LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel)	:	Multi-Object Face Recognition Using Local Binary Pattern Histogram and Haar Cascade Classifier on Low-Resolution Images		
Jumlah Penulis	:	4 orang (Rizal Isnanto, **Adian Fatchur Rochim,** Dania Eridani, Guntur Dwi Cahyono)		
Status Pengusul	:	penulis ke-2		
Identitas Jurnal Ilmiah	:	a. Nama Jurnal	:	Journal of Engineering and Technology Innovation
		b. Nomor ISSN	:	2226-809X
		c. Vol, No., Bln Thn	:	Vol. 11 No. 1, Januari 2021
		d. Penerbit	:	Taiwan Association of Engineering and Technology Innovation, Taiwan
		e. DOI artikel (jika ada)	:	DOI: https://doi.org/10.46604/ijeti.2021.6174
		f. Alamat web jurnal	:	https://ojs.imeti.org/
		Alamat Artikel	:	https://ojs.imeti.org/index.php/IJETI/article/view/6174
		g. Terindex	:	Scopus, Q3, SJR 0,21

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- [ ] Jurnal Ilmiah Nasional Tidak Terakreditasi

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	Reviewer I	Reviewer II	
a. Kelengkapan unsur isi jurnal (10%)	4	3,50	3,75
b. Ruang lingkup dan kedalaman pembahasan (30%)	11	10,80	10,90
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	11	11,10	11,05
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	11	10,70	10,85
Total = (100%)	**37**	**36,1**	**36,55**
Nilai Pengusul = (40% x)/3 = 4,87			

Semarang, 10 Januari 2021

Reviewer 2

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Reviewer 1

Dr. Wahyudi ST, MT
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Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah			Nilai Akhir Yang Diperoleh
	Internasional [40]	Nasional Terakreditasi [ ]	Nasional Tidak Terakreditasi [ ]	
a. Kelengkapan unsur isi jurnal (10%)	4,00			4
b. Ruang lingkup dan kedalaman pembahasan (30%)	12,00			11
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	12,00			11
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12,00			11
Total = (100%)	**40,00**			**37**
Nilai Pengusul = (40% x)/3 = 4,93				

Catatan Penilaian artikel oleh Reviewer :

1. **Kesesuaian dan kelengkapan unsur isi jurnal:**
   International Journal of Engineering and Technology Innovation memiliki kelengkapan yang cukup. Makalah yang dipublikan di jurnal ini sesuai dengan cakupan topik dari Journal tersebut
2. **Ruang lingkup dan kedalaman pembahasan:**
   Topik dari makalah adalah mengenai identifikasi wajah pada kondisi resolusi rendah menggunakan usulan metode LBP dan Haar Cascade Classifier. Pembahasan sudah dilakukan secara mendalam, dilengkapi dengan alur proses identifikasi, gambar, grafik, dan rumus yang cukup lengkap.
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
   Identifikasi wajah saat ini masih tren dalam riset pengembangannya. Perkembangan teknologi identifikasi akan sangat berkembang dengan teknologi akses transmisi yang tinggi di era 5G. Aplikasi yang dapat diimplementasikan dengan metode tsb cukup beragam terutama pada akses-akses publik guna mengidentifikasi orang, dengan kegunaan yang cukup kompleks. Analisis dan proses pengujian sudah mencukupi untuk digunakan dalam pengambilan kesimpulan penelitian. Kesimpulan yang diambil sudah sesuai dengan metodologi yang dipakai.
4. **Kelengkapan unsur dan kualitas terbitan:**
   Terbitan dari Journal IJETI sudah cukup lengkap dalam aspek pemenuhan persyaratan sebagai jurnal ilmiah internasional bereputasi Q3, serta kualitas terbitan online cukup baik.

