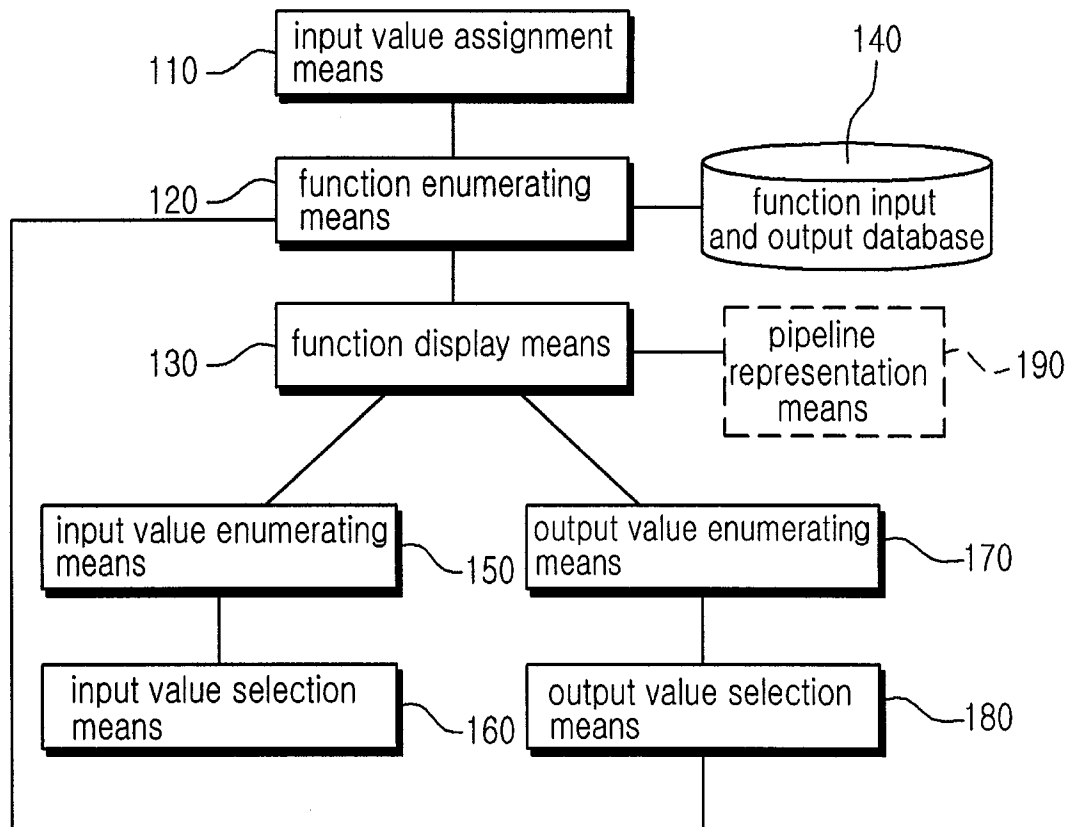
A method for recommending and designing an information analysis process comprising steps of:
assigning an input value information for analyzing by means of an user so as to design the information analysis process;
extracting at least one function related to the input value information of the input value assigning step or any input value information corresponding to an output value information of an output value selecting step from a function input and output database to be enumerated;
displaying any function selected by the user;
extracting the input value information of the function displayed by

the function display step from the function input and output database to be enumerated;
selecting and presenting any input value information for analyzing by means of the user from at least one input value information presented by the input value enumerating step;
extracting an output value information of the function displayed by the function display step from the function input and output database to be enumerated;
selecting and presenting any output value information for analyzing by means of the user from at least output value information presented by the output value enumerating step; and
representing the functions displayed through the function display step so as to confirm them through the user.

