3.4.4 Number of books and chapters in edited volumes/books published per teacher during the last five years (5)

3.4.4.1: Total number of books and chapters in edited volumes / books published, and papers in national/international conference-proceedings year wise during last five years

Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International	ear of publicati	ISBN/ISSN number of the proceeding	Affiliating Institute at the time of publication	Name of the publisher
	CIVIL									
1	SUJIT KUMAR PRADHAN	Lecture Notes in Civil Engineering, Springer	Performance Study of Pervious Concrete as a Road Pavement Infrastructure System	International Conference on Road and Airfield Pavement Technology 2021 (ICPT 2021),	ICPT-2021	INTERNATIONAL	2022	ISBN-978-3-030-87379-0 https://link.springer.com/chapter/10.1007/978-3-030-87379-0_39		Springer Nature, Switzerland
2	SUJIT KUMAR PRADHAN	Materials today, proceeding	Performance Assessment of Pervious Concrete Road on Strength and Permeability by using Silica Fume	Sustainable materials and practices for build environment (SMPBE-2021)	SMPBE-2021	INTERNATIONAL	2022	https://doi.org/10.1016/j.matpr.2022.02.018		Elsevier
3	SUJIT KUMAR PRADHAN	Materials today, proceeding	Utilization of reclaimed asphalt pavement (RAP) as granular sub-base material in road construction	Sustainable materials and practices for build environment (SMPBE-2021)	SMPBE-2021	INTERNATIONAL	2022	https://doi.org/10.1016/j.matpr.2021.12.564		Elsevier
		ELECTRICAL								
4	Dr. Pranati Das	Advances in Distributed Computing and Machine Learning. Lecture Notes in Networks and Systems	Dynamic Image Contrast Enhancement Using Image Dependent Decomposition Method	Advances in Distributed Computing and Machine Learning		International	2022	ISBN-978-981-16-4806-9 https://link.springer.com/chapter/10.1007/978-981-16-4807-6_10	IGIT, Sarang	Springer Singapore
		MECHANICAL								
5	Mr. P.R.Dhal	Intelligent Systems: Proceedings of ICMIB2021	Improving Navigational Parameters During Robot Motion Planning Using SOMA Technique	Lecture notes in Networks and Systems	ICMIB 2021	International	2022	https://link.springer.com/chapter/10.1007/978-981-19-0901-6_17	IGIT Sarang	springer
6	Mrs.K.S.S Sahoo	Lecture notes in Networks and Systems Book series (LNNS,Volume 431)	Optimization of Operating Parameters for Improve the Combustion in Single Cylinder Four Stroke DICI VCR Engine	Intelligent systems	ICMIB	International	2022	https://link.springer.com/chapter/10.1007/978-981-19-0901-6_54	IGIT Sarang	Springer
		CHEMICAL								
7	H.K.Sutar, R .Murmu	Lecturer notes in Mechanical Engineering	Recent Advancements in Mechanical engineering	ICRAMERD 2021		International	2022	978-981-16-9057-0		springer

8	Mr K Barik	Advancement in Materials Processing Technology	Recycling and Reuse of Iron Ore Pellet Fines	Springer Proceedings in Materials	AMPT	International	2022	978-981-16-3297-6 https://link.springer.com/chapter/10.1007/978-981-16-3297-6_17		Springer
9	Dr. H. Sutar, Prof. D. Roy, Prof. S. C. Mishra and R. Murmu		Study of Sliding Wear Behavior of Plasma Sprayed Red Mud Composite Coatings on Mild Steel		Book Publisher			ISBN (Print): 978-93-89816-04-4		
		Metallurgy								
10	J.Majhi, K.P.Jena, S.K.Sahoo, S.C.Patnaik		The Microstructural and Wear Properties improvement by manganese addition in Al-14Si Hypereutectic alloy	Materials Today: Procedings	ICPCM	International	2022	https://doi.org/10.1016/j.matpr.2022.04.638 https://www.sciencedirect.com/science/article/abs/pii/S2214785322028012	NIT Rourkela	Elsevier
11	Saroj Kumar Sahu, Rahul Kumar Patra, Jogendra Majhi		Effect of addition of 3 %Al2O3 on mechanical and microstructural properties in Al-16Si hypereutectic alloys with pouring temperature	Materials Today: Procedings	ICPCM 2021	International	2022	https://doi.org/10.1016/j.matpr.2022.03.517 https://www.sciencedirect.com/science/article/abs/pii/S2214785322018673	NIT Rourkela	Elsevier
	ETC									
12	BIKASH CHANDRA SAHOO		Dual Band Circular Patch Flexible Wearable Antenna Design for Sub-6 GHz 5G Applications		2022 IEEE International RF and Microwave	INTERNATIONAL	2022	978-1-6654-8978-2 https://ieeexplore.ieee.org/document/10065238		IEEE
13	Dr Ashima Rout		A COMPARATIVE ANALYSIS ON 5G CELL FREE MASSIVE MIMO	ICICCSP	ICICCSP	INTERNATIONAL	2022	ISBN:978-1-6654-7258-6 https://ieeexplore.ieee.org/document/9862350	SRINIDHI,HYDERBAD	IEEE
14	Chinmayee Panda	Lecture Notes in Networks and Systems	Performance Analysis of Chaotic OFDM-FSO Communication System	Proceedings of International Conference on Frontiers in Computing and Systems	COMSYS-2022	International	2022	2367-3389 https://link.springer.com/chapter/10.1007/978-981-99-2680-0_30	IGIT, Sarang	Springer
15	Chinmayee Panda		Energy efficiency and BER analysis of Concatenated FEC coded MIMO-OFDM-FSO system	2022 IEEE Fourth International Conference on Advances in Electronics, Computers and Communications	ICAECC	International	2022	978-1-6654-0239-2 https://ieeexplore.ieee.org/document/9716656	IGIT, Sarang	IEEE
16	SUNITA DHALBISOI		A COMPARATIVE ANALYSIS ON 5G CELL FREE MASSIVE MIMO	ICICCSP	ICICCSP	INTERNATIONAL	2022	ISBN:978-1-6654-7258-6 https://ieeexplore.ieee.org/document/9862350	SRINIDHI,HYDERBAD	IEEE

17	Dr. Ashima Rout		A Comparative Analysis on 5G Cell Free Massive Mimo In Next Generation Networking Environment		ICICCSP-2022	INTERNATIONAL	2022	Electronic ISBN:978-1-6654-7258-6 Print on Demand (PoD) ISBN:978-1-6654-7259-3 https://ieeexplore.ieee.org/document/9862350	IGIT Sarang	IEEE
18	Chinmayee Panda		QPSK-Subcarrier Intensity modulated FSO System	IEEE Conference	2021 International Conference on Advances in Technology, Management	International	2022	INSPEC Accession Number: 21668409 https://ieeexplore.ieee.org/document/9732746	IGIT,SARANG	IEEE
19	Dr. Urmila Bhanja	ture Notes in Electrical Enginee	Design and Performance Analysis of an Encrypted Two-Dimensional Coding Technique for Optical CDMA			International	2021	Print ISBN978-981-16-2817-7 https://link.springer.com/chapter/10.1007/978-981-16-2818-4_61		Springer
20	Dr. Urmila Bhanja		Energy efficiency and BER analysis of Concatenated FEC coded MIMO-OFDM-FSO system	2022 IEEE Fourth International Conference on Advances in Electronics, Computers and Communications	ICAECC	International	2022	978-1-6654-0239-2 https://ieeexplore.ieee.org/document/9716656	IGIT, Sarang	IEEE
21	Dr. Urmila Bhanja	ture Notes in Electrical Enginee	Effect of Code and Frequency Index Modulation in MIMO-OFDM-FSO System			International	2021	Print ISBN 978-981-16-2817-7https://link.springer.com/chapter/10.1007/9		Springer
22	Chinmayee Panda	ture Notes in Electrical Enginee	Effect of Code and Frequency Index Modulation in MIMO-OFDM-FSO System			International	2021	Print ISBN 978-981-16-2817-7https://link.springer.com/chapter/10.1007/9		Springer
23	Dr. Urmila Bhanja	Lecture Notes in Networks and Systems	Performance Analysis of Chaotic OFDM-FSO Communication System	Proceedings of International Conference on Frontiers in Computing and Systems	COMSYS-2022	International	2022	2367-3389	IGIT, Sarang	Springer
24	Dr. Urmila Bhanja		QPSK-Subcarrier Intensity modulated FSO System	IEEE Conference	2021 International Conference on Advances in Technology, Management	International	2022	INSPEC Accession Number: 21668409 https://ieeexplore.ieee.org/document/9732746	IGIT,SARANG	IEEE
25	Sunita Dhalbisoi	2022 ICICCSP	A Comparative Analysis on 5G Cell Free Massive MIMO in next generation networking environment		IEEE	International	2022	Electronic ISBN:978-1-6654-7258-6 Print on Demand (PoD) ISBN:978-1-6654-7259-3 https://ieeexplore.ieee.org/document/9862350	SNIST	IEEE

	CSE									
26	Sunita Dhalbisoi; Ashima Rout; Ramesh Kumar Sahoo; Srinivas Sethi	2022 International Conference on Intelligent Controller and Computing for Smart Power (ICICCSP)	A Comparative Analysis On 5G Cell Free Massive Mimo in next generation networking environment	IEEE Conference		National	2022	Electronic ISBN:978-1-6654-7258-6 https://ieeexplore.ieee.org/document/9862350		IEEE
27	R.K Sahoo, A.R Prusty, A Rout,	Lecture Notes in Networks and Systems	Mental Stress Detection Using GSR Sensor Data with Filtering Methods			International	2022	Print ISBN978-981-19-0900-9 https://link.springer.com/chapter/10.1007/978-981-19-0901-6_47		Springer

Road and Airfield Pavement Technology pp 517–528

Performance Study of Pervious Concrete as a Road Pavement Infrastructure System

Sujit Kumar Pradhan ✉, Niranjan Behera & Anil Palai

Conference paper | First Online: 30 January 2022

Part of the Lecture Notes in Civil Engineering book series (LNCE,volume 193)

Abstract

Pervious concrete is recognised as an environment friendly building material to meet the growing demands for pavement infrastructure. It is one of the best practices for storm water management by capturing rain water and allowing it to seep into the ground. In this study, influence of fine aggregate and coarse aggregate quantities on the properties of pervious concrete and performance characteristics of pervious concrete in terms of permeability, compressive strength, flexural strength, split tensile strength were carried out.

