03/05/2023

To

The Principal

RAAK College of Engineering and Technology

Puducherry – 605 110.

Dear Sir,

**Subject: Sanction of Research Grant to RAAK College of Engineering and Technology, Puducherry – Reg.**

We are delighted to witness the commendable efforts and remarkable progress of RAAK College of Engineering and Technology, Puducherry. It gives us immense pleasure to acknowledge the strides your esteemed institution has made towards innovative research and technological advancements. We have thoroughly reviewed the proposal submitted by your Institution for the development of the project titled **"Experimental Investigation of Glass Fiber and Natural Fiber Reinforced Composite"** and are pleased to inform you that it stands approved.

In light of this approval, Techno Enterprises is eager to support and foster an innovative and entrepreneurial ecosystem at your institution. We are pleased to sanction a research grant of **Rs. 45,000/- (Forty-Five Thousand Rupees only)**, which will be provided through a cheque, to aid in the successful development and execution of this project.

We believe that this project holds significant potential for contributing to advancements in composite materials and reinforcing the innovative capabilities of your institution. We look forward to observing the impactful outcomes of this initiative.

Please do not hesitate to contact us for any further assistance or clarification. Wishing you continued success and looking forward to a fruitful collaboration.

With Regards,

Dr. S. SEENUVASAMURTHI, M.E., Ph.D.

PRINCIPAL

RAAK College of Engineering & Technology

No.1, Muthupillai Palayam Road

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Puducherry - 6

For Techno Enterprises

# RAAK

## COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
An ISO 9001:2015 Certified Institution

**Name of the Institution** : RAAK College of Engineering and Technology

Villiyanur,

Pondicherry.

**Project Title** : Experimental Investigation Of Glass Fiber And Natural Fiber Reinforced Composite

## Abstract :

The composite materials are used in the place of ordinary materials because of its properties like high rigidity, low warm development, high solidarity to weight proportion. The improvements of new materials are developing step by step. Blending of characteristic fiber with Polymers are finding expanded applications. Normal fiber composites, for example, Luffa and coconut fiber (coir) fiber strengthened polymer composites turned out to be progressively appealing because of their high specific quality, lightweight and biodegradability. In this investigation mechanical properties, for example, rigidity, hardness quality are assessed. For this, Natural fiber strengthened composites are fabricated utilizing pressure forming technique. These composites are thought about based on mechanical properties, for example, quality, durability, hardness and thickness and. so on. The outcomes showed that the fuse of Luffa (*Luffa acutangula*), Coconut or coir (*Cocos nucefera*) fiber with polymer can improve the properties and utilized as a substitute material for Glass fiber strengthened polymer composite.

## Research of the project Details :

Luffa (Luffa acutangula) fiber got from nearby wellsprings of Aralvoimozhi. Coconut or Coir (Cocos nucefera) fiber has been secured from Agasteeswaram, Kanyakumari area Tamilnadu, India and Polyester sap (P-502) and relating hardener (MEKP) provided by Ciba Geigy India Ltd

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are utilized to manufacture the example utilizing common strands. The bark and seed were expelled from luffa vegetable cautiously and afterward luffa fiber were cut into little pieces. Coconut coir strands were first sliced to the short fiber length. Composite tangle of uniform thickness was set up from Luffa fiber and short coir fiber of specific short fiber length. The two strands are strengthened with polyester tar. The polyester pitch and comparing MEKP hardener is blended in with the proportion of 10:1 by weight rate. The diverse cross breed composite sheet was set up with luffa fiber, coir fiber and luffa + coir fiber as fortification and weight portion. For brisk and simple evacuation of the manufactured composite plate discharging specialist is utilized. Shape discharge splash was additionally applied to the inward surface of the form divider after it was set. Weight was then applied from the top and the shape was permitted to fix at room temperature. In the wake of relieving the composite was cut by the hack saw. By utilizing pressure shaping strategy the 3 distinct kinds of composite materials were created.

