COMPILATION OF SUCCESSFUL FRGS 2021 PROPOSALS

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Abstract: The publication of 'Compilation of Successful FRGS 2021 Proposals' serves the essential purpose of guiding readers through the context in which their research proposals will be evaluated. It provides insights into the expectations of reviewers and the evaluation panel, shedding light on what influences the funding policy and budget allocation, particularly concerning research output. This resource is invaluable for academics, researchers, and postgraduate students seeking to craft compelling grant applications and research proposals. Within this book, you will find fourteen research proposals that encompass a wide range of multidisciplinary and interdisciplinary research areas, all of which received funding from the Malaysian government. These proposals serve as exemplars of high-quality research proposals, offering clear and engaging writing. Each proposal is extensively annotated, providing a user-friendly guide that makes it easy for readers to understand and follow the rules and guidelines for effective proposal writing. Additionally, 'Compilation of Successful FRGS 2021 Proposals' offers a concise explanation of how to address key elements, such as project background, knowledge domain, and the significance of the research issues at hand. It educates researchers on the critical factors involved in the journey from developing a scientific idea to successfully crafting a research proposal.

Keywords: Purpose, application, research, proposal

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2024

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PREFACE

The publication of ‘Compilation of Successful FRGS 2021 Proposals’ serves the essential purpose of guiding readers through the context in which their research proposals will be evaluated. It provides insights into the expectations of reviewers and the evaluation panel, shedding light on what influences the funding policy and budget allocation, particularly concerning research output. This resource is invaluable for academics, researchers, and postgraduate students seeking to craft compelling grant applications and research proposals. Within this book, you will find fourteen research proposals that encompass a wide range of multidisciplinary and interdisciplinary research areas, all of which received funding from the Malaysian government. These proposals serve as exemplars of high-quality research proposals, offering clear and engaging writing. Each proposal is extensively annotated, providing a user-friendly guide that makes it easy for readers to understand and follow the rules and guidelines for effective proposal writing. Additionally, ‘Compilation of Successful FRGS 2021 Proposals’ offers a concise explanation of how to address key elements, such as project background, knowledge domain, and the significance of the research issues at hand. It educates researchers on the critical factors involved in the journey from developing a scientific idea to successfully crafting a research proposal.

CHAPTER1

PURE AND APPLIED SCIENCES

ENHANCING LUNG CANCER RISK PREDICTION IN MALAYSIA: A NOVEL FLRWSPCSVM APPROACH FOR HIGH-RISK SYMPTOM IDENTIFICATION

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1.0 INTRODUCTION

Lung cancer or scientifically called as lung carcinoma has been declared by Ministry of Health Malaysia (MOH) as the leading cause of death in Malaysia. In year 2020, more than 4509 number of deaths which is equal to 11.53 percent. The problem will become more crucial when the process if analyzing data using existing model that is uncertainty and the symptoms are interconnected. It is also reported that study on the high-risk symptoms of lung cancer in Malaysia still ambiguous and unclear.

Thus, Fuzzy Linear Regression (FLR) has been employed for analyzing data due to its ability to represent and quantify the uncertainty aspect. Fuzzy Linear Regression is a theory concept can deal with uncertainty data point value. Using FLR, this study proposes the new hybrid for Fuzzy Linear Regression with Symmetric Parameter Clustering with Support Vector Machine (FLRWSPCSVM) to predict the high-risk symptoms that contributes to the development of lung cancer in

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ENHANCING PORT GOVERNANCE AND SAFETY NAVIGATION EFFICIENCY: A FRAMEWORK FOR MARINE SPATIAL PLANNING WITH RISK ASSESSMENT IN PORT KLANG

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1.0 INTRODUCTION

Port Klang is Malaysia's main gateway, and is Malacca's busiest harbor on the Western Coast of the Malaysian Peninsular. Port Klang is served by three major gateways: North Port (Northpoint), South Port (Southpoint), and Westports. The port covers an area of approximately 70 square nautical miles, which includes the waterways

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FORMULATION OF A NOVEL MODIFIED HYBRID SHOOTING METHOD FOR SOLVING NON-CLASSICAL OPTIMAL CONTOL PROBLEMS WITH PIECEWISE FUNCTIONS IN ECONOMIC ROYALTY PAYMENT MODELS

