

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

Ex parte MASATO KUROKAWA and KAZUNORI MIYATA

---

Appeal No. 1999-2023  
Application No. 08/556,119

---

ON BRIEF

---

Before LALL, BARRY, and LEVY, Administrative Patent Judges.  
LALL, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-24, which constitute all the claims in the application.

The disclosed invention allows a customer at a hair salon to select a hair style and to simulate how the hair style

Appeal No. 1999-2023  
Application No. 08/556,119

would look on the customer. Conventional hair style simulation systems require a user to manually align a hair image with an image of the customer's face, which may entail manually scaling, rotating, and translating the hair image. The user must then utilize a graphical painting tool to fill any gaps between the hair image and the facial image and to delete portions of the hair image that inappropriately overlap the facial image. This conventional technique of hair style simulation is both time consuming and difficult for an unskilled user to perform. Accordingly, the present invention addresses the deficiencies of the prior art by providing an improved method and system for graphically simulating hair styles that automatically fit an image of a hair style to a facial image. A further understanding of the invention can be obtained from the following claim.

8. An image processing system for simulating a selected hair style, said image processing system including a display apparatus and storage media for storing one or more hair images, said image processing system comprising:

means for providing a facial image, wherein said facial image includes a facial region bounded by a facial perimeter;

means for selecting one of said one or more hair images within said storage media to be simulated in association with said facial image, wherein said selected hair image includes an interior perimeter to be positioned adjacent to said facial

image, said interior perimeter of said selected hair image including a first plurality of feature points distributed along said interior perimeter of said hair image, wherein a subset of said first plurality of feature points are disposed at locations at which said hair image is intended to abut, but not substantially overlap said facial image;

means for determining a second plurality of feature points within said facial perimeter and distributed along said facial perimeter, wherein each of said second plurality of feature points corresponds to a respective one of said subset of said first plurality of feature points distributed along said interior perimeter of said hair image;

means for constructing one or more facial perimeter vectors by connecting neighboring feature points among said second plurality of feature points distributed along said facial perimeter;

means for constructing one or more hair perimeter vectors by connecting neighboring feature points within said subset of said first plurality of feature points distributed along said interior perimeter of said hair image;

means for automatically transforming said hair image by displaying each of a plurality of pixels within said hair image at a transformed location, wherein a transformed location of each of said plurality of pixels within said hair image has a position with respect to said one or more facial perimeter vectors determined from an original position of said pixel with respect to said one or more hair perimeter vectors; and

means, responsive to said transformation of said hair image, for displaying said transformed hair image superimposed on said facial image within said display apparatus, wherein hair style simulation efficiency is enhanced.

The examiner relies on the following references:

Steir et al. (Steir)	5,060,171	Oct. 22, 1991
----------------------	-----------	------------------

Appeal No. 1999-2023  
Application No. 08/556,119

Sato et al. (Sato)	5,537,662	Jul. 16, 1996 (filed May 17, 1993)
Hayashi	5,611,037	Mar. 11, 1997 (filed Mar. 16, 1995)

Claims 1-24 stand rejected under 35 U.S.C. § 103 as being unpatentable over Sato in view of Steir and Hayashi.

Rather than repeat the arguments of appellants and the examiner, we make reference to the briefs<sup>1</sup> and the answer for the respective details thereof.

#### OPINION

We have considered the rejection advanced by the examiner and the supporting arguments. We have, likewise, reviewed the appellants' arguments set forth in the briefs.

We reverse.

As a general proposition, in an appeal involving a rejection under 35 U.S.C. § 103, an Examiner is under a burden to make out a prima facie case of obviousness. If that burden is met, the burden of going forward then shifts to the

---

<sup>1</sup> A reply brief was filed on November 30, 1998 as Paper No. 17. The examiner noted its entry, see Paper No. 18.

Appeal No. 1999-2023  
Application No. 08/556,119

applicant to overcome the prima facie case with argument and/or evidence. Obviousness, is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

At the outset, we note that appellants have elected (brief at page 4) that all the claims stand or fall together. We consider the exemplary claim 8 for our analysis. After discussing in detail each of the references at pages 4 and 5 of the examiner's answer, the examiner asserts, id. at page 5, that:

It would have been obvious . . . to use the means for automatically transforming the hair image as taught by Steir and Hayashi in the montage composing system of Sato because they provide a facial image enhancement system that makes it easier to overlay an image on top another image without making the superimposed image look unnatural.