Semarang, 10 Januari 2021
Reviewer 1

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d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12,00			10,70
Total = (100%)	**40,00**			**36,10**
Nilai Pengusul = (40% x 36,10)/3 = 3,88				

Catatan Penilaian artikel oleh Reviewer :

1. **<u>Kesesuaian dan kelengkapan unsur isi jurnal</u>:** Jurnal cukup bereputasi dengan reviewer para pakar di bidangnya. Kelengkapan makalah lengkap dari mulai abstrak, metodologi, sumber data yang digunakan dan hasil serta kontribusi yang cukup penting bagi perkembangan ilmu pengetahuan.
2. **<u>Ruang lingkup dan kedalaman pembahasan:</u>**
   Makalah cukup lengkap membahas mengenai kombinasi dua metode untuk kegunaan identifikasi wajah dalam kondisi intensitas gambar rendah. Metode yang diusulkan menghasilkan kecermatan yang tinggi dalam identifikasi data statik, namun demikian untuk kondisi realtime masih perlu untuk ditingkatkan. **<u>Kecukupan dan kemutakhiran data/informasi dan metodologi:</u>**
   Literatur yang digunakan cukup signifikan dan baru. Topik yang diangkat sedang banyak diperbincangkan dan dibutuhkan saat ini, melihat dari beberapa artikel lain sejenis pada beberpa jurnal yang menjadi referensi.
3. **<u>Kelengkapan unsur dan kualitas terbitan:</u>**
   Unsur jurnal lengkap, kualitas terbitan online-nya cukup baik.

Semarang, 10 Januari 2021
Reviewer 2

Dr. Iwan Setiawan, S.T., M.T.
NIP. 197309262000121001

Document details

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Volume 11, Issue 1, 2021, Pages 45-58

Multi-Object Face Recognition Using Local Binary Pattern Histogram and Haar Cascade Classifier on Low-Resolution Images (Article) (Open Access)

Isnanto, R.R., Rochim, A.F., Eridani, D., Cahyono, G.D.

Department of Computer Engineering, Diponegoro University, Semarang, Indonesia

Abstract

View references (40)

This study aims to build a face recognition prototype that can recognize multiple face objects within one frame. The proposed method uses a local binary pattern histogram and Haar cascade classifier on low-resolution images. The lowest data resolution used in this study was 76 × 76 pixels and the highest was 156 × 156 pixels. The face images were preprocessed using the histogram equalization and median filtering. The face recognition prototype proposed successfully recognized four face objects in one frame. The results obtained were comparable for local and real-time stream video data for testing. The RR obtained with the local data test was 99.67%, which indicates better performance in recognizing 75 frames for each object, compared to the 92.67% RR for the realtime data stream. In comparison to the results obtained in previous works, it can be concluded that the proposed method yields the highest RR of 99.67%.

Author keywords

face recognition | histogram equalization | linear binary pattern histogram | low resolution

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Universitas Diponegoro	2496/STK05/UN7.5.3.2/PP/2020	UNDIP

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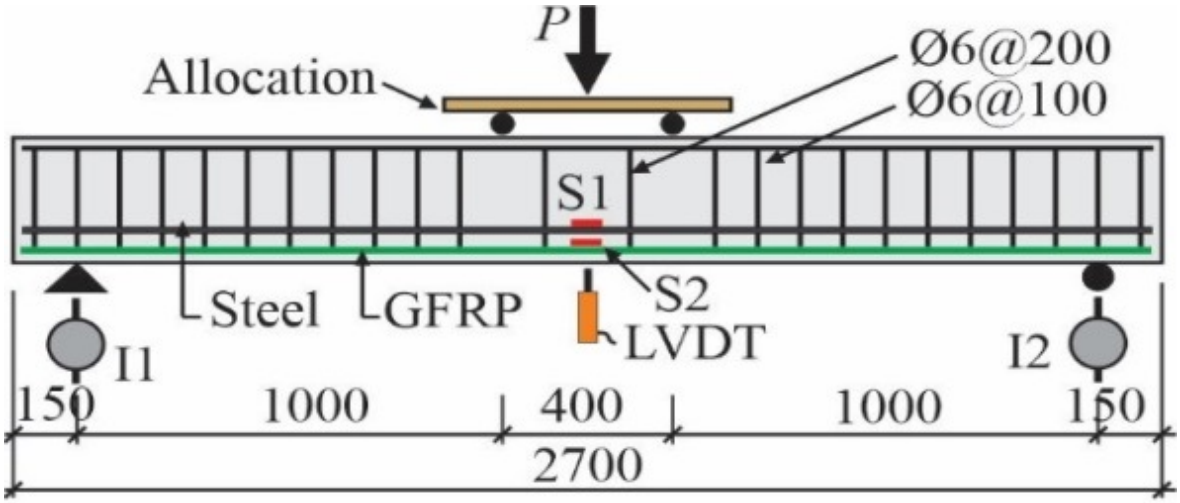