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aterials Today: Proceedings

Volume 60, Part 1, 2022, Pages 288-293

Utilization of reclaimed asphalt pavement (RAP) as granular sub-base material in road construction

Sujit Kumar Pradhan [a], Gurukalyana Biswal [b]

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Abstract

Currently, the scarcity of natural resources has been a significant impact on the construction industry. The demand for fresh aggregate becoming huge due to the increase in the construction of pavement and fulfilling the aggregate requirement is a great concern. In this research, an effort has been shaped to assess the feasibility of the use of Reclaimed Asphalt Pavement (RAP) material for improving the strength properties of the granular sub-base (GSB) layer. RAP aggregate was partially and fully replaced with fresh aggregate in different percentages to test various strength properties. Efforts were being made to improve the strength of the GSB layer by using RAP concerning soaked California Bearing Ratio (CBR) by blending with natural aggregates (NA). To know the best of mix proportions, RAP was partially and fully replaced with virgin aggregate in varying percentages such as 0%, 25%, 35%, 45%, 55%, 65%, and 75%. Modified compaction tests were performed on 100 % RAP and mixtures containing various percentages of RAP to establish the optimum water content for CBR sample preparation. Soaked CBR value was determined at 7 days, 14 days to see the effect of RAP on the GSB mixes. It was observed from the results that the soaked CBR value of RAP improves from 32% over 100% when it is mixed with natural aggregates in varying percentages and made it appropriate for utilizing it as a sub-base of flexible pavement. Depending upon the experimental outcomes, it was deduced that RAP in the sub-base layer is limited to 55% which has exquisite properties as natural aggregates utilized in the road sub-base.

Previous Next

RAP, Reclaimed Asphalt Pavement; GSB, Granular Sub-Base; CBR, California Bearing Ratio

Keywords

RAP; GSB; Modified proctor test; Soaked CBR

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Efficacy of C&D waste in base/subbase layers of pavement – current trends and future prospectives: A systematic review
2022, Construction and Building Materials

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Physical and Mechanical Properties of Reclaimed Asphalt Pavement (RAP) Incorporated into Unbound Pavement Layers
2023, Applied Sciences (Switzerland)

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Volume 60, Part 1, 2022, Pages 559-568

Performance assessment of pervious concrete road on strength and permeability by using silica fume

Sujit Kumar Pradhan, Niranjan Behera

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Abstract

Pervious concrete is recognized as an environmentally friendly material to meet the growing demands for pavement infrastructure. In this study, the influence of fine aggregate and coarse aggregate quantities on the properties of pervious concrete and performance characteristics of pervious concrete in terms of permeability, compressive strength, flexural strength, split tensile strength were carried out. Materials used are OPC Type- I of Grade 43, fine aggregate confirming gradation (Zone II) and coarse aggregate mix of 4.75–10mm, 10–12.5mm, 12.5–16mm, 16–20mm of 15%, 40%, 30% and 15% of the total weight of coarse aggregate respectively. Mixes were prepared with the water-cement ratio of 0.34 and maintaining aggregate-cement ratio as 3.5:1. Here, a total of five numbers mixes were prepared, out of which one for control mixture having M35 grade and remaining four mixtures were prepared by partial replacement of fine aggregated with coarse aggregate in the range of 70–100% by weight. It was observed from the study that with the increase of fine aggregates, various mechanical properties such that compressive strength, flexural strength, split tensile strength increase, and coefficient of permeability decrease. Also, the relationship between the strength, permeability, and total void present in graded aggregate based on angularity number was developed. As the concrete has high porosity, it has low strength as compared to impermeable concrete. To achieve better strength and permeability, a high-performance pervious concrete was developed using cement 43 grade, cementitious material like silica fume which replace the cement by 0%, 4%, 8%, 12%, and 16%, with sand (5%, 7%, and 9%), mentioned the size of coarse aggregate, a small quantity of fine aggregates, superplasticizer (Rheoplast), and a fixed water-cement ratio 0.34. This study represents a detailed overview of performance properties such as compressive strength, split tensile strength, flexural strength, and Cantabro abrasion resistance test at 7, 14, 28days. The outcome of the experimental test showed that partial replacement of silica fume (4–12%) with cement exhibited better results in comparison with the control mixture.

Previous Next

Keywords

Pervious concrete; Compressive strength; Flexural strength; Cantabro test; Silica fume

Abbreviations

OPC, Ordinary Portland Cement

Special issue articles Recommended articles

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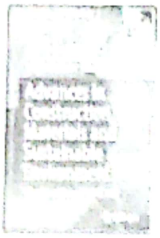
Thermal behavior of pervious concrete in dry conditions
2022, Construction and Building Materials



Advances in Construction Materials and Sustainable Environment pp 385–393

Evaluation of Cloth Bag and Gunny Bag as Potential Reinforcing Materials for Pond Ash

Sujit Kumar Pradhan ✉, Anwesha Rath & Goutam Kumar Pothal

Conference paper | First Online: 15 December 2021

Part of the Lecture Notes in Civil Engineering book series (LNCE,volume 196)

Abstract

The quantity of pond ash produced by the thermal power plants have improved in the latest years. The unutilized ash prompts an over increasing ponding region for putting away ash and correlated environmental problems for the society surrounding the power plants. Pond ash can possibly be utilized as a fill-up substance in retaining walls, embankment and structural land filling, etc., because it is a non-plastic cohesionless material. But the strength of the consolidated pond ash fills retained moderately by reinforcing it

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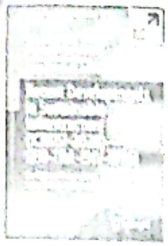

Recent Developments in Sustainable Infrastructure (ICRDSI-2020)—GEO-TRA-ENV-WRM pp 61–71

Effect of Softer Binder on Bituminous Mixture Containing Reclaimed Asphalt Pavement (RAP) Material

Sujit Kumar Pradhan & Umesh Chandra Sahoo

Chapter | First Online: 07 April 2022

250 Accesses

Part of the Lecture Notes in Civil Engineering book series (LNCE,volume 207)

Abstract

Because of the increasing cost of bitumen and aggregate, there is increasing interest for utilizing higher rates of Reclaimed Asphalt Pavement (RAP) material in new hot mix asphalt (HMA) as a result of the gainful effect on the climate, preservation of energy, and saving natural resources. Yet these RAP materials are highly stiff due to the aged binder present in it, making untimely damage to the pavement. To adjust the negative effect of the aged RAP binder, a softer binder is a reasonable choice that reestablishes the properties of the aged binder.

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Materials Today: Proceedings

Volume 60, Part 1, 2022, Pages 288-293

Utilization of reclaimed asphalt pavement (RAP) as granular sub-base material in road construction

Sujit Kumar Pradhan [a], Gurukalyana Biswal [b]

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Abstract

Currently, the scarcity of natural resources has been a significant impact on the construction industry. The demand for fresh aggregate becoming huge due to the increase in the construction of pavement and fulfilling the aggregate requirement is a great concern. In this research, an effort has been shaped to assess the feasibility of the use of Reclaimed Asphalt Pavement (RAP) material for improving the strength properties of the granular sub-base (GSB) layer. RAP aggregate was partially and fully replaced with fresh aggregate in different percentages to test various strength properties. Efforts were being made to improve the strength of the GSB layer by using RAP concerning soaked California Bearing Ratio (CBR) by blending with natural aggregates (NA). To know the best of mix proportions, RAP was partially and fully replaced with virgin aggregate in varying percentages such as 0%, 25%, 35%, 45%, 55%, 65%, and 75%. Modified compaction tests were performed on 100 % RAP and mixtures containing various percentages of RAP to establish the optimum water content for CBR sample preparation. Soaked CBR value was determined at 7days, 14days to see the effect of RAP on the GSB mixes. It was observed from the results that the soaked CBR value of RAP improves from 32% over 100% when it is mixed with natural aggregates in varying percentages and made it appropriate for utilizing it as a sub-base of flexible pavement. Depending upon the experimental outcomes, it was deduced that RAP in the sub-base layer is limited to 55% which has exquisite properties as natural aggregates utilized in the road sub-base.