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1.0 INTRODUCTION

In 1981, Spence proposed an economic model formulation where the functional involved royalty function which denoted as ρ . He did not specify or proposed a specific technique to solve e model. Therefore, this issue hase been interested by Zinober and Kaivanto in 2008. Zinober and Kaivanto in 2008 considered a framework which consisted of a piecewise continuous cumulative royalty schedule. The main idea of the research was to maximize the performance index that consists of an unknown state variable value at final time T, and the integrand is a piecewise continuous. They proposed a methodology to solve Spence (1981) economic model where the problem is converted into matrix formulation. However, solving this interesting problem has presented two difficulties (Zinober & Kaivanto, 2008): (1) the discontinuous changes in the level of the regime royalty are not fully differentiable

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CHAPTER 2

INFORMATION AND COMMUNICATION TECHNOLOGY

AN ADVANCED MODIFICATION OF GLOWWORM SWARM OPTIMIZATION ALGORITHM TO ENHANCE SURFACE QUALITY IN PRECISION MACHINING

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1.0 INTRODUCTION

The most conflicting criteria that always being concern in today's manufacturing industry are improving the productivity and quality of the products. Recently, non-traditional machining processes have widely been used in manufacturing industries due to some advantages such as in terms of cost compared to traditional machining process. Additionally, non-traditional machining processes also enables to solve a problem of high complexity in shape, size and higher demand for product accuracy and surface finish (Khan, M. S., Zafar, M., & Jeevan, T. P. *et al.,* 2017). Instead, traditional machining process has been stated more costly and inefficient because unable to machine them economically due to its tools material that is harder than the work piece material. Nowadays, the selection of optimal machining parameters is important in order to have high quality products and increasing the productivity in low cost Johari, N. et al. (2017). Thus, the poor selection of machining parameters may cause excessive tool wear and increase work-surface roughness (Bagaber, S. A., & Yusoff, A. R. *et al.,* 2017). Traditional selection of EDM parameters is depending on machinist experiences or handbook values which turns out less effective (Ram Prabhu, T *et al.,* 2018).

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IMPROVING SECURITY AND EFFICIENCY IN MULTI-PARTY QUANTUM COMMUNICATION THROUGH AN ENHANCED MULTIPHOTON APPROACH

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1.0 INTRODUCTION

The multiphoton approach is the enhancement version of single photon that has the benefits of high transmission rates and long photon traveling distance over the Quantum Communication network. Despite the advantages of multi-photon over multi-stage transformation, it remains a challenge to enforce the authentication on behalf of multiple parties in the quantum channel since the existing multiphoton only consider two parties involved in the secret sharing of the message. Therefore, the scalability issue during the authentication is arising here in terms of extending the number of parties involve in the quantum network. The authentication procedure should be executed throughout quantum data exchange process to ensure that the parties involved in the protocol are who they are supposed to be. This research aims to propose an enhanced multiphoton approach for authentication and secret sharing procedures for multi-party Quantum Communication with a secure and low quantum computational complexity.

The multiphoton approach as the quantum state will be enhanced, followed by the development of authentication between the legitimate parties and the process of secret sharing message. To examine the performance of the proposed approaches, extensive simulation experiments were carried out using the Python program and the result will be carried out through performance evaluation metric.

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CHAPTER 3

SOCIAL SCIENCES

PEMBANGUNAN KERANGKA MODEL MENANGANI DEFISIT AGAMA DALAM KOMUNITI BERASASKAN NILAI DAN AMALAN KEINSANAN

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1.0 PENGENALAN

Keharmonian, kesepaduan dan perpaduan adalah kunci kemajuan. Justeru, ia akan terus diangkat sebagai agenda utama kerajaan dalam menjadikan Malaysia sebuah negara bersatu, makmur dan bermaruah selaras dengan matlamat Wawasan Kemakmuran Bersama (WKB) 2030. Bagi mencapai agenda tersebut, komuniti merupakan sasaran utama dilihat mampu mengurangkan defisit agama seterusnya mengharmonikan agama, mengukuhkan perpaduan dan keharmonian dalam masyarakat majmuk. Tingkah laku dan amalan berlandaskan nilai-nilai keinsanan penganut pelbagai agama dalam komuniti dapat menstabilkan hubungan masyarakat dan membentuk masyarakat yang cintakan kedamaian. Justeru, kajian ini menyenaraikan tiga objektif yang perlu dicapai iaitu menentukan elemen-elemen asas nilai dan amalan keinsanan masyarakat penganut pelbagai agama dalam komuniti. Seterusnya, menentukan faktor-faktor yang membentuk dan memupuk nilai dan amalan keinsanan dalam masyarakat penganut pelbagai