Limiting Reinforcement Ratios for Hybrid GFRP/Steel Reinforced Concrete Beams

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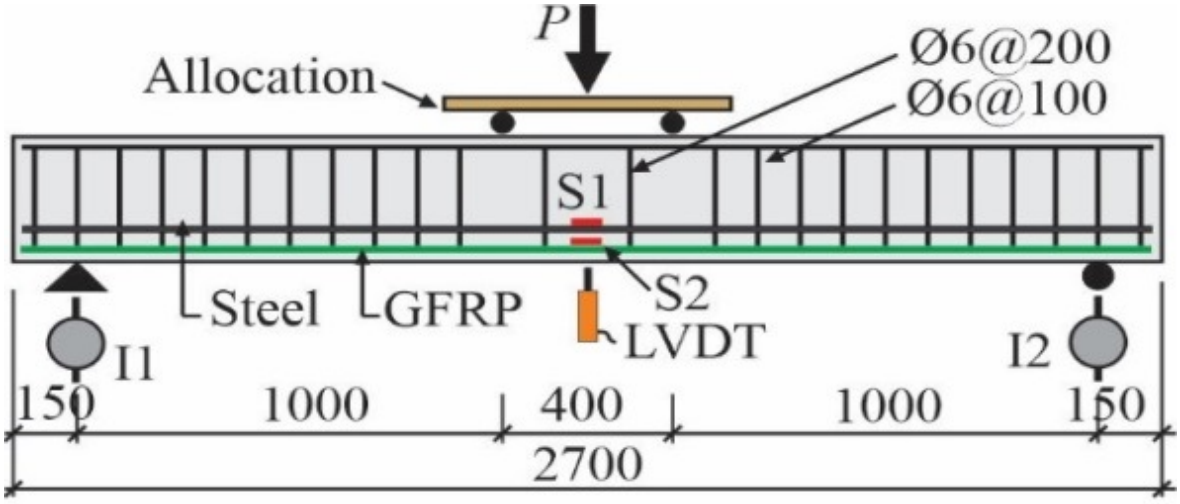

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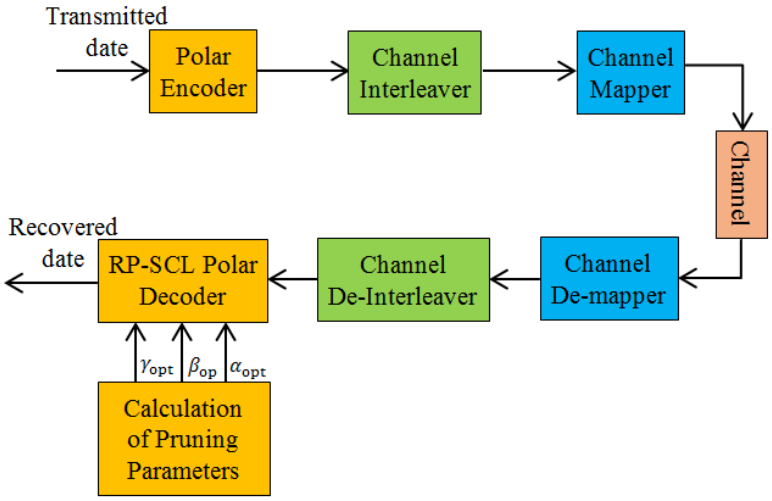