Introduction

With the fast growth of the economy, the demand for transportation is also expanding. The necessity for the road network is maximum because it provides door-to-door services. Reutilizing waste materials has enhanced a feasible substitute in road maintenance and rehabilitation as well as it can also use for making new pavement also. During highway maintenance and rehabilitation work, a huge amount of RAP is generated. Generally, a major part of the RAP can be used in the making of new hot mix asphalt and the rest of the material is considered as waste. If the other parts could be re-used in the base and sub-base layer of the roads, it can minimize the environmental impact, waste disposal problem and also reduce transportation costs during maintenance and construction activities. In the last few years, attempts have been made to include RAP into the base or sub-base layer of pavement [1], [2]. Utilizing RAP in pavement base and sub-base was investigated and found feasible by [3]. RAP as an unbound aggregate in the base course as the RAP had stiffness more than the unbound conventional used in base and had good permeability [4]. Mixes containing 50% and 75% of RAP with fresh granular materials and recycled concrete aggregate were performed to determine the suitability for granular base/sub-base layers of flexible pavements [5]. Experiments were performed on four types of granular material mixed with various proportions of RAP such that 20%, 50%, and 75%. The study showed that mixing RAP with granular material brought about just minor changes in the engineering properties of the virgin material. But, a limiting value of 50% RAP in the base layer was recommended [6]. The inclusion of RAP to the new granular material enhances notably the properties of soil concerning CBR. The incorporation of 22% RAP created better outcomes concerning density and CBR [7]. Impact on the performance of a sub-base layer mixture with 50% of natural aggregates and 50% of RAP was examined and found better [8]. Stabilized RAP material looks to be able to function as a conventional sub-base material [9]. 100% RAP samples have higher stiffness and lower shear strengths than dense-graded aggregate base course samples [10]. The objective and scope of this research are to evaluate the suitability of RAP as a sub-base material based on the physical properties i.e., crushing, impact, abrasion, combined flakiness and elongation, soundness, specific gravity, and mechanical properties such that soaked CBR value at 4days and 7days. The load-bearing capacity of reinforced RAP and WMM in the ratio of 50% is more than unreinforced WMM, which is used in the base course of the pavement [11]. It is observed that recycled aggregate is successfully used as a base layer for high volume roads [12].

Materials Today: Proceedings xxx (xxxx) xxx

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Performance assessment of pervious concrete road on strength and permeability by using silica fume

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ARTICLE INFO

Article history:
Available online xxxx

Keywords:
Pervious concrete
Compressive strength
Flexural strength
Cantabro test
Silica fume

ABSTRACT

Pervious concrete is recognized as an environmentally friendly material to meet the growing demands for pavement infrastructure. In this study, the influence of fine aggregate and coarse aggregate quantities on the properties of pervious concrete and performance characteristics of pervious concrete in terms of permeability, compressive strength, flexural strength, split tensile strength were carried out. Materials used are OPC Type- I of Grade 43, fine aggregate confirming gradation (Zone II) and coarse aggregate mix of 4.75–10 mm, 10–12.5 mm, 12.5–16 mm, 16–20 mm of 15%, 40%, 30% and 15% of the total weight of coarse aggregate respectively. Mixes were prepared with the water-cement ratio of 0.34 and maintaining aggregate-cement ratio as 3.5:1. Here, a total of five numbers mixes were prepared, out of which one for control mixture having M35 grade and remaining four mixtures were prepared by partial replacement of fine aggregated with coarse aggregate in the range of 70–100% by weight. It was observed from the study that with the increase of fine aggregates, various mechanical properties such that compressive strength, flexural strength, split tensile strength increase, and coefficient of permeability decrease. Also, the relationship between the strength, permeability, and total void present in graded aggregate based on angularity number was developed. As the concrete has high porosity, it has low strength as compared to impermeable concrete. To achieve better strength and permeability, a high-performance pervious concrete was developed using cement 43 grade, cementitious material like silica fume which replace the cement by 0%, 4%, 8%, 12%, and 16%, with sand (5%, 7%, and 9%), mentioned the size of coarse aggregate, a small quantity of fine aggregates, superplasticizer (Rheoplast), and a fixed water-cement ratio 0.34. This study represents a detailed overview of performance properties such as compressive strength, split tensile strength, flexural strength, and Cantabro abrasion resistance test at 7, 14, 28 days. The outcome of the experimental test showed that partial replacement of silica fume (4–12%) with cement exhibited better results in comparison with the control mixture.

Selection and peer-review under responsibility of the scientific committee of the Sustainable Materials and Practices for Built Environment.

1. Introduction

Generally, normal concrete is used for pavement construction with the presence of fine aggregates which makes concrete impermeable. The impervious nature of concrete creates huge environmental issues like increasing runoff, reducing groundwater levels, flooding in built-up areas, etc. Pervious concrete is a new type of construction material that has high void content so that it can infiltrate water coming from different sources to pavement surface to other media and by this process possibility of rainwater wastage and artificial flood can be reduced. So, the basic composition of pervious concrete is the same as of conventional concrete with a little fine or no fine aggregate which leads to the formation of an interconnected network of voids that allow the water to percolate through the pavement. By using pervious concrete as a pavement in the parking area leads to an increase in the parking area by reducing water retention areas.

As concrete anti-glare type materials, so pervious concrete pavement reduces the glare on road surfaces, particularly at the

Abbreviations: OPC, Ordinary Portland Cement.

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https://doi.org/10.1016/j.matpr.2022.02.018

Selection and peer-review under responsibility of the scientific committee of the Sustainable Materials and Practices for Built Environment.

A Smartphone App Based Model for Classification of Users and Reviews (A Case Study for Tourism Application)

Ramesh K. Sahoo, Srinivas Sethi, and Siba K. Udgata

Abstract Classification of reviews provided by the users plays a vital role in many real world applications. Many industries in the current era depend on the reviews of the customers/ users for planning their business and providing better customer care services. It deals with the classification of reviews to validate the objectives of the organization. The evaluations and follow up goals can be determined as positive or negative types of reviews. This paper tried to propose a model that performs the classification of users or customer reviews using ratings provided by users or reviewers. In the proposed model, users can give feedback on the location through the Android App, which will be stored in a cloud platform. This real time dataset can be used for tourism applications in the proposed work. The algorithm is used to classify a review as either an honest review or a fake review. It also tries to classify the users as honest, suspicious, and malicious. Feedbacks classified as honest and given by honest users only will be considered authentic information by the other users during the search operation.

Keywords Classification · Feedback · Reviews · Rating · Tourism · Smartphone app

1 Introduction

Currently, tourism is one of the growing businesses in the world. Traveling from place to place for relaxation, enjoyment, business meetings, and spending quality time with family in outdoor locations has become a norm. Due to the hectic lifestyle generally, most people have lots of stress, and many times this leads to a lot of health related issues. That is why people typically love and plan to visit some outdoor locations to get some time.

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S. K. Udgata et al. (eds.), *Intelligent Systems*, Lecture Notes in Networks and Systems 185, https://doi.org/10.1007/978-981-33-6081-5_30

Cognitive Function of Human Memory Using Machine Learning

Ashima Rout, Ramesh K. Sahoo, Sangita Pal, and Divyajyoti Dehury

Abstract In this paper, it has been tried to analyze number of student details for the accuracy of result and for human brain development process. This work is based on human intelligence, which may be characterized to different attributes like sharpness, alertness, cleverness, reasoning capability, critical thinking, problem solving, judgment, etc. Machine learning being a classification of artificial intelligence (AI) builds mathematical model for the sample data. A data of approximately 200 students have been taken into consideration for manual calculation and simulation using WEKA software toward result and analysis. This paper summarizes to focus on how to increase the learning capability. If the past learning is good, then given sufficient time for studies where interest is at an outstanding level of a person, eventually student's learning capability is good. This work is also based on linear regression equation. The accuracy of results could be performed by analyzing three different classification processes of BayesNet, NaïveBayes, and ZeroR.

Keywords Cognitive function · Human memory · Machine learning

1 Introduction

Human brain being an important part of its body, the basic structure of it may be comprised of three main parts as cerebellum, the brain stem, and spinal cord [1]. Brain contains neuron of 1010 basic units and every neuron is connected to 104 other neurons. This is a very small cell which accepts electro chemical signals from different sources and reacts by transmitting electrical impulses to different other neurons. This work is based on human intelligence. Intelligence is a brain power of human being, which may be sharpness, alertness, cleverness, reasoning capability, critical thinking, problem solving capability, understanding capability or any type

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S. K. Udgata et al. (eds.), *Intelligent Systems*, Lecture Notes in Networks and Systems 185, https://doi.org/10.1007/978-981-33-6081-5_36

Ensuring Data Integrity in Mobile Crowdsensing Environment Using Fuzzy Logic

Ramesh K. Sahoo, Sateesh Kumar Pradhan, and Srinivas Sethi

Abstract In the modern world, industries rely on the feedback/reviews of the users for estimating their future plan for better customer care services and customer relationship management. The evaluations and follow up achievement can be computed as +ve/−ve types of feedback or review. This work attempts to present a model using fuzzy logic over mathematical model that will outperform the categorisation of customers or users feedback using ratings given by users or customers to ensure data integrity in mobile crowdsensing environment. In this work, customers or users can provide feedback or review for the location using web-based applications or Android Application, that will be stored in a cloud environment. This data-set will be analysed using fuzzy logic to isolate genuine reviews to maintain data integrity which may be used for different types of real-time applications such as tourism, medical, educations, among a few other applications and also categorise the customers or users as honest, malicious and suspicious.

