

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202341010712 A

(19) INDIA

(22) Date of filing of Application :17/02/2023

(43) Publication Date : 17/03/2023

(54) Title of the invention : Polar Harmonic Transforms of the Fractional Order with Funk Decomposition of Singular Values as a Safe Image Watermarking Method

(51) International classification :A61B 080800, G01R 333873, G06T 010000, H02K 011400, H04L 250200
(86) International Application No :PCT//
Filing Date :01/01/1900
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

(71)Name of Applicant :

1)Mr A.Ravi Kishore, GMR Institute of Technology, Rajam
Address of Applicant :Assistant Professor, Department of Computer Science and Engineering GMR Institute of Technology, Rajam, Andhra Pradesh, India Rajam -----

2)Mr.M Venkata Pavan, Bapatla Engineering College
3)Dr.S.Gopi Krishna, Sri Mittapalli College of Engineering
4)Mr.K. Kolla Kotaiah, Prakasam Engineering College

Name of Applicant : NA

Address of Applicant : NA

(72)Name of Inventor :

1)Mr A.Ravi Kishore, GMR Institute of Technology, Rajam
Address of Applicant :Assistant Professor, Department of Computer Science and Engineering GMR Institute of Technology, Rajam, Andhra Pradesh, India Rajam -----

2)Mr.M Venkata Pavan, Bapatla Engineering College
Address of Applicant :Assistant Professor, Department of Computer Science and Engineering Bapatla Engineering College, Andhra Pradesh Bapatla -----

3)Dr.S.Gopi Krishna, Sri Mittapalli College of Engineering
Address of Applicant :Professor and Head, Department of Computer Science and Engineering, Sri Mittapalli College of Engineering, Tummalapalem, Andhra Pradesh, India Tummalapalem -----

4)Mr.K. Kolla Kotaiah, Prakasam Engineering College
Address of Applicant :Assistant Professor, Department of Mechanical Engineering, Prakasam Engineering College, Andhra Pradesh Prakasam -----

(57) Abstract :

Traditional digital watermarks struggle to maintain a good balance between durability and invisibility. To address this issue, we offer an adaptive picture watermarking technique that combines singular value decomposition (SVD) and the Wang-Landau (WL) sampling method. When using this technique, the principal component is first chosen as the embedded location, and then derived using SVD from the third-level approximation sub-band acquired via the three-level wavelet transform. The scaling factor then permanently incorporates the data into the host image. Using a specified objective evaluation function, the Wang-Landau sampling technique acts as a global optimization algorithm to determine the optimal embedding coefficient. To avoid the common pitfall of many classic optimization algorithms—falling into local optimization—the embedding intensity is adaptively modified using the accumulated knowledge from the past. Several image-processing attacks are conducted, and the experimental findings are detailed to confirm the validity of the proposed strategy. This method has been shown to achieve a trade-off between robustness and invisibility when compared to other comparable watermarking techniques based on both qualitative and quantitative evaluation factors including peak signal-to-noise ratio (PSNR) and normalised cross-correlation (NC).

No. of Pages : 10 No. of Claims : 3