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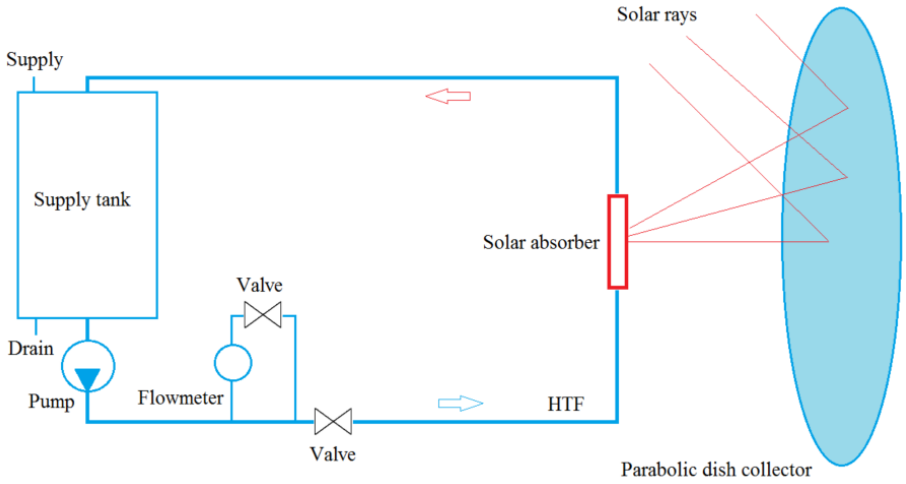

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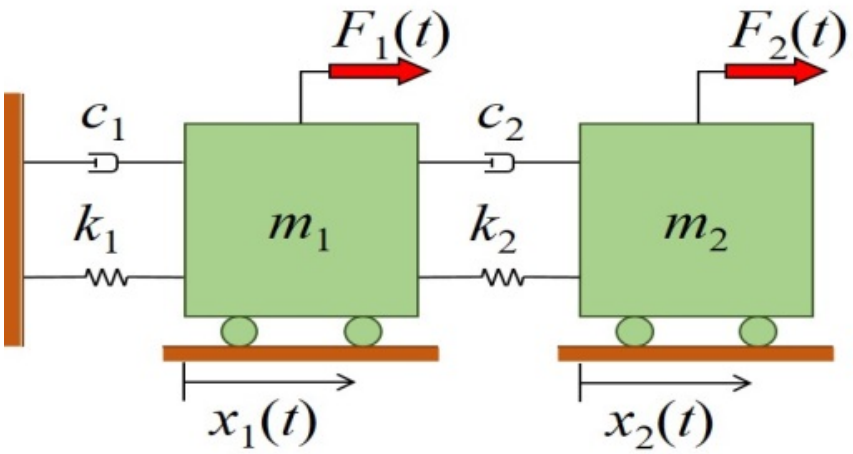

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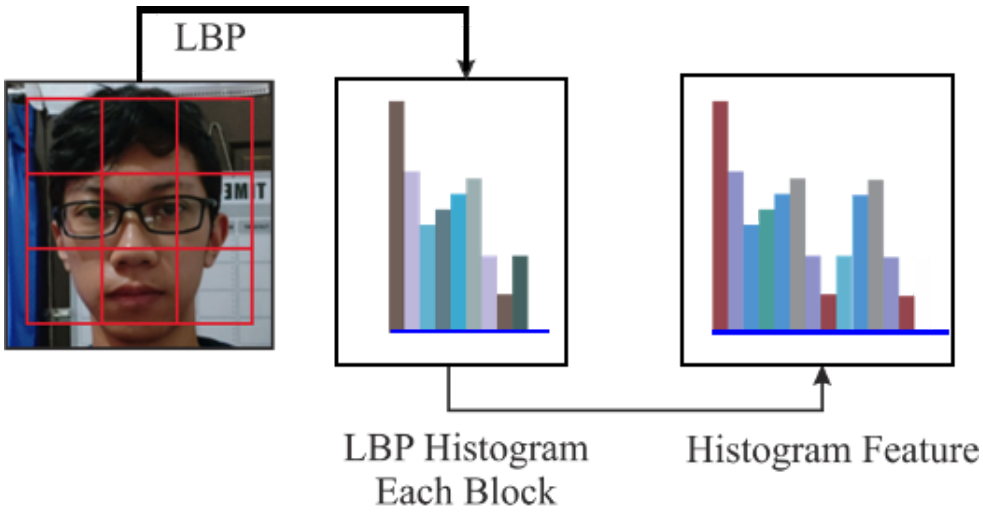