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CREATING A STRATEGIC FRAMEWORK FOR THE SUCCESSFUL IMPLEMENTATION OF FUNDING FORMULAS IN MALAYSIAN PUBLIC UNIVERSITIES

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1.0 INTRODUCTION

As stated in the Malaysia Education Blueprint 2015-2025 (Higher Education), the MoHE will link government funding mechanisms, and encourage HLIs to diversify funding sources. Among the key initiatives are improving the funding formulae for public HLIs by replacing block grants with performance-linked and per-student funding, implementing five-year performance contracts (3+2), and targeting government investment in priority areas. The Malaysia Education Blueprint 2015-2025 (Higher Education) - Wave 2: Accelerate system improvement (2016–2020) highlighted that the MoHE will introduce new funding formulae and performance contracts for public universities with clear KPIs. The desire to improve the efficiency and effectiveness of funding HEIs has led to the formulation of many policy reforms.

Malaysia needs a long-term financing system for higher education that will sustain and rapidly improve the nation's ability to provide accessible, equitable, high-quality education that meets international standards. Therefore, it is crucial to implement good funding formulae as it can contribute to a well-financed system. Funding formulae is the result of applying a mathematical formula to decide on the allocation of resources to higher education institutions that includes criteria related to institutional size as well as unit costs and measures of institutional

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ENHANCING THE RESILIENCE OF MODERN OFFICE BUILDINGS THROUGH PROFILE-DRIVEN DECISION-MAKING IN RESPONSE TO POST-PANDEMICS AND UNFORESEEN EVENTS

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1.0 EXECUTIVE SUMMARY OF RESEARCH PROPOSAL

The Covid-19 pandemic that has been impacting the world has opened the eyes of many in terms of security, health, and economy. With the Movement Control Order (MCO) imposed almost a year ago, this pandemic has affected the property sector where the property market report for 2020 indicates office building occupancy rate has declined to 77.3% in the Q2 of 2020 compared to 81.5% in the Q2 of 2019. It is especially troubling when it seems to have shown our office buildings are less conducive. Moreover, there is a dissonance between the announcements of increased offerings of new office space in the future and new norms that have been introduced such as working from home (WFH) that has been practised by almost all private and government sectors. Therefore, this research aims to reshape modern office buildings that would be resilient based on profiling in decision-making to address pandemics and unpredicted phenomena in the future. The methodology of this research is by employing the integration-based mixed-method approach of Delphi-AHP methods. Delphi method is functioning in identifying the criteria of resilient and sustainable office buildings through opinions of the experts in the property industries. Meanwhile, Analytical Hierarchy Process (AHP) method will measure those criteria more holistically, regardless of whether they are in physical or non-physical forms. By integrating these methods, profiling for modern office buildings in this country will be generated and could be adopted as an indicator to overcome the impacts from pandemics

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CHAPTER 4

TECHNOLOGY AND ENGINEERING

OPTIMIZING FRACTURE MECHANISM CHARACTERISTICS IN PPNCGS NANOCOMPOSITES VIA OPTIMIZED INJECTION MOULDING PROCESSING CONDITION

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1.0 INTRODUCTION

A fundamental disadvantage of using bamboo fibers in composites is their hydrophilic nature and poor adherence at the fiber-matrix contact. The difficulty is in determining the best formulation for the dispersion of the nanofillers and fibres in the polymer matrix, even if their presence could boost the strength and stiffness. Hence, finding the suitable formulation of the polymer nanocomposites- natural fibers is important to solve this issue.