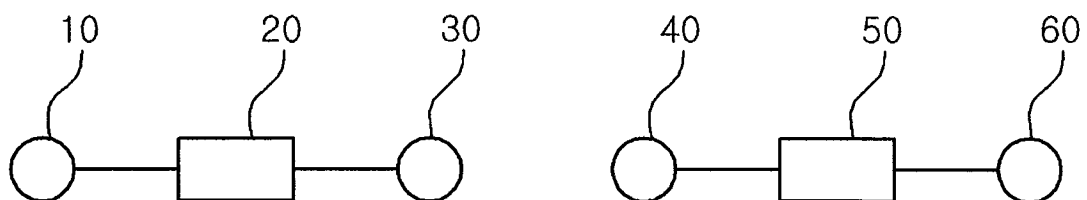
【Claim 7】

A method as claimed in claim 6, further comprising steps of extracting weights from the function input and output database and displaying them in each function enumerated by the function enumerating step.

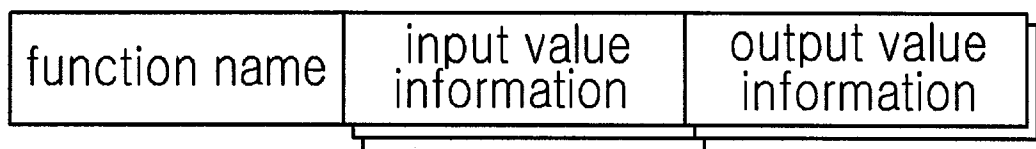
[Fig. 1]



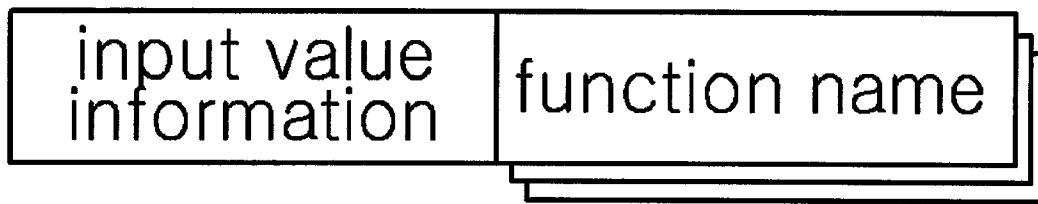
[Fig. 2]



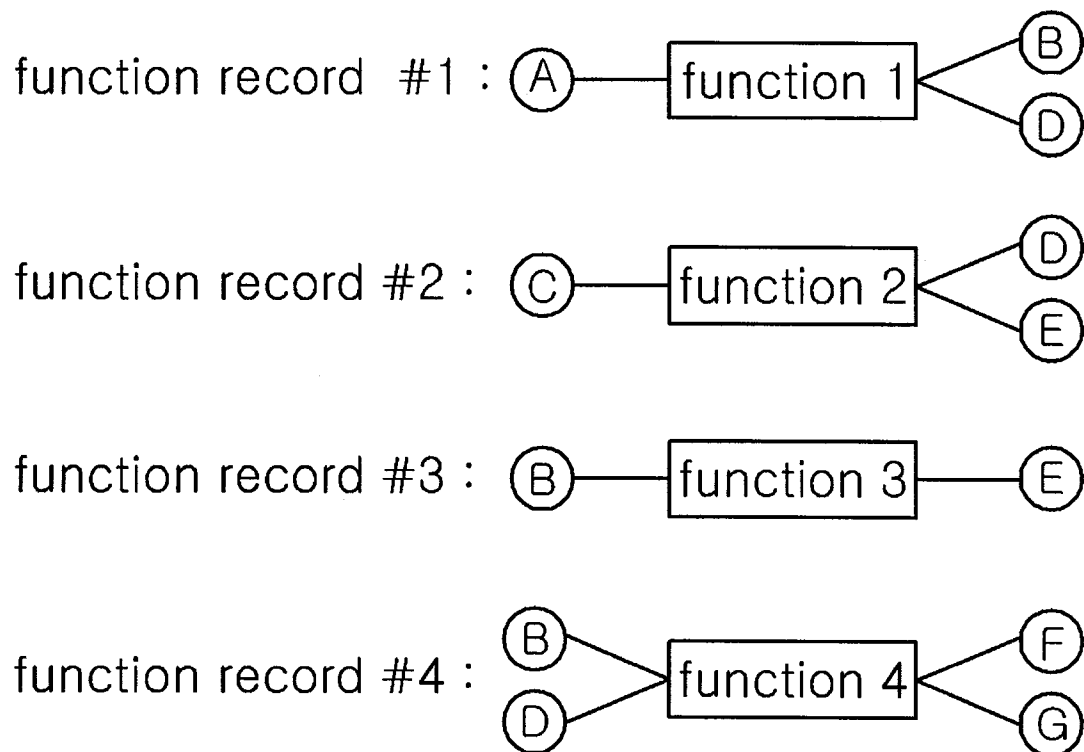
[Fig. 3]