Multi-Object Face Recognition Using Local Binary Pattern Histogram and Haar Cascade Classifier on Low-Resolution Images

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Multi-Object Face Recognition Using Local Binary Pattern Histogram and Haar Cascade Classifier on Low-Resolution Images

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Abstract

This study aims to build a face recognition prototype that can recognize multiple face objects within one frame. The proposed method uses a local binary pattern histogram and Haar cascade classifier on low-resolution images. The lowest data resolution used in this study was 76 × 76 pixels and the highest was 156 × 156 pixels. The face images were preprocessed using the histogram equalization and median filtering. The face recognition prototype proposed successfully recognized four face objects in one frame. The results obtained were comparable for local and real-time stream video data for testing. The RR obtained with the local data test was 99.67%, which indicates better performance in recognizing 75 frames for each object, compared to the 92.67% RR for the real-time data stream. In comparison to the results obtained in previous works, it can be concluded that the proposed method yields the highest RR of 99.67%.

Keywords: face recognition, linear binary pattern histogram, low resolution, histogram equalization

1. Introduction

Object identification by artificial intelligence is a research topic that is attracting growing interest. Various methods are used for object identification in the field of artificial intelligence. One of the implementation concepts under development is the identification of human faces. The development and implementation of face recognition technology is an interesting field. In this modern era, emerging technologies for smartphones utilize face recognition technology in their security systems.

Face recognition technology uses a camera to capture image data, which can have various resolutions. Low-resolution images are those that lack sharp focus or fine detail. Compared to high-resolution images, low-resolution images have fewer pixels and greater compression. This compression compromises the quality of smaller image files [1]. Furthermore, the acquisition of low-resolution images can produce noise that looks like black or white dots on the original image known as salt-and-pepper noise. This noise is generally caused by software failure, hardware failure in the image capturing, transmission, or the defect of a camera sensor. A standard salt-and-pepper noise value may be either minimum (pixel value 0) or maximum (pixel value 255) [2].

This paper presents a prototype face recognition system based on the test data with four face objects within the same frame. This prototype system implements an LBPH algorithm for generating a model for face recognition purposes. The training data were generated by a low-resolution webcam implemented by the Haar cascade method, which is used to detect specific objects based on a model loaded in the program. Additional methods are used to improve the quality of the image data, including histogram equalization and median filtering. Unlike previous research, in this study, the images with multiple

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Non-Parametric Operational Modal Analysis Methods in Frequency Domain: A Systematic Review

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Abstract

The objective of this research is to present a systematic review of the non-parametric modal analysis methods in the frequency domain. Peak picking (PP), frequency domain decomposition (FDD), enhanced frequency domain decomposition (EFDD), and frequency–spatial domain decomposition (FSDD) are revisited and didactically illustrated by means of modal identification for a study case proposed in previous researches. Algorithm schemes are illustrated to summarize these frequency domain OMA techniques. Modal frequencies, modal damping ratios, and modal shapes are estimated using the different OMA techniques and compared to estimations obtained by the free decay (FD) method reported in previous researches. These are employed to compare the results obtained by the methods presented herein and show a very good correlation in obtaining modal frequencies and a low correlation in the case of modal damping.