Keywords Data integrity · Mobile crowdsensing · Genuine reviews · Reviews · Rating · Fuzzy model

1 Introduction

Data integrity reflects consistency, accuracy and safety of data in database. Data collection and storage in a proper way to ensure accuracy and reliability is a part of physical data integrity whereas logical data integrity verifies accuracy of data in the specific context. It ensures that whenever data will be analysed it will provide same information. It is required to remove invalid and fake data that can compromise the information and also it is necessary to identify users who want to use it for malicious purpose to change the information. It can be used for different real-time applications

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S. K. Udgata et al. (eds.), *Intelligent Systems*, Lecture Notes in Networks and Systems 431, https://doi.org/10.1007/978-981-19-0901-6_22

Mental Stress Detection Using GSR Sensor Data with Filtering Methods

Ramesh K. Sahoo, Alok Ranjan Prusty, Ashima Rout, Binayak Das, and Padmini Sethi

Abstract Study of the stress level in the human body is vital now a days. It is very important to assess the mental state of the human being with significant physiological changes. Proper and on time diagnose of the stress and anxiety may make one's lifestyle happier, healthier, and more productive. Persons, when stay and work far from their places; undergone many types of life changes and become the victim of stress, trauma, and anxiety. Hormonal changes in the human body due to stress can be reflected in terms of physiological and psychological changes. It becomes more significant to address such situations at remote places by analysing physiological data and send the same data through heterogeneous wireless communication for further analysis. In this paper, it has been identified three different activities with varied positions and sending of galvanic sensing response sensed data to the intended sink node through the heterogeneous wireless communication medium. Galvanic sensing response sensed data are different in respect to the contact surface area with the body, body position, environment, and activities. Proper investigation of sensed data can give real time solution.

Keywords Physiological data · Wireless communication · GSR sensor · Heterogeneity · Filtering

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S. K. Udgata et al. (eds.), *Intelligent Systems*, Lecture Notes in Networks and Systems 431, https://doi.org/10.1007/978-981-19-0901-6_47

Smart Wheelchair Using Brain Waves Through Machine Learning

Jenamani Chandrakanta Badajena, Srinivas Sethi, Amrit Dash, Priyanka Rout, and Ramesh K. Sahoo

Abstract Maneuvering a mechanical wheelchair is a difficult task for a paralyzed person. Hence, there is a need for designing a wheelchair that is intelligent and provides easy maneuverability for persons who are not capable of handling the manual maneuvering process. Our proposed system is designed to receive, process, and classify electroencephalographic signals before controlling the wheelchair. This paper is based on an analysis of the cognitive function of the human brain, and its deployment through machine learning algorithms. It has been analyzed that machine learning algorithms improve the accuracy of electroencephalograph (EEG) response data. We have captured brain signals using the NeuroMAX-32 instrument from human beings under various stimuli conditions and tried to classify data using naive Bayes, support vector machine (SVM), and decision tree (J48). Attention and meditation level of person has been obtained from EEG response data, and it will be used to move, control, and stop the wheelchair using microcontroller.

Keywords Machine learning · EEG sensor · Brain wave · Smart wheelchair · Naïve Bayes · Support vector machine · Decision tree

1 Introduction

Attention can be considered as a focal point to capture the brain waves of a person that can further be used to process and analyze signals for utilization in the implementation of autonomous smart wheelchairs [1–3], where the human makes decisions and the smart control technology helps in the automation of motion. The primary contribution of this research is fourfold: The first fold is to observe the brain activity. The second is to create a firmly established environment with different situations. The third is to be evaluated through a machine learning algorithm, and the fourth is to deploy the idea in

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S. K. Udgata et al. (eds.), *Intelligent Systems*, Lecture Notes in Networks and Systems 431, https://doi.org/10.1007/978-981-19-0901-6_40

Review on Scenario of Wind Power Generation and Control

Chandan Kumar Barick ; Bijaya Kumar Mohapatra ; Subash Ranjan Kabat ; Kasinath Jena ; Bibhu Prasad Ganthia ; Chinmoy Kumar Panigrahi All Authors •••

Abstract: This era brings RE ascent more popular in energy generations evolve response in enhancing concern towards environmental issues. Among all RE sources wind energy becomes m... **View more**

▸ Metadata

Abstract:

This era brings RE ascent more popular in energy generations evolve response in enhancing concern towards environmental issues. Among all RE sources wind energy becomes more attractive in the sense of nonhazardous, cleanest and most cost-effective source of energy. This 20 th century appeals the risk of shortage in fossil fuel, pollutions, carbon dioxide emissions and the surge of power demands. This develops a hope to settle our future energy demands to be recovered the wind energy can play the vital role in this aspect. Fulfilling the clean energy source, this renewable source can also be a part of growth in energy sector. This review work presents the worldwide generations of wind power and its control considering all constraints and parameters.

Published in: 2022 1st IEEE International Conference on Industrial Electronics: Developments & Applications (ICIDeA)

Date of Conference: 15-16 October 2022

DOI: 10.1109/ICIDeA53933.2022.9970193

Date Added to IEEE *Xplore*: 07 December 2022

Publisher: IEEE

▸ ISBN Information:

Conference Location: Bhubaneswar, India

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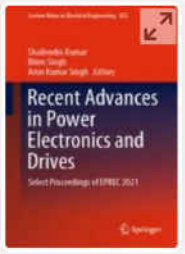


Recent Advances in Power Electronics and Drives pp 245–254

Performance Comparison Analysis of Energy Management Strategies for Hybrid Electric Vehicles

Jai Kumar Maherchandani, R. R. Joshi, Ritesh Tirole, Raju Kumar Swami & Bibhu Prasad Ganthia

Conference paper | First Online: 27 May 2022

Part of the book series: Lecture Notes in Electrical Engineering ((LNEE,volume 852))

Abstract

The performance of three widely used energy management strategies for hybrid electric vehicles (HEV) is compared in this paper. The HEV considered here consists of the fuel cell (FC), battery, and supercapacitor (SC). Performance comparison is carried out among conventional proportional-integral (PI), rule-based (RB), and

Prototype Design of Modified Mechanical Drive Train Gear Box System using ANSYS for Wind Power Generation

Publisher: IEEE

Anupriya Biswal ; Bibhu Prasad Ganthia ; Subhasmita Satapathy ; Shilpa Patra ; Sunil Kumar Bhatta ; Monalisa Mohanty **All Authors** •••

Abstract: For wind power generation, the mechanical drive train system is the most important controlling component. It is extremely important with fast changes in wind speed. The g... **View more**

Metadata

Abstract:
For wind power generation, the mechanical drive train system is the most important controlling component. It is extremely important with fast changes in wind speed. The goal of this article is to build a redesigned drive train system for a Type-III wind turbine. A new design of mechanical drive train system is implemented in a wind power generation system in this research. This improved design can be used to solve the voltage sag and the voltage swell problem caused by time to time variations in wind speed. The wind turbine's pitch control, gearbox, and yaw are primarily targeted for change. The rotor's gear box is primarily to responsible for the rotor's sluggish rotation during low wind speeds. This paper highlights the prototype design of gear box in Type-III wind turbine system with its power smoothing characteristics. Also in this paper depicted that how the modified gearbox system can be helpful for power controls compared with the existing models. For prototype design; MATLAB simulink platform is used taking parameters of Computational Fluid Dynamics (CFD) of ANSYS design.

Published in: 2022 Second International Conference on Artificial Intelligence and Smart Energy (ICAIS)

Date of Conference: 23-25 February 2022

DOI: 10.1109/ICAIS53314.2022.9743077

Date Added to IEEE *Xplore*: 30 March 2022

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

Sliding Mode Control and Genetic Algorithm Optimized Removal of Wind Power and Torque Nonlinearities in Mathematical Modeled Type-III Wind Turbine System

Publisher: IEEE

Bibhu Prasad Ganthia ; Subrat Kumar Barik ; Byamakesh Nayak **All Authors •••**

Abstract: The wind energy generation affected by the rapid change in wind speed. To control the wind speed and maintain the stability in the system sliding mode controller is intro... **View more**

▸ Metadata

Abstract:
The wind energy generation affected by the rapid change in wind speed. To control the wind speed and maintain the stability in the system sliding mode controller is introduced in this paper. Nonlinearities developed due to variable wind speed can be controlled by genetic algorithm optimized sliding mode control technique. Tip speed ratio technique is used to extract maximum power from the wind energy. To improve this TSR technique PI-GA tuned sliding mode controller technique used to get maximum power and reducing the active power losses. Nonlinearities in the pitch angle due to variable wind speed can be solved using this proposed technique. Hence in this paper the robustness of the modified Type-III wind turbine system is studied using MATLAB Simulink. The Simulink results are compared with the existing technique of DFIG based Type-III wind turbines.