The following issue was connected to a list of priorities for requirements or restrictions pertaining to injection moulding processing conditions. These include maximizing elements like output, strength, quality, conduct, efficiency, and usage. Many optimization techniques can be utilized. There are various types of optimization method that have been performed specifically in injection molding process, such as Response Surface Method, Fused Deposition Method and Taguchi Method. However, the close examples of using response surface method could be beneficial for further references.

For developing trustworthy theoretical models with more accurate descriptions of chain conformation statistics, especially regarding the effects of arrays of nanoparticles and natural fibers on the polymer matrix system, towards the life span of a product, the prediction was extremely important in terms of enhancing the polymer fracture mechanism. From this point of view, the optimize models should good enough to provide vital information about this new material ability

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EXPLORING THE CHARACTERISTICS OF PALM OIL-IN-WATER EMULSIONS FOR ABRASIVE BLASTING BY REDUCING ENVIRONMENTAL POLLUTION AND CORROSION RATES

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1.0 INTRODUCTION

Malaysia is a developing country and 69.7 percent of Malaysians involve in labour force which equals to almost 14.6 million people in November 2018 (Department of Statistics Malaysia, 2019). Industrial accidents rate in Malaysia are constantly high every year. The rate of accident reports to the responsible body are around 100 cases fo every 10,000 workers every year (Social Security Organisation, 2019). Abrasive blasting is one of the common activities in industry that are acutely and chronically dangerous mostly due to its abrasive blasting dust.

The dust release from abrasive blasting activities can be measured according to occupational exposure or as particulate matter (PM) emission into environment. Most studies stated that the dust release from abrasive blasting is high but there are limited data available until now regarding the occupational exposure to the abrasive blasting workers. Nationl Priority Area (NPA) by government of Malaysia has list the environment and climate change is one of the key priorities to move forward.

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INVESTIGATING IONOSPHERIC IRREGULARITIES WITH A COST-EFFICIENT GPS RECEIVER ENHANCED BY IOT ARCHITECTURE FOR ADVANCED SPACE WEATHER MONITORING IN MALAYSIA

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1.0 INTRODUCTION

The GPS satellite transmit signal to the receiver on the Earth and travels through the ionosphere that may be affected by irregularities. The increasing concentration of greenhouse gases, particularly carbon dioxide CO2, play a part in the atmosphere, troposphere and surface climate. It affects the entire atmosphere-ionosphere system and it induces long-term trends and/or climate change in the ionosphere. It is well recognised that progress in climate changes can benefit from observations made by ground-based system that can provide information and help advance understanding of the state of the space environment near the Earth. Extensive studies have shown the occurrence of ionospheric irregularities in the high- and mid-latitude regions, mainly due to the geomagnetic storm. In contrast to the equatorial region because geomagnetic storm rarely occurs in Malaysia. The ionosphere over Malaysia is unique in the equatorial regions but it may disrupt the amplitude and phase of propagating radio signals, an effect called scintillation. Scintillations can affect satellite communication and navigation performance like the GNSS. Amplitude

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KERANGKA PARIHS UNTUK MENGEMBANGKAN MODEL FASILITASI CEGAH ULANG-LAKU BAGI RESIDIVIS DENGAN MEMUPUK INTEGRASI SOSIAL DAN PEMBELAJARAN SEPANJANG HAYAT

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1.0 PENGENALAN

Peningkatan jumlah residivisme yang berlaku di Malaysia sering dibahaskan kerana telah mencetuskan masalah seperti peningkatan kos pengurusan, kesesakan di penjara, keraguan terhadap pelaksanaan program pemulihan dan peraturan penjara. Inisiatif kerajaan seperti program latihan, pemulihan dan rawatan yang diberikan ini diharapkan dapat membantu menyediakan penghuni penjara untuk menjadi masyarakat yang produktif. Pelaksanaan melalui Program Pembangunan Insan (PPI) diberikan supaya penghuni penjara tersebut dapat menempatkan diri ke dalam pangkuan masyarakat apabila dibebaskan kelak. Pendekatan ini adalah penting untuk mengatasi kesukaran golongan ini mendapatkan pekerjaan dan mengakibatkan residivis.

