

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
21 June 2007 (21.06.2007)

PCT

(10) International Publication Number
WO 2007/070012 A1

(51) International Patent Classification:
G06N 3/12 (2006.01)

(21) International Application Number:
PCT/SG2006/000382

(22) International Filing Date:
8 December 2006 (08.12.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
200508032-0 13 December 2005 (13.12.2005) SG

(71) Applicants (for all designated States except US): **SINGAPORE TECHNOLOGIES DYNAMICS PTE LTD** [SG/SG]; 249 Jalan Boon Lay, Singapore 619523 (SG). **NANYANG TECHNOLOGICAL UNIVERSITY** [SG/SG]; 50 Nanyang Avenue, Singapore 639798 (SG).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LIM, Meng Hiot** [MY/SG]; 99 Cashew Road #02-04, Singapore 679670 (SG). **XU, Yi Liang** [CN/US]; 3214 Caterina Lane, College Station, Texas 77845 (US).

(74) Agent: **WATKIN, Timothy, Lawrence, Harvey**; Lloyd Wise, Tanjong Pagar, P O Box 636, Singapore 910816 (SG).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, 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, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, 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, 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, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

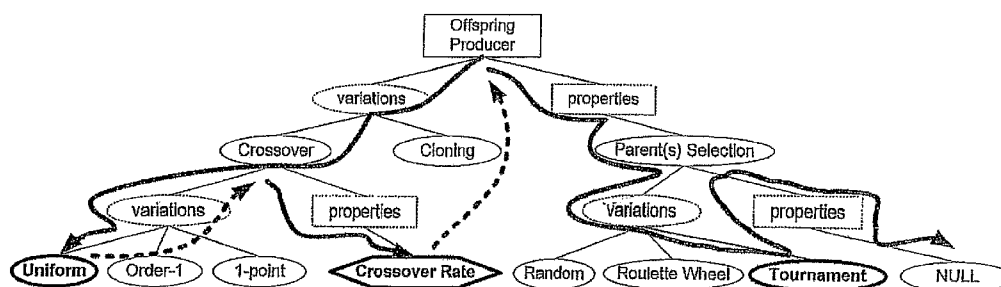
— of inventorship (Rule 4.17(iv))

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND APPARATUS FOR AN ALGORITHM DEVELOPMENT ENVIRONMENT FOR SOLVING A CLASS OF REAL-LIFE COMBINATORIAL OPTIMIZATION PROBLEMS



(57) Abstract: The invention pertains to an algorithm development environment for solving a class of combinatorial optimization problems. Many practical real-life applications can be formulated as combinatorial optimization problems. Over the years, there have been many well-known algorithms proposed to solve these problems. The effort in customizing algorithms to fulfill a particular domain-specific application is still significant. Furthermore, conventional approaches towards codes generation and modification are tedious and thus inefficient. To address the need for rapid generation of algorithms that are efficient in solving a given class of real-life problems, embodiments of the present invention encompasses a hierarchical tree structure for managing a procedure modules library. Based on the preferred management and object-oriented design concept, users configure and generate a genetic algorithm (GA) via an intuitive graphical user interface. The goal-seeking approach of customization of the generated GA can be easily carried out for solving various optimization problems. This way, the efficiency of algorithm development is enhanced significantly.

WO 2007/070012 A1