Published in: 2021 9th International Conference on Cyber and IT Service Management (CITSM)

Date of Conference: 22-23 September 2021

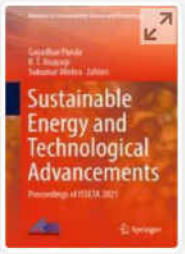
DOI: 10.1109/CITSM52892.2021.9587933

Date Added to IEEE *Xplore*: 11 November 2021

Publisher: IEEE

▸ ISBN Information:

Conference Location: Bengkulu, Indonesia



Sustainable Energy and Technological Advancements pp 423–433

Comparative Analysis of Fuzzy Logic and Synchronous Reference Frame Controlled LVRT Capability Enhancement in Wind Energy System Using DVR and STATCOM

Subash Ranjan Kabat, Chinmoy Kumar Panigrahi & Bibhu Prasad Ganthia

Conference paper | First Online: 25 March 2022

Part of the book series: Advances in Sustainability Science and Technology ((ASST))

Abstract

This study examines the different techniques utilized to enhance the low-voltage ride through (LVRT) capabilities of double-fed induction generators (DFIG)-based wind turbine systems (WT). As the globe uses around 20–25% of renewable energy from wind, the Type-III WT

PAPER • OPEN ACCESS

Comparative Analysis on Various Types of Energy Storage Devices for Wind Power Generation

Bibhu Prasad Ganthia[1], K. Suriyakrishnaan[2], N. Prakash[3], J. Harinarayanan[4], M. Thangaraj[5] and Sthitprajna Mishra[1]

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Journal of Physics: Conference Series, Volume 2161, 1st International Conference on Artificial Intelligence, Computational Electronics and Communication System (AICECS 2021) 28-30 October 2021, Manipal, India

Citation Bibhu Prasad Ganthia *et al* 2022 *J. Phys.: Conf. Ser.* **2161** 012066

DOI 10.1088/1742-6596/2161/1/012066

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Abstract

Specifically for wind and photovoltaic, energy Storage is well regarded as an important tool

PAPER • OPEN ACCESS

Optimization of Load Forecasting in Smartgrid using Artificial Neural Network based NFTOOL and NNTOOL

Sthitprajna Mishra[1], Bibhu Prasad Ganthia[1], Abel Sridharan[2], P Rajakumar[3], D. Padmapriya[4] and S. Kaliappan[5]

Published under licence by IOP Publishing Ltd

Journal of Physics: Conference Series, Volume 2161, 1st International Conference on Artificial Intelligence, Computational Electronics and Communication System (AICECS 2021) 28-30 October 2021, Manipal, India

Citation Sthitprajna Mishra *et al* 2022 *J. Phys.: Conf. Ser.* **2161** 012068

DOI 10.1088/1742-6596/2161/1/012068

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Abstract

The motivation behind the research is the requirement of error-free load prediction for the

PAPER • OPEN ACCESS

Sensorless Speed Contorl of Doubly-Fed Induction Machine Using Reactive Power Based MRAS

Sidhartha Kumar Samal[1], Smrutisikha Jena[2], Bibhu Prasad Ganthia[1], S. Kaliappan[3], M. Sudhakar[4] and S. K. Sriram Kalyan[5]

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Journal of Physics: Conference Series, Volume 2161, 1st International Conference on Artificial Intelligence, Computational Electronics and Communication System (AICECS 2021) 28-30 October 2021, Manipal, India

Citation Sidhartha Kumar Samal *et al* 2022 *J. Phys.: Conf. Ser.* **2161** 012069

DOI 10.1088/1742-6596/2161/1/012069

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Abstract

A sensorless speed control method for doubly fed induction machine (DFIM) operating with

Smart Grid Based Multiagent System in Transmission Sector

S. Jaanaa Rubavathy ; R. Venkatasubramanian ; M.Mohan Kumar ; Bibhu Prasad Ganthia ; J.Satheesh Kumar ; P. Hemachandu ; M.Siva Ra... All Authors

Abstract: New technological hurdles are growing as renewable energy-based generating distributions are rising. Due to the nearness of linked inverters and the variety of solar PV i... **View more**

Metadata

Abstract:

New technological hurdles are growing as renewable energy-based generating distributions are rising. Due to the nearness of linked inverters and the variety of solar PV inverters, it is more likely for an overvoltage issue to occur. This is similar to the previous statement, which said that solar PV inverters help enhance the probability of reverse power flow. The continued issues with distribution network operations might lead distribution channel operators to institute further stricter limitations on the implementation of distributed PV inverters into their distribution networks. Despite this, these issues may be solved by means of supervision monitoring and data collection, such as SCADA. It's also a lot more expensive to build SCADA-like functionality using low voltage networks as there will be a large number of special equipment that will be linked to them. Instead, multi-agent systems like multi-robot systems may be used to deal with the aforementioned technological issues. This system is flexible and capable of using several control strategies, including decentralized control and hierarchical control, which may help to overcome the many technological issues.

Published in: 2021 Third International Conference on Inventive Research in Computing Applications (ICIRCA)

Date of Conference: 02-04 September 2021

DOI: 10.1109/ICIRCA51532.2021.9544644

Date Added to IEEE *Xplore*: 01 October 2021

Publisher: IEEE

ISBN Information:

Conference Location: Coimbatore, India

IEEE XPLORE COMPLIANT ISBN
978-1-6654-0052-7

JCT COLLEGE OF ENGINEERING AND TECHNOLOGY

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Prototype Design of Modified Mechanical Drive Train Gear Box System using ANSYS for Wind Power Generation

at the

International Conference on Artificial Intelligence and Smart Systems (ICAIS 2022)

organized by JCT College of Engineering and Technology, Coimbatore, India

on 23-25, February 2022.

Session Chair

Conference Chair
Dr. K. Geetha

Principal
Dr. S. Manoharan

Frequency regulation of hybrid distributed power systems integrated with renewable sources by optimized type-2 fuzzy PID controller

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Abstract— The uncertain nature of renewable sources and load demand makes modern power systems highly complex and causes the frequency fluctuations. This research presents a maiden application of an Improved Sunflower Optimization Algorithm (ISFO) technique tuned Adaptive Type-2 Fuzzy PID (AT2FPID) structurefor frequency regulation of hybrid distributed power systems integrated with renewable sources. Initially PID controller is considered and the dominance of ISFO over Sunflower Optimization Algorithm (SFO), Genetic Algorithm (GA) and Differential Evolution (DE) has been established. Performance comparison is carried out by assessing overshoots, undershoots and various integral errors due to Step Load Perturbations (SLPs) in each area. In the next stage, AT2FPID controller is considered and its supremacy to control the system frequency is demonstrated by comparing with Type 2 Fuzzy PID (T2FPID), Type 1 Fuzzy PID (T1FPID) and PID controllers.

Keywords— **Sunflower Optimization Algorithm (SFO); Improved SFO (ISFO); Distributed Energy Sources, renewable sources; Frequency Control; Adaptive Type-2 Fuzzy PID (AT2FPID) Controller.**

I. INTRODUCTION

The amalgamation of the renewable energy sources to

dynamic performance in this case [9].This paper proposes an Adaptive Type-2 FPID (AT2FPID) structure as in [10] to improve the performance of T2FPID. Numerous optimization-based approaches have been projected to select controller parameters [4-9]. Sunflower Optimization Algorithm (SFO) is a newly projected optimization approach encouraged by the orientation of sunflowers towards sunlight [11]. The SFO is enthused by the "inverse-square law of radiation intensity," where the strength of solar energy (i.e., heat) is directly related to the squared distance between the flowers and the sun. It is based on the positioning of flowers, which models the cross-pollination formed among arbitrary adjacent flowers to attain the optimum position solution. In the initial periods of SFO algorithm, the best position is unidentified. Thus, big initial steps may move the solutions away from optimum position. Consequently, scaling factors can be employed to modify the positions in the initial phases in the proposed Improved SFO (ISFO) which is used to optimize controller parameters. The objectives of this study are:

- An AT2FPID structure is suggested for frequency regulation power system with distributed and renewable sources

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https://link.springer.com/chapter/10.1007/978-981-19-0901-6_3

Synchronization and Its Use in Communication Network with Frequency Control

Smrutiranjan Nayak, Sanjeeb Kumar Kar, Subhransu Sekhar Dash & Madhab Chandra Das

Conference paper | First Online: 04 May 2022

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 431)

Abstract

In this paper, another fragmentary request turbulent framework containing a few nonlinearity terms is presented. This new framework can energize stowed away turbulent attractors or self-invigorated tumultuous attractors relying upon the picked framework boundaries or its part request. A few elements of this new framework, like tumultuous attractors, harmony focuses, are examined logically and mathematically. Then, at that point, versatile control laws are created for accomplishing confusion synchronization of two indistinguishable new frameworks with dubious boundaries: one of these two new indistinguishable frameworks is the expert and the other is the slave. Moreover, in disarray application fields, these expert and slave synchronized frameworks are applied in secure correspondence to go about as transmitter and beneficiary individually. Mathematical test outcomes showed the chance of utilizing this proposed fragmentary request tumultuous framework in high security correspondences.