Walau bagaimanapun, setelah PPI diperkenal dan dilaksanakan mulai tahun 2002, jumlah residivis tidak menunjukkan penurunan sebaliknya ulang-laku jenayah menunjukkan trend meningkatan dari tahun ke tahun. Oleh itu, pembangunan model baharu fasilitasi ulang-laku residivis menggunakan pendekatan kerangka PARIHS dilakukan untuk membentuk residivis berintegrasi masyarakat dan berpendidikan sepanjang hayat. Hal ini penting untuk menentukan pendekatan dan latihan yang telah dan sedang dilaksanakan di penjara supaya PPI dapat dilaksanakan secara holistik kepada golongan ini. Pembangunan model ini diharap dapat mencetus dan merungkai isu-isu semasa tempoh transisi residivis. Selain itu, dapat menambah baik objektif PPI,

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CHAPTER 5

NATURAL AND CULTURAL

UNVEILING THE MECHANISM OF A GREEN ZIN COXIDE-CYMBOPOGON NARDUS (ZNO-CN) MEMBRANE PHOTOCATALYTIC REACTOR FOR POLLUTED RIVER WATER TREATMENT

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1.0 INTRODUCTION

According to the 15th Water Environment Partnership in Asia (WEPA) annual meeting 2020, reported that in year 2018, out of 638 monitored rivers, 56% were classified as clean, 36% as slightly polluted and 8% a polluted. The polluted rivers affect the sustainability of water resources, population and economy (Afroz, R. and Rahman. A *et al.,* ((2017).

The membrane photocatalytic reactor (MPR) system, incorporated green Zinc oxide (ZnO) nanoparticles as the photocatalyst, is a new hybrid technology for wastewater treatment, but for the treatment of

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PEMODENAN SENI BINA MELAYU TRADISIONAL: MENEROKAI MODEL PENYELIDIKAN 'RESARCH ONION' SEBAGAI KERANGKA ASAS SENI BINA MELAYU MODEN (SMM) DI MALAYSIA

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1.0 RINGKASAN EKSEKUTIF CADANGAN PENYELIDIKAN

Identiti seni bina kebangsaan merujuk kepada pembangunan karakter reka bentuk bangunan yang mencerminkan nilai kenegaraan. Pengadaptasian nilai reka bentuk seni bina Melayu tradisional kepada bangunan moden telah diwartakan sebagai salah satu jalan di dalam membina bahasa identiti seni bina kebangsaan seperti yang telah dinyatakan di dalam 'Seminar Ke Arah Identiti Kebangsaan Dalam Seni Bina' pada tahun 1981. Sungguhpun begitu, sehingga ke hari ini, pengadaptasian nilai warisan seni bina Melayu tradisional tidak dikembangkan mengikut konteks pembangunan reka bentuk bangunan baru masa kini. Hasilnya, lahirlah reka bentuk bangunan Melayu moden yang tidak menepati intipati nilai asal seni bina Melayu tradisional. Hal ini disebabkan oleh ketiadaan kerangka pemikiran asas Seni Bina Melayu Moden (SMM) yang jelas. Di samping itu, tiada dasar mahupun garis panduan khusus yang dimuktamadkan dalam pembangunan karakter reka bentuk Seni Bina Melayu Moden. Cubaan

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Compilation of SUCCESSFUL FRGS 2021 Proposals

The publication of 'Compilation of Successful FRGS 2021 Proposals' serves the essential purpose of guiding readers through the contxt in which their research proposals will be evaluated. It provides insights into the expectations of reviewers and the evaluation panel, shedding light on what influences the funding policy and budget allocation, particularly concerning research output. This resource is invaluable for academics, researchers and postgraduate students seeking to craft compelling grant applications and research proposals. Within this book, you will find 14 research proposas that encompass a wide range of multidisciplinary and interdisciplinary research areas, all of which received funding from the Malaysian government. These proposals serve as examplars of high-quality research proposals, offering clear and engaging writing. Each proposal is extentively annotated, providing a user-friendly guide that makes it easy for readers to understand and follow the rules and gudelines for effective proposal writing. Additionally 'Compilation of Successful FRGS 2021 Proposals' offers a concise explanation of how to address key elements, such as research issues at hand. It educates researchers on the critical factors involved in the journey from developing a scientific idea to successfully crafting a research proposal.

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