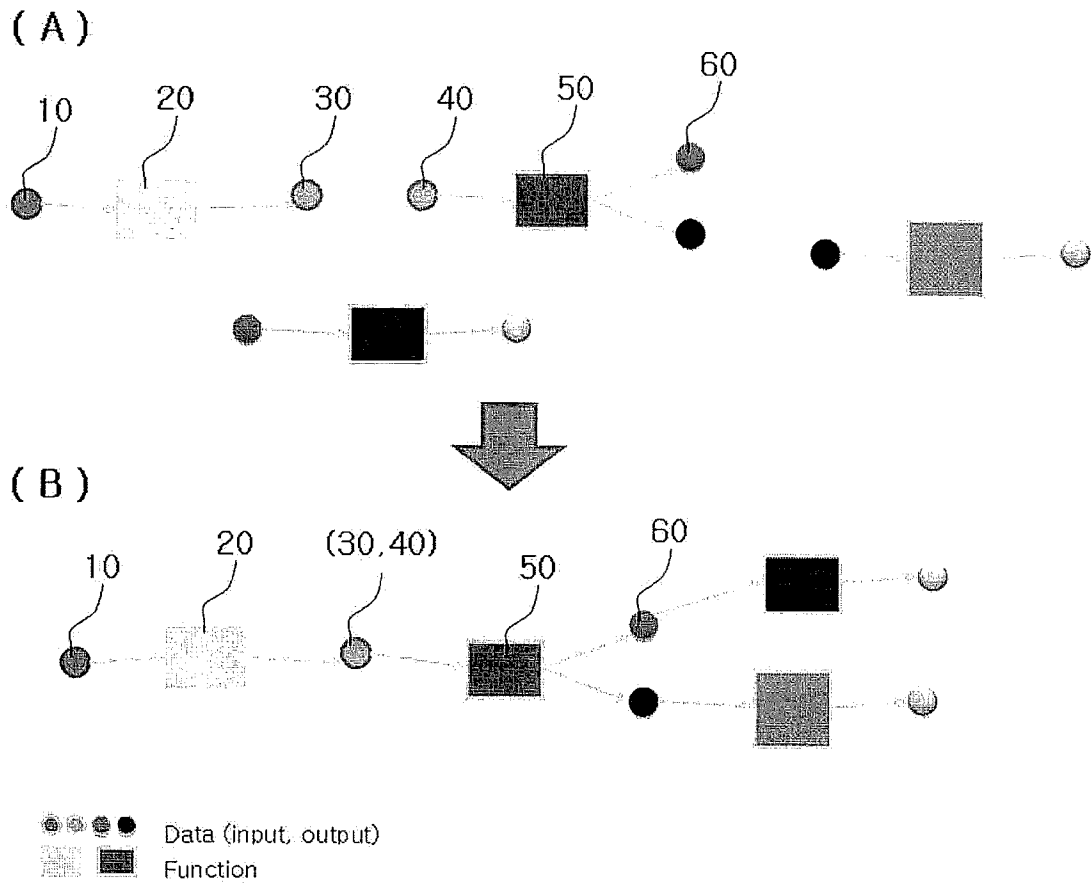
[Fig. 4]