PIDA Regulator for Frequency Limitation of Conventional Power Systems

Smrutiranjan Nayak, Sanjeeb Kumar Kar, Subhransu Sekhar Dash, Madhab Chandra Das & Sarat Chandra Swain

Conference paper | First Online: 04 May 2022

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 431)

Abstract

PIDA regulator manages automatic generation control of power installation. In addition, in the affectability examination, the system limits, burden and the region of disturbance are changed, and the results are taken apart. PIDA is introduced to fulfill details for transient and consistent state reaction of a third request control framework. The proposed controller design techniques are also employed for controlling AC motor system models. In the proportional controller, rectification is applied to the controlled variable which is relative to the distinction between the ideal worth and estimated esteem. The integral controller can eliminate the steady-state error. The subordinate regulator detects the pace of progress of the blunder signal. Speed increase regulator is a high request control alternative that adds high request gains to the position control calculation. The presentation from the affectability evaluation appropriateness of hSGA/PS tuned PIDA regulator on AGC of the power structure.

A Comparative Analysis On 5G Cell Free Massive Mimo In Next Generation Networking Environment

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2022 International Conference on Intelligent Controller and Computing for Smart Power (ICICCSP) | 978-1-6654-7258-6/22/$31.00 ©2022 IEEE | DOI: 10.1109/ICICCSP53532.2022.9862350

***Abstract*— Next generation 5G network provides solution for rigorous demand for data with increasing network speeds. Now-a-days cell free 5G network can resolve many issues such as interference that appear in cellular configuration. Massive MIMO with cell free configuration is one of the solutions for massive-MIMO with conventional cellular network.This is also called cell free (CF) MIMO in massive. A CF Massive-MIMO system consists of number of access points (APs) which are distributed uniformly. It serves few numbers of user equipment at same frequency or time resources. It is based on characteristics of channel which is measured directly. Eachuser and APs possess only single antenna. The channel state information is acquired by APs through time division duplex(TDD)operation. Users transmits uplink pilot signals. The Multiplexing/de-multiplexing performed by APs through matched filtering during uplink and conjugate beamforming during downlink. The simplified expressions for uplink and downlink throughputs of single user would lead to maximum/minimum power control algorithms. The objective is to focus a comparative analysis on optimized cell free network which has maximum the coverage area, and a minimum transmission power. The interference problem can be resolved in operation of cell free network and it can resolve by using cell free network that appear normally in cellular network. The major challenge is to achieve the benefits of cell-free configuration that it can scalable to large network with increase in number of users. A frame work could arrive for scalable massive MIMO in cell free system by using the concept of dynamic cooperation cluster (DCC). Several algorithms are used for jointly initial access to appoints master AP, assignment of pilot signals to invite other APs, and cluster formation. It has been proved that it can be scalable. Also, the standard channel estimation, different precoding methods, and combining methods have been adopted for making the system scalable and robust.**

Keywords*— *Cell free massive MIMO,5G, access points, Dynamic cooperation clustering, scalable, spectral efficiency

I. Introduction

Nowadays, next generation network is the main topic of research study in worldwide. In telecommunication field, fifth-generation (5G) has been standardized. The next generation 5G and beyond 5G is expected to connect billion of devices by the network.5G wireless networks technology has standardized. Therefore, 5G network will provide the solution of continuous growth of smart devices. These devices have different features and different quality of service (also called QoS) such as data rates(Gbps), throughput, latency(msec) and reliability.

5G system are designed to come up with higher capacity such as data rate of 1 Gbps [3] and latency up to 1 - 5 msec and achieving better cost efficiency and energy .5G networks expected to provide wider spectrum [12] and high data rates (in multiple gigabits per second) [20] for mobile users. Massive MIMO is one of the technologies [22] used to implemented into the 5G for both cellular network and cell free network. In massive MIMO systems base stations (BSs) consists of 2^n number of antenna elements over the samefrequency band and time that connect with number of user equipment which has single or multi antenna. The power consumption may increase in the 5G networks. So cell free Massive MIMO may have better power consumption than now-a-days conventional 4G base stations.

In cell free massive MIMO, each base station equipped with massive number of antennas to serves many users in the same frequency band and time.5G wireless technology provides high throughput and better reliability. Each base stations with massive antenna arrays deployed in distributed setups over a large area. Central processing unit is present to exchange information between central processing unit and APs.Power control coefficients changes slowly. Channels estimated [7] through the help of uplink pilots at AP.The channel estimates which is obtained is used to precode the downlink data [7] and detect the data in the uplink [8].

The Dynamic Cooperation Clustering (DCC) [7] is a unique technique used for CF massive MIMO which is used to develop a specific algorithm for jointly initial access, cooperation cluster formation , and pilot assignment. Spectral Efficiency [12] expressions are derived for both uplinkand downlink transmissions.Firstly,to implement centralized network,all APs receives pilot signal and then it performs channel estimation and finally it processes UL and DL data signals.Secondly, to implement decentralized network, all APs estimates channels of UEs and process data signals.Decoding and encoding of data signals are carried out through pilot signal at the CPUs.

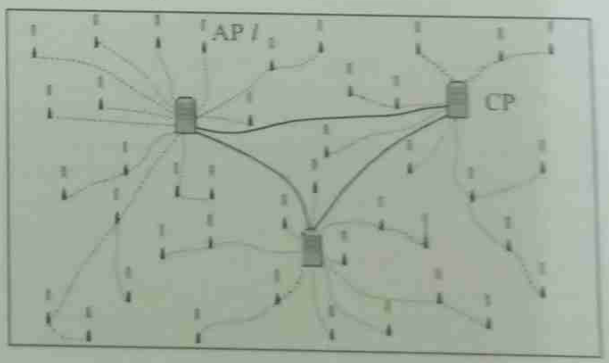

Fig.1:Distributed APs connects to CPU in cell free Massive MIMO network[8]

II. Cell-Free Massive MIMO

The objective of cell free network is to advanced backhaul to provide good service for each users in uniformly distributed base station antennas. The main aspect is many

HEALING EFFECT OF YOGIC PRACTICES: AN EXPERIMENTAL ANALYSIS

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2022 Second International Conference on Computer Science, Engineering and Applications (ICCSEA) | 978-1-6654-5834-4/22/$31.00 ©2022 IEEE | DOI: 10.1109/ICCSEA54677.2022.9936563

***Abstract*— This study was designed to understand the healing effects of yogic practices in a scientific way. In 30 days, duration. It had modules related to dynamic exercise and improvement of respiratory pressure reducing tachycardia, increasing handgrip strength and handgrip endurance. Fifty-Six healthy samples (30males & 26 females, aged 19 to 24 of Ravenshaw University, Cuttack) were subjected to yogic practices regularly. Blood pressure, pulse rate and oxygen level was measured with a non-invasive automatic blood pressure monitor and oximeter. Measurements were recorded before the training and after the activity every day. After 2 Weeks of training there was a fall in Systolic Blood Pressure (SBP) and Diastolic Blood Pressure (DBP) and Mean Blood Pressure (MBP) as well as Pulse Pressure (PP) (PP = SBP - DBP). Every day after each yogic practice, there was a remarkable change in SBP and DBP. Our result shows that ancient Yoga training optimizes the sympathetic response to stressful stimuli like isometric handgrip tests and restores the automatic regulatory reflex mechanism in hypertensive patients.**

Keywords - component, formatting, style, styling, insert

I. INTRODUCTION

Yoga is a path that leads to entire body, mind, and spirit harmony. Yoga is derived from the Sanskrit word "Yuj," which meaning "unity." Individual consciousness is united with universal consciousness. Yoga is more than just a kind of physical exercise. It is an ancient wisdom for living a healthier, happier, and more peaceful life, which eventually leads to connection with the Self. Yoga is an ancient science that has been practiced for thousands of years. It causes physiological changes and has a solid scientific foundation. Scientists all across the world have examined Yogasana and found that it promotes longevity and has therapeutic and rehabilitative effects. Various Yogic techniques are recorded in ancient Indian literatures such as Patanjali Yoga Sutra, Gheranda Samhita, and Bhagavad Gita. The scientific approach towards Yoga was adopted in various countries. Specific Yogasana and pranayama are recommended for hormonal balance, various systems and organs of our body. Sincere practicing of Asana fulfills various needs of the musculo-skeletal, digestive, respiratory and nervous system. Sincere practice of Yogic exercises aids in the prevention and management of very prevalent diseases such as diabetes, hypertension, and endocrine disorders. Arthritis, asthma and chronic fatigue can also be reduced. Yoga has a great impact in the therapeutic and prevention of high blood pressure and **tachycardia**. The Yogic pranayama and breath control techniques lowers the blood pressure. The asana decreases the sympathetic tone, Pulse Pressure (PP) and improves cardiovascular endurance.

