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IBM CORP. (WIP)			VU, TUAN A	
c/o WALDER INTELLECTUAL PROPERTY LAW, P.C.				
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte TONG CHEN, BRIAN FLACHS, BRAD W. MICHAEL,
MARK R. NUTTER, JOHN K.P. O'BRIEN,
KATHRYN M. O'BRIEN, and TAO ZHANG¹

Appeal 2015-003650
Application 13/444,907
Technology Center 2100

Before ALLEN R. MacDONALD, HUNG H. BUI, and
MICHAEL M. BARRY, *Administrative Patent Judges*.

BARRY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from a Final Rejection of claims 1, 6–10, and 22, which constitute all pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ Appellants identify the real party in interest as International Business Machines Corp. App. Br. 2.

Introduction

Appellants describe their application as relating “to mechanisms for arranging binary code based on call graph partitioning to reduce instruction cache conflict misses.” (Spec ¶ 1.) Claim 1 is representative:

1. A method, in a data processing system, for arranging binary code to reduce instruction cache conflict misses, comprising:
 - generating, by a processor of the data processing system executing a compiler, a call graph of a portion of code;
 - weighting, by the compiler, nodes and edges in the call graph to generate a weighted call graph;
 - partitioning, by the compiler, the weighted call graph according to the weights, affinities between nodes of the call graph, and the size of cache lines in an instruction cache of the data processing system, so that binary code associated with one or more subsets of nodes in the call graph are combined into individual cache lines based on the partitioning; and
 - outputting, by the compiler, the binary code corresponding to the partitioned call graph for execution in a computing device, wherein each node in the call graph is weighted according to a size of code associated with the node and each edge in the call graph is weighted according to an estimate of a number of calls between nodes of the edge, and wherein partitioning the weighted call graph comprises ***performing the following operations iteratively until an edge having a maximum weight cannot be selected from unprocessed edges of the weighted call graph:***
 - selecting an edge from the unprocessed edges of the weighted call graph that has a maximum weight of the weights of the unprocessed edges;***

merging the nodes of the selected edge into a new node in response to a determination that the nodes of the selected edge should be merged.

App. Br. 37 (Claims App'x) (dispositive requirement emphasized).

Rejections

(1) Claims 1 and 6–8 stand rejected under 35 U.S.C. § 103(a) as obvious over:

Ju et al. (“Ju2”) ²	US 6,175,957 B1	Jan 16, 2001;
Chilimbi et al. (“Chilimbi”)	US 6,330,556 B1	Dec. 11, 2001;
Larus et al. (“Larus”) ³	US 6,360,361 B1	Mar. 19, 2002;
Ju et al. (“Ju”)	US 6,839,895 B1	Jan. 4, 2005;
Li et al. (“Li”)	US 2005/0155023 A1	July 14, 2005;
Archambault et al. (“Archambault”)	US 2005/0246700 A1	Nov. 3, 2005; and
Delong et al. (“Delong”)	US 2007/0286483 A1	Dec. 13, 2007.

Final Act. 2–14.

(2) Claims 9 and 10 stand rejected under 35 U.S.C. § 103(a) as obvious over Ju, Ju2, Li, Archambault, Chilimbi, Delong, Larus, and Kawaguchi (US 5,926,632; July 20, 1999). Final Act. 14–18.

(3) Claim 22 stands rejected under 35 U.S.C. § 103(a) as obvious over Ju, Ju2, Li, Archambault, Delong, Chilimbi, and Kiriansky et al. (US 2004/0133777 A1; July 8, 2004) (“Kiriansky”). Final Act. 18–19.

(4) Claims 1, 6–10, and 22 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claims 11 and 16–28 of Application No. 12/823,244 (the “244 application”). Final Act. 20.

² Ju was filed as a continuation of the application from which Ju2 issued.

³ Chilimbi also includes and describes the same figures as in Larus (applications for both were filed contemporaneously, by the same inventors).