Appellants discuss the combination of Sato, Steir, and Hayashi at pages 5-8 of appellants' brief and conclude, id. at page 8,

Appeal No. 1999-2023  
Application No. 08/556,119

that "the present invention is not rendered obvious by the Examiner's combination of *Sato*, *Steir* and *Hayashi* because that combination of references fails to show or suggest either the individual elements recited in the present claims or the combination of those elements to perform hair image transformation." The examiner responds, answer at page 9, that:

Obviously these outlines [in *Sato*] are created by connecting 'feature points' of a part numbers and they have to correspond to the corresponding feature points in order to compose a picture of a human face which would be a desirable picture. Additionally, *Sato*'s invention provides a montage composing wherein, '[w]ith the above structure of the picture composing apparatus, a montage of a human face which moves in response to reproduced sounds' . . . would require a very extensive superimposing and synchronization of various part numbers of human face at a pixel level details.

Regarding *Steir*, the examiner responds that *Steir* discloses a superimposing of hair styles on a human face (answer at page 9) and means for defining reference anchor points on the facial image and means for superimposing the hair style image on the facial image so that the defined location on the hair style image fits those on the head image. With respect to *Hayashi*, the examiner asserts (answer at page 10) that:

Appeal No. 1999-2023  
Application No. 08/556,119

It discloses the details regarding perimeter vector and transformation process, 'transforming means for designating an area on the predetermined plane including the computed coordinates and for transforming the computed coordinates included in the designated area based on the transforming data; overlapping determining means for determining whether an area enclosed by coordinates of a closed curve line including the transformed coordinates is overlapped with an area enclosed by the coordinates of a different closed curved line or lines'....

Our own study of the references shows that Sato discloses means of constructing a human face by selecting prestored parts of the human face, see column 11, line 63 to column 12, line 49.

Whereas this process yields a montage of a human face, it does not have the flexibility of the recited means to create a facial image by determining a second plurality of feature points within said facial perimeter distributed along said facial perimeter.

The deficiency of Sato is not cured by Steir. Steir discloses, Figures 6-11 and column 7, line 8 to column 9, line 20, how a selected hair image can be smoothed at selected anchor points such as 110, 112 and 114 in Figure 6 selected on the facial image of a person photographed in Figure 2. Therefore, whereas Steir may be considered to show the

Appeal No. 1999-2023  
Application No. 08/556,119

creating of a different hair image by the movement of the feature points on a selector hair image so that the hair image fits the facial image, it does not have any disclosure regarding the means for constructing one or more facial perimeter vectors by connecting feature points among said second plurality of feature points distributed along a facial perimeter, i.e., the facial image in Steir is fixed.

We also do not agree with the examiner that Hayashi shows the recited means of obtaining transformed matching facial and hair images (penultimate paragraph of claim 8). Instead, Hayashi obtains its transformed facial image by simply selecting from a prestored list of different expressions of face in its memory via a pull down menu. Hayashi does not at all disclose dealing with a hair image.

Therefore, we are of the view that the combination of Sato, Steir, and Hayashi does not suggest or teach the recited limitations of claim 8. Consequently, we do not sustain the obviousness rejection of claim 8 over Sato, Steir and Hayashi. Since the other two independent claims, 1 and 15, each have at least the limitations similar to the ones discussed above, we

Appeal No. 1999-2023  
Application No. 08/556,119

also do not sustain the obviousness rejection of independent claims 1 and 15 and dependent claims 2-7, 9-14, and 16-24 over Sato, Steir and Hayashi.

Accordingly, the decision of the examiner rejecting claims 1-24 under 35 U.S.C. § 103 is reversed.

REVERSED

	Parshotam S. Lall	)	
	Administrative Patent Judge	)	
		)	
		)	
		)	
	Lance Leonard Barry	)	BOARD OF
PATENT	Administrative Patent Judge	)	APPEALS AND
		)	INTERFERENCES
		)	
		)	
	Stuart S. Levy	)	
	Administrative Patent Judge	)	

PSL:tdl

Appeal No. 1999-2023  
Application No. 08/556,119

Andrew J. Dillon  
Felsman, Bradley, Gunter & Dillon, LLP  
Suite 350, Lakewood on the Park  
7600B North Capital of Texas Highway  
Austin, TX 78731