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102324	7590	01/08/2020	EXAMINER	
Artegis Law Group, LLP/NVIDIA 7710 Cherry Park Drive Suite T #104 Houston, TX 77095			SHIN, ANDREW	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte YONG HE, ERIC B. LUM, ERIC ENDERTON, HENRY
PACKARD MORETON, and KAYVON FATAHALIAN

Appeal 2019-001069
Application 14/106,582
Technology Center 2600

Before JENNIFER L. McKEOWN, LINZY T. McCARTNEY, and
ALEX S. YAP, *Administrative Patent Judges*.

McKEOWN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 1–3, 10–12, 19, and 20. Claims 4–9 and 13–18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

¹ NVIDIA Corporation (“Appellant”) is the applicant as provided in 37 C.F.R. § 1.46 and is identified as the real party in interest. Appeal Br. 2.

STATEMENT OF THE CASE

Appellant's disclosed and claimed invention relates "generally to graphics processing and, more specifically, to adaptive shading in a graphics processing pipeline." Spec. 2 (Field of the Invention).

Claim 1 is illustrative of the claimed invention and reads as follows:

1. A computer-implemented method for adaptively selecting coarse shading pixels, the method comprising:
 - receiving a pixel block visibility mask corresponding to a pixel block that includes a set of pixels;
 - selecting a plurality of coarse shading pixels associated with a subset of the set of pixels, wherein the plurality of coarse shading pixels includes a first pixel but does not include a second pixel;
 - performing a first pixel shading operation on each of the coarse shading pixels to calculate first coarse shading results; and
 - performing one or more interpolation operations on the first coarse shading results to calculate a second coarse shading result that is associated with the second pixel.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Seiler	US 2006/0033735 A1	Feb. 16, 2006
Hoppe	US 2007/0002071 A1	Jan. 4, 2007
Du	US 2008/0235316	Sept. 25, 2008
Vaidyanathan	US 2015/0170345 A1	June 18, 2015

REJECTIONS

The Examiner rejected claims 1, 10, and 19 under 35 U.S.C. § 103 as unpatentable over Du, Seiler, and Hoppe. Final Act. 4–6.

The Examiner rejected claims 2, 3, 11, 12, and 20 under 35 U.S.C. § 103 as unpatentable over Du, Seiler, Hoppe, and Vaidyanathan. Final Act. 7–8.

ANALYSIS

Based on the record before us, we are persuaded that the Examiner erred in rejecting claims 1–3, 10–12, 19, and 20 as unpatentable.

Appellant argues that the Examiner errs in finding that Hoppe discloses “performing one or more interpolation operations on the first coarse shading results to calculate a second coarse shading result that is associated with the second pixel.” Appeal Br. 10. While Appellant recognizes that Hoppe describes using interpolation, Appellant maintains that the interpolation of Figure 21, which is relied upon by the Examiner, “does not relate in any way to interpolation operations performed on coarse shading results.” Appeal Br. 10 (emphasis omitted); *see also* Reply Br 4. Appellant further explains Hoppe discloses that an “interpolation is performed between the two circles,” namely “for added control and broader adaptation at coarser levels, two radii are stored, namely, the inner radius and the outer radius and the radius per-level is interpolated from these two radii values.” Appeal Br. 12 (citing Hoppe ¶ 175). As such, Appellant maintains that “Hoppe cannot be properly interpreted as teaching or suggesting the above limitations of the independent claims.” Reply Br. 4.

We agree. The Examiner finds that “Hoppe’s first and third constraint regions corresponds to the claimed first coarse shading results,” (Ans. 3) however, the Examiner fails to sufficiently explain this finding. As Appellant explains, Hoppe’s constraint regions, two circles, are interpolated for in between resolution levels. Hoppe in no way refers or remotely suggests shading results or interpolation of shading results. While the Examiner also points to Du as teaching shading results, the Examiner fails to explain how or why Hoppe’s general teaching of using interpolation would be incorporated into Du’s graphics process. As such, we are persuaded of error in the Examiner’s rejections of the claimed invention.

Accordingly, based on the record before us, we reverse the rejections of claims 1–3, 10–12, 19, and 20 as unpatentable.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 10, 19	103	Du, Seiler, Hoppe		1, 10, 19
2, 3, 11, 12, 20	103	Du, Seiler, Hoppe, Vaidyanathan		2, 3, 11, 12, 20
Overall Outcome				1–3, 10–12, 19, 20

REVERSED