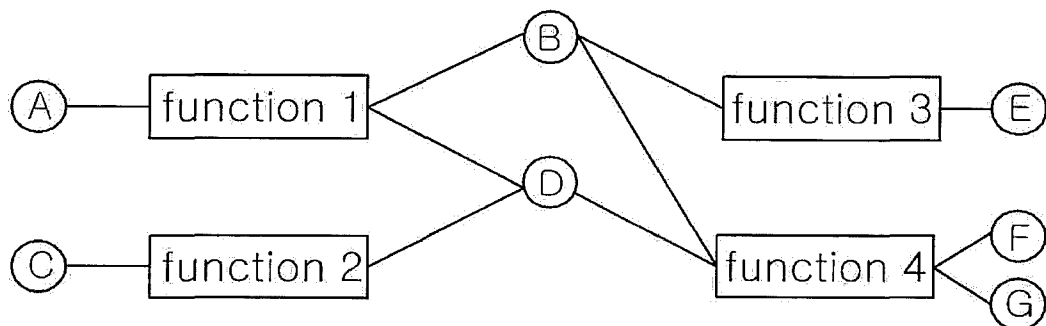
[Fig. 5]



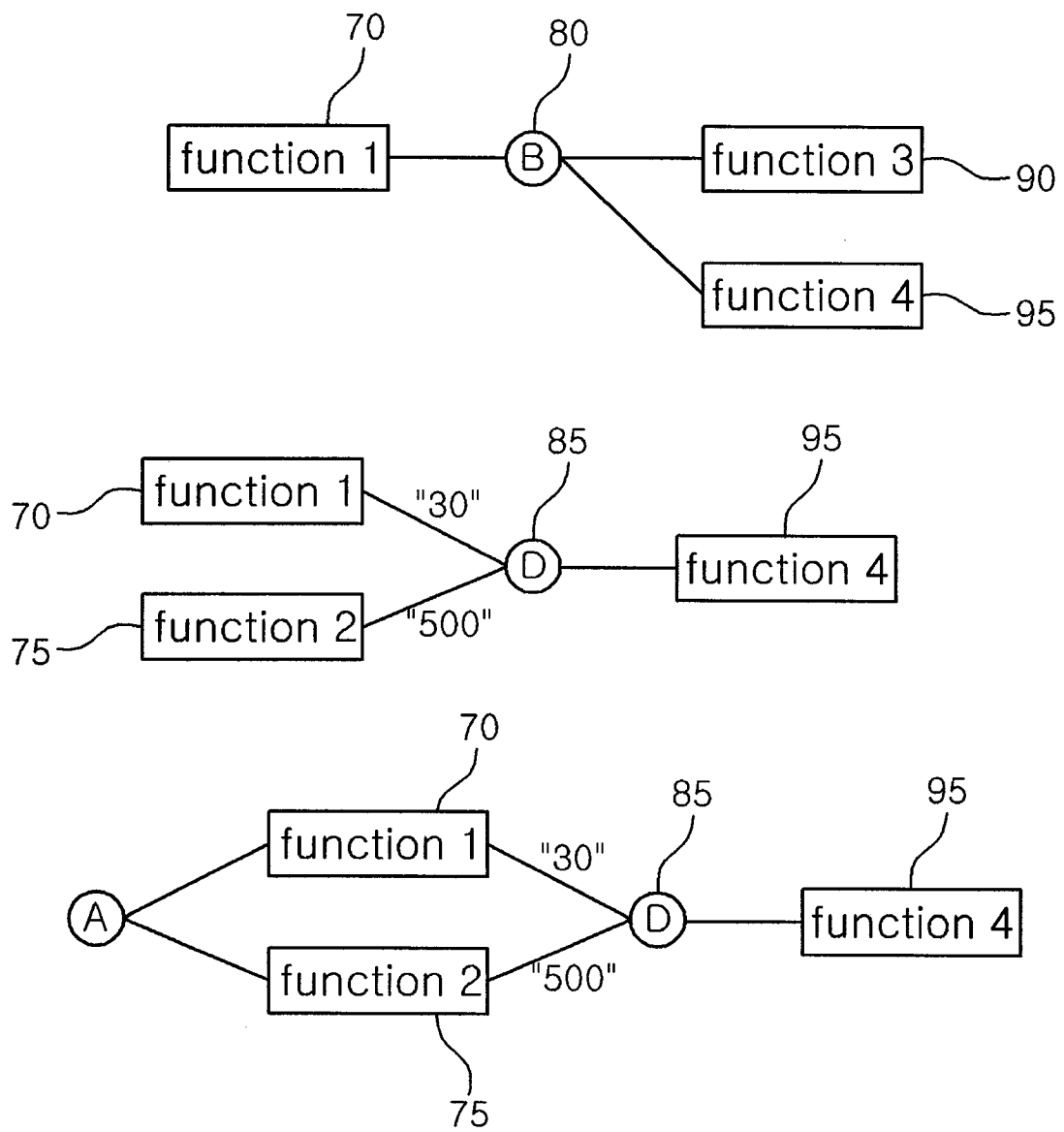
[Fig. 6]