ANALYSIS

35 U.S.C. § 103(a) Rejection

In rejecting claim 1 as obvious, the Examiner finds Ju does not disclose the dispositive requirement (Final Act. 6) but that it teaches “cumulatively clustering of nodes in view of a size limit to determine whether node pair merging (based on weight of their edges) can be carried out or stopped” as part of an iterative process (Final Act. 7). The Examiner reasons that for such an iterative process in Ju, “for implementing spatial closeness in cache, [giving priority] to highest weight of edges” as required by the dispositive requirement “**is either** disclosed **or** would have been obvious.” (Final Act. 8). The Examiner further finds Larus, Delong, and Archambault each teach processing a weighted graph in weight order, starting with the node having the highest weight. (Final Act. 8–10.) The Examiner determines that modifying Ju’s heuristic to achieve the dispositive requirement based on the teachings of “Ju, Delong, Larus, and/or Archambault, for the purpose of improving cache utilization and reducing performance drawback[s] . . . would have been obvious” Final Act. 10.

Appellants argue the Examiner misinterprets Ju, and instead that essentially what Ju is doing is generating clusters based on a smallest power of 2 multiple of a cache line, and then using the clusters as nodes in a next level PEG [Program Execution Graph] in which the weights of the clusters are set to 1 and the weights of the edges between the clusters is equal to the number of edges between nodes in one cluster and nodes in the other cluster.

It is noted that nowhere in this process, is there any selection of any edge in the PEG based on the edge having a maximum weight of the unprocessed edges. There simply is no operation anywhere in Ju that performs such a selection

Reply Br. 13 (referring to the process described for Ju Figures 6a–b).

We agree. Appellants persuade us that Ju’s iterative process for generating clusters of (merging) nodes does not teach or suggest the dispositive requirement to iteratively select an unprocessed edge that has a maximum weight (which then is processed) until it is impossible to select such a maximally weighted, unprocessed edge. (*See* App. Br. 7–12.)

Appellants further persuade us that Larus, Li, Archambault, Chilimbi, and Delong, alone or in combination, do not teach or suggest the dispositive requirement. (*See* App. Br. 12–22; Reply Br. 7–16).

We accordingly do not sustain the rejection of claim 1 under 35 U.S.C. § 103(a). We thus also do not sustain the § 103(a) rejection of dependent claims 6–10 and 22.

Provisional Obviousness-Type Double Patenting Rejection

We note the ’244 application, the claims of which the Examiner used for this double-patenting rejection, issued as U.S. Patent No. 9,459,851 B2 on October 4, 2016 (“’851 patent”). The claims of the ’244 application considered by the Examiner in the rejection are substantively the same as the claims in the ’851 patent.

Appellants do not contest the merits of the provisional double-patenting rejection and instead state it “should be held in abeyance until such time as one or both of the applications are in condition for allowance[,] at which time Appellants will consider the merits of the rejection with regard to the then state of the claims.” (App. Br. 3.) Notwithstanding Appellants’ invitation for us to “take a pass” on this issue, we exercise our discretion to decide whether or not to sustain this rejection. (*See Hyatt v. Dudas*, 551

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F.3d 1307, 1314 (Fed. Cir. 2008) (explaining the PTO may affirm an uncontested rejection, without even considering the merits.)

We agree with the Examiner's stated reasons for why claims 1, 6–10, and 22 are obvious variants of the corresponding claims of the '244 application. (*See* Final Act. 20.) Accordingly, we sustain the rejection of claims 1, 6–10, and 22 for obviousness-type double patenting.

We note Appellants can overcome this rejection with a timely filed terminal disclaimer in compliance with 37 C.F.R. § 1.321(c).

DECISION

For the foregoing reasons, we reverse the rejection of claims 1, 6–10, and 22 as obvious under 35 U.S.C. § 103(a) and affirm the rejection of these claims under the doctrine of obviousness-type double patenting.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)

REVERSED