II. BACKGROUND

Description of the condition cardiovascular disease (CVDs) are a group of disorders of the heart and blood vessels, which include CVDs due to atherosclerosis (coronary heart disease (CHD), cerebrovascular disease, and peripheral vascular disease) and other CVDs (rheumatic heart disease, congenital heart disease, cardiomyopathies, and cardiac arrhythmias) [3]. Atherosclerosis is a complex process that occurs in the walls of blood vessels over many years, where fatty material and cholesterol deposit and form plaques, which narrow and stiffen arteries and reduce blood flow [2]. Ruptured plaques can create blood clots, which can lead to heart attacks if they form in the coronary arteries and strokes if they originate in the brain (WHO 2011) [1].

CVDs are the biggest cause of death worldwide, accounting for 17.7 million deaths in 2015.; this represented 31% of all global deaths that year, over three-quarters of which occurred in low and middle income countries (WHO 2017). Of these 17.7 million deaths, 7.4 million were due to CHDs and 6.7 million were due to stroke (WHO 2017) [6]. Many CVDs are preventable by addressing behavioral cardiovascular risk factors, the most important of which are unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol which in turn can affect markers of increased CVDs risk such as raised blood pressure, raised blood glucose levels, raised blood lipids, and overweight and obesity (WHO 2017) [7]. Population-wise strategies to address these behavioral risk factors and health policies to create environments where healthy options are available and affordable are recommended (WHO 2017) [3]. Other determinants of atherosclerotic CVDs include advancing age, hereditary factors, gender, poverty, and psychological factors including stress and depression (WHO 2011) [1]. Psychosocial stress has been shown to be a risk factor for CVDs (Dimsdale 2008; Merz 2002; O'Donnell 2010; Rosengren 2004; Yusuf 2004), and clusters with other behavioral risk factors such as smoking and increased consumption of alcohol and unhealthy foods [8]. Because many of these risk factors are associated with lifestyle choices and are modifiable, they have become the focal point of CVD prevention measures [1]. It is estimated that as much as 90% of the population-attributable risk for CHDs (specifically myocardial infarction) and stroke worldwide is accounted for by contributions from nine modifiable risk factors: abnormal cholesterol, raised blood pressure, diabetes

978-1-6654-5834-4/22/$31.00 ©2022 IEEE

Mental Stress Detection Using GSR Sensor Data with Filtering Methods

| Conference paper | First Online: 04 May 2022

| pp 537–548 | Cite this conference paper

Intelligent Systems

Ramesh K. Sahoo, Alok Ranjan Prusty, Ashima Rout, Binayak Das & Padmini Sethi

Part of the book series: Lecture Notes in Networks and Systems ((LNNS,volume 431))

Energy Efficiency and BER analysis of Concatenated FEC Coded MIMO-OFDM-FSO System

Publisher: IEEE

Chinmayee Panda ; Urmila Bhanja All Authors

Abstract:
Various advanced digital signal processing techniques that includes modern algorithms and optimizations are applied to MIMO-OFDM system for cost and complexity reduction.... **View more**

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Published in: 2022 IEEE Fourth International Conference on Advances in Electronics, Computers and Communications (ICAECC)

Date of Conference: 10-11 January 2022

DOI: 10.1109/ICAECC54045.2022.9716656

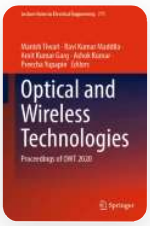
Date Added to IEEE *Xplore*: 23 February 2022

Publisher: IEEE

Effect of Code and Frequency Index Modulation in MIMO–OFDM–FSO System

| Conference paper | First Online: 02 September 2021

| pp 89–95 | Cite this conference paper



Optical and Wireless Technologies

Chinmayee Panda & Urmila Bhanja

Part of the book series: Lecture Notes in Electrical Engineering ((LNEE,volume 771))

Abstract

This paper analyses the MIMO-OFDM-FSO system using code and frequency index modulation. In this scheme, a joint code and frequency index modulation (CFIM) is used that enhances spectral and energy efficiencies. In weak turbulence condition for a particular spectral efficiency value, a comparative analysis is done by taking conventional OFDM, CFIM scheme with OFDM and MIMO-OFDM system in free space. The CFIM-MIMO-FSO scheme exhibits the lowest BER as compared to conventional OFDM and

Preliminary Security Measures for Smart Meters

Publisher: IEEE

Urmila Bhanja ; Swagat Kumar Jena ; Prateekshya Priyadarshini ; Samyat Sahu ; Pratik Parida All Authors

Abstract:
Internet of things (IoT) devices and Smart Grid systems stand up to the modern-day challenges for Sustainable Energy Management. But security becomes an issue with the co... **View more**

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Internet of things (IoT) devices and Smart Grid systems stand up to the modern-day challenges for Sustainable Energy Management. But security becomes an issue with the connectivity of growing devices with an internet. These security issues are often overlooked by many companies and clients. The smart grid market brings in new players who may not be enabled with enough funds to invest heavily on security solutions and can be easy victims to compromising attacks that could lead to disastrous results. Our motive is to propose a minimum first line of security solution for smart meters that can be developed with almost very little expenditure and at the same time could be extremely effective in holding off many attacks.

Published in: 2022 IEEE Delhi Section Conference (DELCON)

Date of Conference: 11-13 February 2022

DOI: 10.1109/DELCON54057.2022.9752823

Date Added to IEEE *Xplore*: 20 April 2022

Publisher: IEEE

ISBN Information:

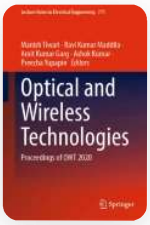
Conference Location: New Delhi, India

Contents

Design and Performance Analysis of an Encrypted Two-Dimensional Coding Technique for Optical CDMA

| Conference paper | First Online: 02 September 2021

| pp 573–583 | Cite this conference paper



Optical and Wireless Technologies

Urmila Bhanja

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Abstract

Recently, security plays an important role in wired and wireless optical communication. An eavesdropper or a jammer can intercept the data using sophisticated equipment. An eavesdropper can also tap the data. Hence, security in optical communication network plays a significant role and needs to be addressed. In this paper, security is enhanced by incorporating an encryption module to the existing 2D MDPHC encoder circuit referred in this work as integrated multi diagonal prime hop code (IMDPHC). The data in the OCDMA

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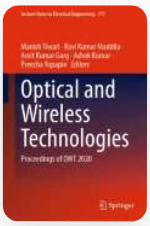

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Date Added to IEEE *Xplore*: 23 February 2022

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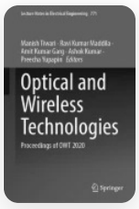

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Energy Efficiency and BER analysis of Concatenated FEC Coded MIMO-OFDM-FSO System

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2022 IEEE Fourth International Conference on Advances in Electronics, Computers and Communications (ICAECC) | 978-1-6654-0239-2/22/$31.00 ©2022 IEEE | DOI: 10.1109/ICAECC54045.2022.9716656

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Keywords*— *MIMO-OFDM, Concatenated FEC Codes, Gamma-Gamma Channel, Energy Efficiency, FSO

I. INTRODUCTION

Free space optical (FSO) communication defines the technology in which the medium between Transceivers is taken as free space and light signal travels in that medium. License free spectrum and high bandwidth are the prime factors to select the free space as the medium of optical communication. Military systems use FSO due to their inherent benefits. Absorption, scattering and the turbulence conditions of atmosphere are the main obstacles of free space optical communication that degrades the signal strength at receiver end. The BER of the received dada at receiver end influenced by variation in transmission power and attenuation factor [1]. Orthogonal frequency division multiplexing (OFDM) is a transmission scheme where multiple number of subcarriers are orthogonal to each other & is a spectrally efficient transmission scheme. OFDM is taken in several wireless standards such as IEEE 802.119, IEEE 802.16 etc. OFDM is mainly famous for spectral efficiency, flexibility to allocate resources that saves the bandwidth [2]. The concept of MIMO invented by Greg Raleigh in 1996 & its investigated that various data streams bearing similar frequency can be transmitted at the similar time. By utilizing this concept MIMO is implemented & used in wireless medium as well as free space medium [3]. Using OFDM modulation MIMO is most manageable at higher speed. Spectral diversity is the prime cause for choosing multi input and multi output system. MIMO is famous for capacity coverage, range enhancement and signal fading reduction. MIMO with OFDM overcomes the problems of multipath fading and both the combined techniques (MIMO with OFDM) provides more data throughput & larger spectral efficiency [4]. Different forward correction codes such as LDPC code, BCH code, Reed Solomon code and Convolution code are taken in different turbulence conditions in free space. The use of forward error correction codes results highest Q value with lowest BER [5]. To achieve better performance the forward error correction codes are concatenated with each other and applied to FSO [6-8].

The experiment on MIMO-OFDM-FSO system allows for controlling the communication system by increasing the efficiency of the system and reducing energy consumption with cost [9].The arrangement of the paper is given as: Section I covers Introduction part, Section II analyses different FEC codes , Section III describes system model, channel model, BER and Energy Efficiency calculation, Section IV exhibits simulation result and Section V covers the conclusion part.

