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Application Details

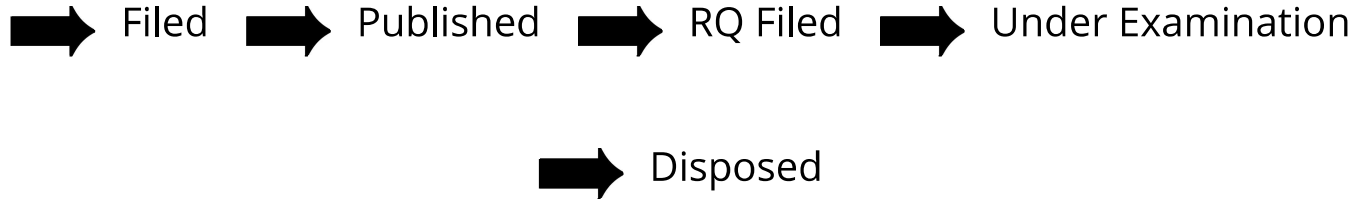
APPLICATION NUMBER	202241075300
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	25/12/2022
APPLICANT NAME	1 . E Vijaya Babu 2 . Dr. Y. Syamala 3 . Dr. Narayanam Balaji
TITLE OF INVENTION	DESIGN AUTOMATION OF CMOS ANALOG CIRCUITS USING SCA-MGWO ALGORITHM
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	vijayababu.e@gmail.com
ADDITIONAL-EMAIL (As Per Record)	
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	30/12/2022

Application Status

APPLICATION STATUS

Awaiting Request for Examination

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(54) Title of the invention : DESIGN AUTOMATION OF CMOS ANALOG CIRCUITS USING SCA-MGWO ALGORITHM

(51) International classification :G06N0003000000, G06F0030367000, G06F0030360000, G06F0030330000, G06F0030300000

(86) International Application No :NA
 Filing Date :NA

(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)E Vijaya Babu
 Address of Applicant :Assistant Professor, Department of ECE Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering and Technology, Hyderabad -----

2)Dr. Y. Syamala
3)Dr. Narayanam Balaji
Name of Applicant : NA
Address of Applicant : NA

(72)Name of Inventor :
1)E Vijaya Babu
 Address of Applicant :Assistant Professor, Department of ECE Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering and Technology, Hyderabad -----

2)Dr. Y. Syamala
 Address of Applicant :Associate Professor & HoD, Department of Internet of Things Seshadri Rao Gudlavalleru Engineering College, Gudlavalleru, Krishna(D.T.) – 521356 Andhra Pradesh, India. -----

3)Dr. Narayanam Balaji
 Address of Applicant :Professor of Electronics and Communication Engineering, Jawaharlal Nehru Technological University, Kakinada – 533003, Andhra Pradesh, India -----

(57) Abstract :
 Analog circuit design is comparatively more complex than its digital counter- part due to its nonlinearity and low level of abstraction. This study proposes a novel low-level hybrid of the sine-cosine algorithm (SCA) and modified grey- wolf optimization (mGWO) algorithm for machine learning-based design automation of CMOS analog circuits using an all-CMOS voltage reference circuit in 40- nm standard process. The optimization algorithm’s efficiency is further tested using classical functions, showing that it outperforms other competing algorithms. The objective of the optimization is to minimize the variation and power usage, while satisfying all the design limitations. Through the inter- change of scripts for information exchange between two environments, the SCA-mGWO algorithm is implemented and simultaneously simulated. The results show the robustness of analog circuit design generated using the SCA- mGWO algorithm, over various corners, resulting in a percentage variation of 0.85%. Monte Carlo analysis is also performed on the presented analog circuit for output voltage and percentage variation resulting in significantly low mean and standard deviation.

No. of Pages : 36 No. of Claims : 4