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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/872,519	04/29/2013	E. Webb Stacy	APTI1202PPPU	4259
15951	7590	10/11/2018	EXAMINER	
Aptima, Inc. 12 Gill Street, Suite 1400 Attn: Patents/Jay Brooks Woburn, MA 01801			UTAMA, ROBERT J	
			ART UNIT	PAPER NUMBER
			3715	
			MAIL DATE	DELIVERY MODE
			10/11/2018	PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* E. WEBB STACY, COURTNEY DEAN,  
ALAN CARLIN, and DANIELLE DUMOND

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Appeal 2017-007269  
Application 13/872,519  
Technology Center 3700

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Before JAMES P. CALVE, GEORGE R. HOSKINS, and  
ARTHUR M. PESLAK, *Administrative Patent Judges*.

PESLAK, *Administrative Patent Judge*.

DECISION ON APPEAL  
STATEMENT OF THE CASE

E. Webb Stacy et al. (“Appellants”) appeal under 35 U.S.C. § 134(a) from the Examiner’s decision finally rejecting claims 1–21.<sup>1</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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<sup>1</sup> Aptima, Inc. is identified as the real party in interest. Appeal Br. 4.

THE CLAIMED SUBJECT MATTER

Appellants' invention is directed to "automatically determining instructional content to be presented to individual students." Spec. ¶ 5. Claim 1, reproduced below, is illustrative of the claimed subject matter.

1. A computer implemented method for determining an action for a user within a learning domain, the method comprising:
  - defining an initial learning model of a learning domain comprising:
    - a plurality of learning domain states,
    - at least one learning domain action,
    - at least one domain learning domain state transition,
    - and at least one learning domain observation;
  - determining an initial user state of the user;
  - the initial user state comprising one of the at least one learning domain states;
  - determining an initial user action from the at least one learning domain action with the initial learning model given the initial user state as the at least one learning domain state;
  - receiving a user observation of the user after the user executes the initial user action;
  - the user observation comprising one of the at least one learning domain observations;
  - determining, with a processor, an updated user state from the plurality of learning domain states with the initial learning model given the user observation; and
  - determining a subsequent user action from the at least one learning domain action.

REJECTION<sup>2</sup>

Claims 1–21 are rejected under 35 U.S.C. § 101.

DISCUSSION

The Examiner finds that the claims “contain the same abstract idea described in the July 2015 Interim Eligibility Guideline, namely, the abstract idea of ‘Mathematical Relationship/Formula’” or alternatively “an Idea of itself.” Final Act. 4–5. The Examiner finds that none of the claims “contain additional elements that amounts to significantly more than the judicial exception itself.” *Id.* at 5. The Examiner indicates that claim limitations relating to computer components are “considered to be conventional, well known and routine in the art of computer science” and none of the claim limitations “constitute[] an improvement to the technology or an improvement to the functioning of [the] computer itself.” *Id.* The Examiner concludes that the claim limitations “are not sufficient to be interpreted as additional elements that amount to significantly more than the judicial exception itself.” *Id.* at 6.

Appellants’ first contention is that the claims are not directed to a mathematical algorithm. Appeal Br. 22. Appellants acknowledge that the claims recite “the product of a mathematical algorithm,” but “confine the claim to a particular useful application.” *Id.* Appellants argue that “[t]he claims confine their application to computer based trainers and in some embodiments, computer based training with specific algorithms being used

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<sup>2</sup> In the Answer, the Examiner withdrew a rejection of claims 1–21 under 35 U.S.C. § 112(a) as failing to comply with the written description requirement. Ans. 2; Final Act. 2.

to support the trainers.” *Id.* Appellants’ second contention is that the Examiner failed “to address the additional elements individually and as a combination with other limitations of the claims” by “summarily conclud[ing] all the limitations are directed to implementing an algorithm.” *Id.* at 23. Appellants relying on paragraphs 46 and 47 of the Specification, argue that “the claimed solutions are very different than conventional Intelligent Tutoring System (ITS) in that the claimed solutions provide for automatic definition of individualized assessments and can more efficiently progress students through the learning domain.” *Id.* at 24.

