CENTRE FOR RESEARCH
ANNA UNIVERSITY

INTERVIEW FOR Ph.D. ADMISSION FOR JULY 2025 SESSION

AI-Driven Image Processing in Digital Marketing

Topic of Research

Name of the Candidate : Rashmi.R
Reference No. : 252941017
Affiliation (for PT Scholars) :

Name of the Proposed Supervisor : Resmi R Nair
Associate Professor
Affiliation : Saveetha Engineering College (SEC)

Educational Qualifications

Sl.No.	Degree	Specialisation	University/ Institute	Year of Passing	Marks (%/CGPA)
1	M.E	CSE	Anna Univ	2013	8.3
2	B.E	CSE	Anna Univ	2011	74%

Experience (As on 30.04.2024)

Sl. No.	Designation	Organisation	From	To	Years of Experience
1	Assistant Manager	Learn Panda	18.04.2022	16.04.2023	00.11
2	Senior Curriculum Developer	WhitehatJR	10.09.2020	14.04.2022	01.07
3	Teacher	Treamis International	09.07.2018	22.02.2019	00.07
4	Assistant Professor	Sairam Institute of Tech.	16.06.2016	17.04.2018	01.10
5	Assistant Professor	SKR Eng. College	10.06.2013	10.05.2016	02.11
Total Years of Experience					6.10

Publication (Journals Only)

Sl. No.	Title of the Paper	Authors	Name of the Journal	Year, Volume, Issue	Impact Factor as per Clarivites
1	Design and Development of IoT Based Wearable Health Monitoring System	R.Rashmi, P.Subha, R.Jegatha	International Journal of Pure and Applied Mathematics	2017, Volume 117, No. 16	-

Introduction

- The Fourth Industrial Revolution, powered by Artificial Intelligence, is transforming marketing through automation, emotional targeting, and real-time personalization.
- Traditional advertisements lack emotional connection, leading to low user engagement.
- This study proposes a **novel deep learning model** that uses the **Theory of Planned Behavior (TPB)** to analyze user behavior and generate personalized advertisement that emotionally connect with users.

Objective

- Design and implement an AI-powered system that uses deep learning to generate personalized advertisement images based on user behavior, ensuring consistent brand visuals and improving audience relevance.

Scope

- Focuses on using deep learning to generate personalized advertisement images.
- Aims to create visuals that are more likely to appeal to individual users.
- User behavior will be interpreted using the Theory of Planned Behavior (TPB) to understand intent and preferences.
- Deep learning models will analyze existing marketing visuals and behavioral data.
- New advertisement images will be generated that are relevant and engaging to each user.

Literature Review (Cont..)

"The Intelligent Advertising Image Generation Using Generative Adversarial Networks and Vision Transformer" – Hang Zhang et al. (2024)

- Developed a deep learning framework combining SeqGAN and VGG-based Vision Transformer for advertising image generation
- Outperformed six baseline models in both image background classification and tagline generation tasks
- **Key Distinction:** Primarily focuses on adding taglines and optimizing layouts on existing or selected images, rather than generating entirely new image content from scratch.

Literature Review

In "A CNN-Based Advertisement Recommendation through Real-Time User Face Recognition" by Gi-Han Kim et al. (2021):

- Developed a CNN-based model to predict advertisement ratings through real-time facial expression analysis
- Integrated a SIFT-based similarity model to identify users with shared ad preferences
- Evaluated using food-related advertisement videos and compared against benchmark systems (random, average rating, collaborative filtering)
- Limitations include the narrow scope (only food videos) and difficulty in accurately capturing real-time preferences across all users

Summary of Literature

- AI enhances digital marketing through personalized, emotionally engaging advertisements.
- Existing research uses deep learning models like CNN and GAN to analyze and generate ad content.
- Hang Zhang et al. (2024) combined GANs and Vision Transformers for tagline and layout optimization, but only modified existing images.
- Gi-Han Kim et al. (2021) used CNN and facial recognition for ad rating prediction, limited to food-related advertisement.
- Our proposed model integrates TPB, CNN, and GAN to generate entirely new, advertisement that match the user's behavior and emotions.

Research Proposal (Cont..)

Step 1: Behavior Analysis Using TPB

- User data is collected and analyzed based on TPB components: Attitude, Subjective Norm, and Perceived Behavioral Control.
- This helps identify user intent and predict future behavior patterns relevant to advertising.

Step 2: Advertisement Mapping

- Relevant advertisement categories are mapped to user behavioral profiles derived from TPB.

Step 3: Feature Extraction via CNN

- Content features from matched advertisements are extracted using CNN to identify patterns in layout, color, object presence, and emotional tone.

Research Proposal (Cont..)

Step 4: Ad Generation Using GAN

- The extracted CNN features are passed to a GAN model, trained to synthesize new advertisement visuals that reflect user preferences and predicted emotional responses.
- GAN generates realistic and targeted visuals tailored to user behavioral profiles.

Step 5: Performance Evaluation

- Generated advertisements are presented to users in a controlled testing environment to collect feedback on visual appeal, relevance, and engagement.
- Based on this feedback, model performance is evaluated and refined to enhance personalization and overall effectiveness.

Novelty in Research Proposal

- While most advertising models select from existing advertisment, this work generates new advertisement images using a novel deep learning model that combines CNN for feature extraction and GAN for image synthesis.
- User behavior is profiled using the Theory of Planned Behavior (TPB), mapping psychological factors (Attitude, Subjective Norm, Perceived Behavioral Control) from digital footprints to ad attributes.
- This integrated approach allows for real-time creation of emotionally and contextually relevant advertisement tailored to individual user psychology.

References

- Hang Zhang, Wenzheng Qu, Huizhen Long, Min Chen, "The Intelligent Advertising Image Generation Using Generative Adversarial Networks and Vision Transformer: A Novel Approach in Digital Marketing," Journal of Organizational and End User Computing, 2024, 36(1).
- Gihwi Kim, Ilyoung Choi, Qinglong Li, Jaekyeong Kim, "A CNN-Based Advertisement Recommendation through Real-Time User Face Recognition," Applied Sciences, 2021
- V. Kumar, Abdul R. Ashraf, Waqar Nadeem, "AI-powered marketing: What, where, and how?", International Journal of Information Management, 2024, 77, 102783.

Thank you