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(54) Title: FRAME INTERPOLATION VIA ADAPTIVE CONVOLUTION AND ADAPTIVE SEPARABLE CONVOLUTION

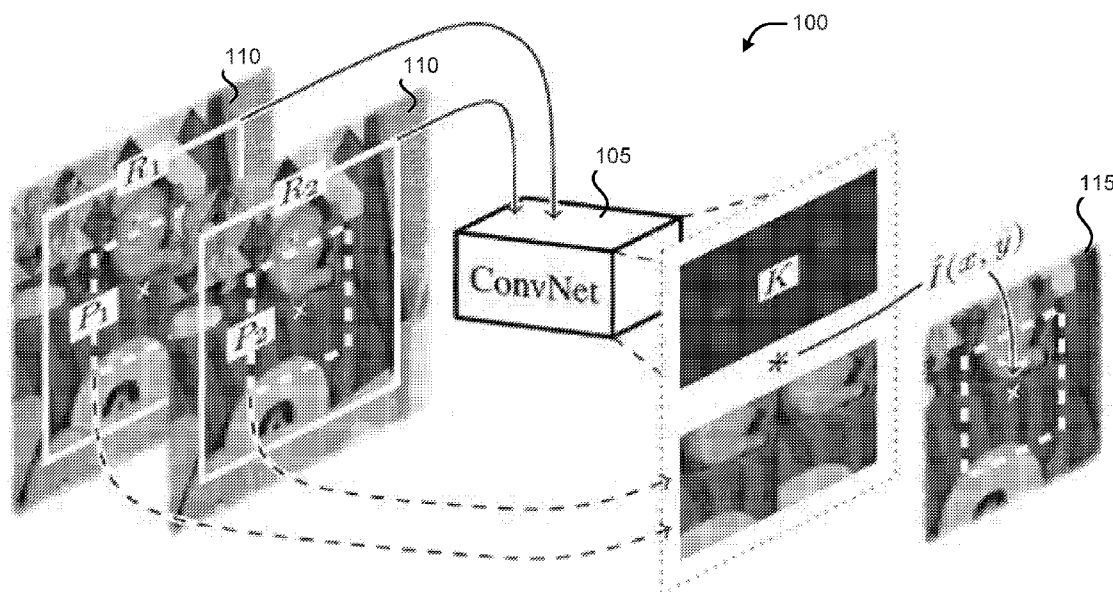


Figure 1

(57) **Abstract:** Systems, methods, and computer-readable media for context-aware synthesis for video frame interpolation are provided. A convolutional neural network (ConvNet) may, given two input video or image frames, interpolate a frame temporarily in the middle of the two input frames by combining motion estimation and pixel synthesis into a single step and formulating pixel interpolation as a local convolution over patches in the input images. The ConvNet may estimate a convolution kernel based on a first receptive field patch of a first input image frame and a second receptive field patch of a second input image frame. The ConvNet may then convolve the convolutional kernel over a first pixel patch of the first input image frame and a second pixel patch of the second input image frame to obtain color data of an output pixel of the interpolation frame. Other embodiments may be described and/or claimed.

SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
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A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06T 1/00-1/40, H04N 19/00-19/177

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatSearch (RUPTO internal), USPTO, PAJ, K-PION, Esp@cenet, Information Retrieval System of FIPS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Haitam Ben Yahia. Frame Interpolation using Convolutional Neural Networks on 2D animation. Universiteit van Amsterdam, Bachelor Thesis; Credits: 18 EC, 24 June 2016	1-25
A	Gucan Long et al. Learning Image Matching by Simply Watching Video. Springer International Publishing AG 2016. B.Lerbe et al. (Eds.): ECCV 2016, Part VI, LNCS 9910, pp.434-450, 2016. DOI: 10.1007/978-3-319-46466-4.26	1-25
A	WO 2016/132146 A1 (MAGIC PONY TECHNOLOGY LIMITED) 25.08.2016	



Further documents are listed in the continuation of Box C.



See patent family annex.

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