II. FORWARD ERROR CORRECTION CODES & SYSTEM MODEL

A. LDPC Code

Various techniques are used to overcome the error occur during transmission of signal. FEC are needful to minimize errors at receiver side in communication system since some redundancies are added to the data. Low density Parity check code.

(LDPC) is one of the most useful forward error correction code since it has good error performance for low SNR.As compared to other decoders its decoding scheme is not very complex. It contains low density parity check matrix which indicates its name [6].

Decoding scheme using LDPC code:

- Generation of H matrix and derivation of G matrix.
- Creation of random sequence & encryption with the generator matrix.
- Modulation process using 64 QAM and Transmission of signal in Gamma-Gamma channel.
- Addition of noise in free space

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Improving Navigational Parameters During Robot Motion Planning Using SOMA Technique

Prasant Ranjan Dhal, Pragyan Kumar Pradhan, Manoj Kumar Muni, Saroj Kumar, and Ansuman Padhi

Abstract Science and technology have progressed in recent years as robots gained their popularity in industrial applications with real-time scenarios. The effective and efficient use of robots in real-time applications become a challenging task for the researchers. Use of intelligent algorithms for trajectory generation with proper motion planning while performing required task is required criterion for robotic agents. The Self-Organizing Migrating algorithm (SOMA) is used in this study to plan optimal paths for many mobile robots in both static and dynamic environments. This technique was simulated in V-REP simulator, and the outcomes have been validated in an experimental platform with real Khepera III robots under laboratory conditions. The simulation and experimental outcomes with very less navigational parameter deviation depict the effectiveness of the implemented intelligent path planning algorithm.

Keywords SOMA · Motion planning · V-REP simulator · Khepera III · Navigational parameters

1 Introduction

Mobile robots gained their applications to perform tedious works in real-time scenarios. To do this path planning is the main area of concern. In this research, Khepra-II mobile robot is considered for both simulation and experimental endorsement. The research focuses on mobile robot navigation in a complicated environment

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S. K. Udgata et al. (eds.), *Intelligent Systems*, Lecture Notes in Networks and Systems 431, https://doi.org/10.1007/978-981-19-0901-6_17

A Fuzzy AHP Approach to Evaluate the Strategic Design Criteria of a Smart Robotic Powered Wheelchair Prototype

Sushil Kumar Sahoo and Bibhuti Bhusan Choudhury

Abstract In the product development process of a prototype, the most noteworthy task is to select important engineering characteristics (ECs) to avoid early stage failures such as design manufacturing, assembly, and operating errors. Hence, it is very essential to identify and reveal the conflicting design criteria with the various labels of importance associated with it. In this work, an investigation on the prototype design of a smart robotic powered wheelchair (SRPW) is proposed to select and rank the design criteria based on multi-criteria decision-making (MCDM) methods. We have introduced two new additional design criteria, namely functional performance of wheelchair (FPW) and user immediate environment (UIE) to the existing attributes. Then, we apply analytical hierarchy process (AHP) to analyze the importance of various criteria. Furthermore, a fuzzy analytic hierarchy process (FAHP) is used to validate the results of AHP as the various conflicting criteria's rating provided by expert's acumen on the presence of these engineering characteristics could be personalized, unclear, and uncertain. In the present analysis, FPW design criteria turn out to be an important criterion for designing a SRPW, as it comes in second position in the priority level following the manufacturing cost criterion out of seven nos. of design criteria that are identified, selected, and analyzed for the proposed wheelchair. Whereas UIE placed fifth rank in this analysis and manufacturing cost as a criterion has the highest weight of 0.3657 corresponding to other ECs. It was found that both AHP and FAHP give similar result regarding the importance of calculated weights assigned to the attributes. So, this study will assist the decision maker in a better way while evaluating different factors required for the early stage design of the product as it analyzes a more number of important criterions.

Keywords Smart robotic wheelchair · Fuzzy AHP · Design criteria ranking · Soft computing

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S. K. Udgata et al. (eds.), *Intelligent Systems*, Lecture Notes in Networks and Systems 185, https://doi.org/10.1007/978-981-33-6081-5_40

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Materials Today: Proceedings

Volume 49, Part 5, 2022, Pages 1905-1909

Dielectric properties of Steel Melting shop (SMS) slag

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Received 1 July 2021, Revised 9 August 2021, Accepted 12 August 2021, Available online 26 August 2021, Version of Record 7 January 2022.

What do these dates mean?

https://doi.org/10.1016/j.matpr.2021.08.081

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Abstract

Many researchers have been focused on the better way to increase the utilization of industrial by-products for the road construction and tile productions. However, none of the research results have reported the functional characteristics of SMS slag. This paper deals with the processing and functional characterization of SMS slag using novel powder metallurgy method. The particle sizes, mineralogical phases, and dielectric constant were determined by XRF, BET, XRD and Impendence analyzer respectively. The effect of reduction of particle size on the functional properties of SMS slag was revealed that reduction in particles of slag decreases the dielectric properties of slag at 600°C. As results, 50.65 wt% of free CaO phase was present in the slag samples. It is suggested that SMS slag can be useful for the electronic packaging applications.

Introduction

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Materials Today: Proceedings

Volume 49, Part 5, 2022, Pages 1782-1785

Mechanochemical synthesis of $CaTiO_3$ powders: Microstructure and surface morphology

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Received 27 June 2021, Revised 3 August 2021, Accepted 4 August 2021, Available online 19 August 2021, Version of Record 7 January 2022.

What do these dates mean?

https://doi.org/10.1016/j.matpr.2021.08.017

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Abstract

Calcium titanate (CT) is a material that is similar to hydroxyapatite in biological properties. In this report, CT powders was prepared by using high energy planetary ball mill and to determine their phases distribution, microstructure and surface morphology as an effect of milling duration was characterized by XRD, SEM, and BET analysis. As results, XRD, SEM and BET analysis indicate that all the peaks were the $CaTiO_3$ powders in regular shape and uniformly distributed size of 2 µm in 32 h. Finally, it can be concluded that with increasing the milling time has significantly influenced and reduced $CaTiO_3$ crystalline powders after calcinations.

Introduction

Slurry Erosion Behaviour of HVOF-Sprayed NiAl Composite Coating

Pragyan Senapati, Harekrushna Sutar, Rabiranjan Murmu, and Shubham Gupta

Abstract Nickel-aluminium coating was deposited on AISI 304 stainless steel by HVOF process. The coating was characterised by scanning electron microscope and optical microscope. The surface hardness, surface roughness, thickness and fracture toughness value of the coating was determined. Slurry erosion testes were carried out on both the coated and uncoated samples by varying the impact angles at 30°, 60° and 90°, and their slurry erosion behaviour was studied. The coated samples exhibited 3.5 times, 1.9 and 1.04 times more resistance to slurry erosion at 30°, 60° and 90° impact angle, respectively, than the uncoated bare steel.

Keywords HVOF · Slurry erosion · NiAl

1 Introduction

The HVOF coatings are characterised by wear, corrosion and abrasion resistance along with protection of the substrate at high temperature. This coating process is carried out at a temperature of about 3000 °C and velocity of 1000 m/s. HVOF technique uses wide variety of coating powders: metals, ceramics, metal alloys and cermets. Coating powders of size ranging from 4 to 45 μm can be coated, and coating thickness of few millimetres can be obtained by this process. The advantages of HVOF coatings over other thermal coating processes are mostly related to its high coating quality such as high density, low porosity, retention of the powder chemistry, low in/flight exposure time leading to lower oxide content, smoother and thicker coatings due to high impact velocity and low residual stresses, respectively [1–3]. There are certain disadvantages of HVOF coatings such as complexity in the properties and microstructure of the coatings due various coating parameters,

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P. Pradhan et al. (eds.), *Recent Advances in Mechanical Engineering*,
Lecture Notes in Mechanical Engineering,
https://doi.org/10.1007/978-981-16-9057-0_68

BOOK CHAPTER

Author Proof

Recycling and Reuse of Iron Ore Pellet Fines

P. Prusti, K. Barik, D. K. Sahu, S. Soren, B. C. Meikap, and S. K. Biswal

1 Introduction

Iron ores are valuable natural resources being finite and non-renewable. Iron ore is one of the basic raw materials for iron and steel industries. It is predicted that the world steel production may reach more than 2600 million tonnes and in India it may reach 300 million tonnes by 2030 [1]. This has resulted in a large increase in the demand for iron ore. It is a great concern for steel industries to either receive suitable quality iron ore in the form of lumpy or sinter/pellet. To utilize the ultra-fine particles after beneficiation of low and lean grade resources, pelletization is the only alternative technology. Therefore, a greater number of pelletizing plants have been set up all over the world having capacity more than 800 million tonnes per annum to utilize iron ore high-grade fines to improve the conservation of iron ore in the world.

During pelletization process and preparation of feed for DRI or reduction smelting processes, around 3% of pellet fines (less than 8 mm) is generated as undesired product in existing pelletization plants. The quantity will be more than 24 million

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R. Prasad et al. (eds.), *Advancement in Materials Processing Technology*,
Springer Proceedings in Materials 12,
https://doi.org/10.1007/978-981-16-3297-6_17