With respect to whether the claims are directed to an abstract idea, the Examiner responds that the limitations in independent claims 1, 13, and 18 of “Defining an initial learning model . . . ,” “Determining an initial user state of the user,” and “Determining, with a processor, an updated user state . . .” are all based on a mathematical algorithm. Ans. 3–4. According to the Examiner, “if a specific claim limitation includes . . . a product of a mathematical algorithm[,] then the claim by definition ha[s] to include[] some abstract idea.” *Id.* at 6. With respect to whether the claim limitations are analyzed separately or as an ordered combination to determine whether the claims amount to “significantly more” than the abstract idea, the Examiner responds that “the PCA and POMDP algorithm[s] are used in appellant[s]’ specification and claim limitation in a conventional manner that is common in the field of computer engineering or computer programming.” *Id.* at 8.

In the Reply Brief, Appellants submit that the Examiner’s statement of the abstract idea in the Final Office Action can “only be supported if the claims are improperly oversimplified.” Reply Br. 4–5. Appellants also

assert that “the Examiner’s Answer totally ignore[s] the claims being directed to ‘determining an action for a user within a learning domain’ as the claim terms should be interpreted in light of the specification.” *Id.* at 5.

The Supreme Court has established a two part test for determining whether a claim recites patent-eligible subject matter. *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2350 (2014). First, the claims are examined to determine whether they are directed to a patent ineligible concept such as an abstract idea. *Id.* If so, the claim elements are considered both individually and as an ordered combination to determine whether they transform the claim into a patent-eligible application. *Id.*

The Federal Circuit instructs, in connection with the first inquiry, that  
The “abstract idea” step of the inquiry calls upon us to look at the “focus of the claimed advance over the prior art” to determine if the claim’s “character as a whole” is directed to excluded subject matter.  
*Affinity Labs of Texas LLC v. DIRECTV LLC*, 838 F.3d 1253, 1257–58 (Fed. Cir. 2016) (citations omitted).

In this case, the Examiner found that the claims contain the abstract idea of a mathematical algorithm or an idea of itself. Final Act. 5; *see also* Ans. 6. The Examiner never made a finding as to what the claims are directed to in the manner described by the Federal Circuit in *Affinity Labs* so that we can evaluate whether “the claim’s ‘character as a whole’ is directed to excluded subject matter.” *Id.* The Examiner’s findings that the claims contain the idea of a mathematical algorithm or an idea of itself fails to address the actual claim limitations, and, thus, is insufficient to establish that the claims are directed to an ineligible abstract idea. For example, a central determination underlying the rejection is that the claims recite the “product of a mathematical algorithm,” and therefore recite “the abstract idea of

‘Mathematical Relationship / Formula.’” Final Act. 4–5; Ans. 4–6. However, we agree with Appellants’ position that the Examiner has “improperly oversimplified the claims” and it is only “in some embodiments” that “specific [mathematical] algorithms [are] used to support the trainers.” Appeal Br. 22.

Further, even if the Examiner made sufficient findings to support such a determination, the Examiner has not adequately explained why the claim elements as an ordered combination do not transform the claim into a patent eligible application. *See* Final Act. 5–6. The Examiner asserts in the Answer that the claim steps individually are “routine and conventional in the field.” Ans. 7–8. However, this finding is not supported by the evidence of record. For example, the Examiner finds the Partially Observable Markov Decision Process and the Principal Component Analysis of Appellants’ Specification and dependent claims are “well known and considered to be conventional in the field of computer algorithm and data analysis” (Ans. 5), and are “mathematical algorithm[s] that are commonly used in . . . any computer learning process” (*id.* at 5–6). The Examiner cites an unspecified “[d]ocument that contain[s] a primer on” the claimed analyses as being attached to the Answer, but there is no such document in the record. *Id.* at 5 n.1. The Examiner further cites an unspecified “search in the database IEEEExplor,” but there is no corresponding documentation provided in the record. *Id.* at 6. Even if the finding that the claim steps are routine and conventional in the field was supported by the evidence, the Examiner still does not adequately address the claim limitations as an ordered combination. For these reasons, we are unable to sustain the Examiner’s determination that claims 1–21 are patent ineligible under 35 U.S.C. § 101.

Appeal 2017-007269  
Application 13/872,519

DECISION

The Examiner's decision rejecting claims 1–21 is reversed.

REVERSED