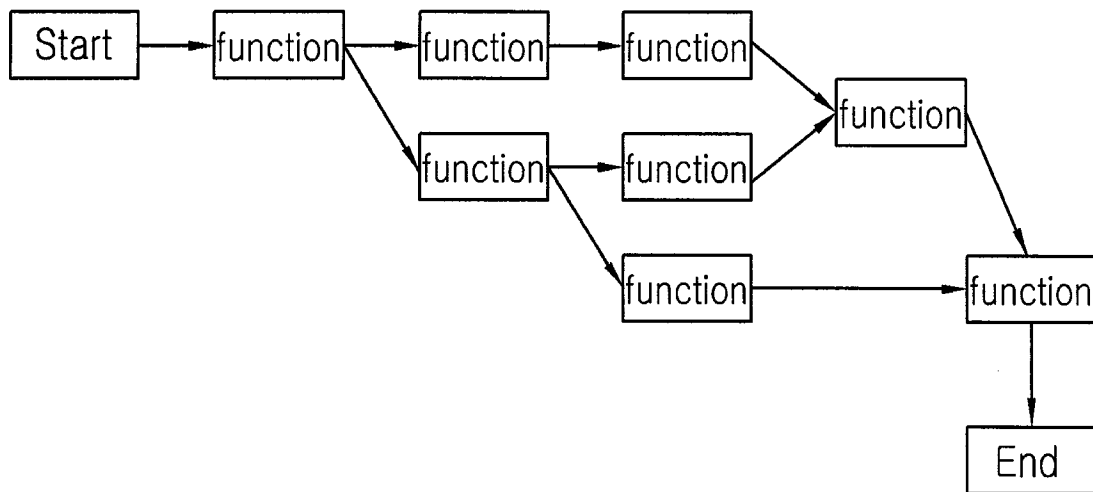
[Fig. 7]