Keywords: operational modal analysis, peak picking, frequency domain decomposition, enhanced frequency domain decomposition, frequency–spatial domain decomposition

1. Introduction

Operational modal analysis (OMA) arises as a response to the need to identify the modal parameters of the structures, which may be difficult, expensive, or restricted for conventional experimental modal analysis (EMA). OMA is addressed in the modal parameters identification for systems subjected to one or more excitation sources, which cannot be measured [1-2]. These excitation signals are produced in normal operating conditions of the system under environmental forces [3]. Thus, the system response is the only information available for identification purposes [4-5]. OMA has been widely used in civil engineering since the 1990s as environmental tests [3, 6-7]. Due to the advantages provided by these methods, their use has spread to other areas such as aerospace engineering [8-10] and mechanical engineering [11-15], as well as monitoring of equipment for preventive maintenance [6, 16-17].

OMA methods obtain information physically related to structure from correlation functions and spectral densities [2, 4]. The methods available to perform these analyses can be carried out in the time domain and the frequency domain. In the time domain identification in OMA, the information is extracted from the correlation functions [18]. The biggest drawback of using these identification techniques is that all modes contribute to the range of the problem at any time when working with free decays, usually estimated as correlation functions. However, it is possible to obtain bias-free data [4].

Frequency domain methods start with estimating the output response spectrum. The main advantage of these methods is the simplicity and speed with which the modal parameters can be obtained at a very low computational cost, compared to those

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Limiting Reinforcement Ratios for Hybrid GFRP/Steel Reinforced Concrete Beams

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Abstract

In this work, a theoretical approach is proposed for estimating the minimum and maximum reinforcement ratios for hybrid glass fiber reinforced polymer (GFRP)/steel-reinforced concrete beams to prevent sudden and brittle failure as well as the compression failure of concrete before the tension failure of reinforcements. Equilibrium equations were used to develop a method for determining the minimum hybrid GFRP/steel reinforcement ratio. A method for determining the maximum hybrid GFRP/steel reinforcement ratio was also developed based on the equilibrium of forces of the balanced failure mode. For estimating the load-carrying capacity of concrete beams reinforced with hybrid GFRP/steel, less than the minimum and more than the maximum reinforcement ratio is recommended. Comparisons between the proposed expressions, experimental data, and available test results in the literature shows good agreement between the theoretical and experimental data, with a maximum discrepancy of 7%.

Keywords: GFRP, hybrid reinforcement, reinforcement ratio

1. Introduction

Since the 1980s, fiber reinforced polymer (FRP) reinforcement has been used in modern construction [1-3] to replace conventional steel bars in reinforced concrete (RC) structures in specific environments [2-4]. Glass fiber reinforced polymer (GFRP) is one of the FRPs with high tensile strength and low elastic modulus. Thus, a concrete beam reinforced with GFRP exhibits a higher deflection and wider crack width than that reinforced with steel bars [5-8]. Many researchers have suggested adding longitudinal steel bars to GFRP RC beams to improve their flexural performance; hence, hybrid FRP/steel RC beams were developed. Experimental studies have shown that the ductility of hybrid GFRP/steel RC beams is significantly enhanced compared with that of pure GFRP RC beams. Moreover, steel reinforcement increases the flexural stiffness of GFRP RC beams, and hybrid GFRP RC beams exhibit lower deflection, smaller crack width, and higher load-carrying capacity compared with the concrete beams reinforced with GFRP bars [9-15]. Depending on the hybrid reinforcement ratios, six failure modes, including two balanced failure modes, have been identified for hybrid GFRP/steel RC beams [15]. Based on the classification of failure modes, researchers have proposed formulas to determine the load-carrying capacity of hybrid GFRP/steel RC beams [12, 14-16]. According to many researchers, for hybrid GFRP/steel RC beams, the preferred failure mode is concrete crushing after the yielding of steel [15-18]. To the best of our knowledge, previous studies have focused on the classification of the failure modes of hybrid GFRP/steel RC beams, and proposed analytical equations to separate these failure modes according to their reinforcement ratios. There are no studies on limits on the minimum and maximum reinforcement ratios of concrete beams reinforced with hybrid GFRP/steel bars.

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