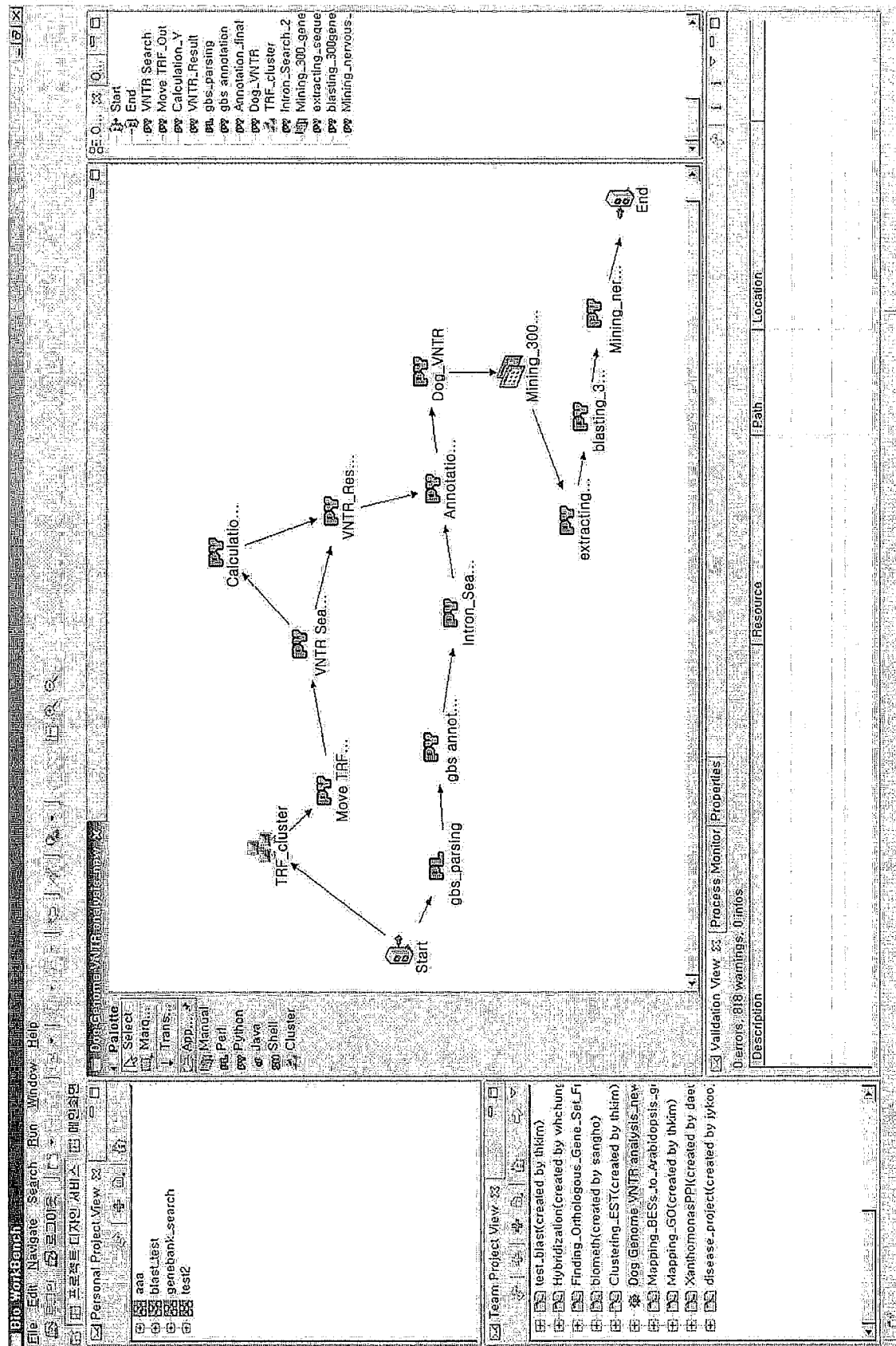
[Fig. 8]



[Fig. 9]



[Fig. 10]



A. CLASSIFICATION OF SUBJECT MATTER**G06F 17/50(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

KOREAN UTILITY MODELS AND APPLICATIONS FOR UTILITY MODELS SINCE 1975

JAPANESE UTILITY MODELS AND APPLICATIONS FOR UTILITY MODELS SINCE 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal), IEEEExplore, Google

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ALAN M. DURHAM et al., "EGene: a configurable pipeline generation system for automated sequence analysis", Bioinformatics, vol. 21, no. 12, pages 2812-2813, 6 April 2005	1 - 7
A	SHAWN HOON et al., "Biopipe: A Flexible Framework for Protocol-Based Bioinformatics Analysis", Genome Research, vol. 13, no. 8, pages 1904-1915, 17 July 2003	1 - 7
A	CHENGGANG YU et al., "A Tool for Creating and Parallelizing Bioinformatics Pipelines", DoD High Performance Computing Modernization Program Users Group Conference 2007, pages 417-420, 18-21 June 2007	1 - 7
A	WO 2004/042594 A1 (SRC COMPUTERS, INC.) 21 May 2004 See the Abstract, page 2, line 16 - page 4, line 14, FIG. 2	1 - 7



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

15 JULY 2009 (15.07.2009)

Date of mailing of the international search report

15 JULY 2009 (15.07.2009)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-
gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

NA, Yong Soo

Telephone No. 82-42-481-8456



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2008/006901

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004/042594 A1	21.05.2004	AU 2003-275027 A1	16.09.2003
		EP 1559027 A1	03.08.2005
		EP 1559027 A4	21.03.2007
		JP 2006-505053 A	09.02.2006
		US 2004/0088527 A1	06.05.2004
		US 7225324 B2	29.05.2007
		US 2007/0204131 A1	30.08.2007