## Conclusion :

In this examination, three examples, for example, Luffa fiber strengthened composites, Coir fiber fortified composites and Luffa + Coir fiber strengthened polyester composites were manufactured and their mechanical properties are assessed. In view of trial examination and investigation, the accompanying ends are drawn: The three example comprised of coir, luffa, Coir + Luffa, had demonstrated better outcome anyway example comprised of Coir Luffa has delivered an extreme quality of 1069.16 N was higher than other composite. Hybrid composite materials shows great mechanical properties. Proper care ought to be taken while taking care of these composites. In future, further examination might be focused on the customary machining of those material.

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01.02.2023

To,

Mr. B. Murugan,

HOD/EEE,

RAAK CET, Puducherry – 605 110

Respected Sir,

**Sub: Research & Development – Project Fund – Sanctioned – Reg.**

Good wishes! With immense happiness, we acknowledge your letter dated 23.01.2023 and we feel very glad and proud to accept your project proposal. After many deliberations made by the research scrutiny committee, your proposal has been approved for further process.

| S. No. | Title of the Project | Faculty Name | Duration of the project | Total amount of the project |
|---|---|---|---|---|
| 1 | Design and hardware implementation of electric bike with active cell balancing technique | Mr. B. Murugan, HOD/EEE | 06 months | 0.85 lakhs |

The committee has reviewed your proposal details and they concluded that your project will be useful for society. We hereby assured you that the financial support from our seed fund has been consented to your proposed project and it will be released immediately to initiate the project-related works.

Thanking you, we are looking forward to explore with you.

**Dr. S. SEENUVASAMURTHI**, M.E., Ph.C.
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No.1, Muthupillai Palayam Road,
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Puducherry - 605 110

With warm wishes,

**SECRETARY**
SECRETARY
Raak College of Engineering and Technology
PUDUCHERRY, 605 110

01.02.2023

To,

Mr. K. Murugan,

HOD/ECE,

RAAKCET, Puducherry – 605 110

Respected Sir,

**Sub: Research & Development – Project Fund – Sanctioned – Reg.**

Good wishes! With immense happiness, we acknowledge your letter dated 23.01.2023 and we feel very glad and proud to accept your project proposal. After many deliberations made by the research scrutiny committee, your proposal has been approved for further process.

| S. No. | Title of the Project | Faculty Name | Duration of the project | Total amount of the project |
|---|---|---|---|---|
| 1 | Prediction of diabetics using deep learning | Mr. K. Murugan, HOD/ECE | 06 months | 0.5 lakhs |

The committee has reviewed your proposal details and they concluded that your project will be useful for society. We hereby assured you that the financial support from our seed fund has been consented to your proposed project and it will be released immediately to initiate the project-related works.

Thanking you, we are looking forward to explore with you.

With warm wishes,

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08/03/2022

To,

The Principal

RAAK College of Engineering and Technology

Puducherry – 605 110.

Dear Sir,

**Sub.: Grant Approval for the Project "A Multi-Controller SDN Framework for Advanced Attack Detection and Mitigation in IoT Environment"-Reg.**

We are delighted to acknowledge the remarkable efforts and outstanding advancements your esteemed institution has achieved in recent times. It is with great pleasure that we recognize the significant strides your team has made towards innovative research and development. Upon thorough review and consideration of the proposal submitted by your institution for the development of the project titled **"A Multi-Controller SDN Framework for Advanced Attack Detection and Mitigation in IoT Environment,"** we, at Techno Enterprises, are pleased to inform you of our decision to support your endeavor.

We are excited to announce the approval of a grant amounting to **Rs. 65,000/- (Rupees Sixty-Five Thousand only)**. This fund will be disbursed to your Institution through a cheque and is intended to facilitate the successful execution of your project. We are confident that this project will contribute significantly to advancements in the field of IoT security and will further enhance the innovative capabilities of your Institution. We look forward to witnessing the positive impact and success of this initiative.

Wishing you continued success and looking forward to a fruitful collaboration.

With Regards,

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For Techno Enterprises

**RAAK**

**COLLEGE OF ENGINEERING AND TECHNOLOGY**

(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
An ISO 9001:2015 Certified Institution

**Name of the Institution :** RAAK College of Engineering and Technology

Villiyanur,

Pondicherry.

**Project Title :** A Multi-Controller Sdn Framework For Advance Attack Detection And Mitigation In Iot Environment

## Abstract

This research introduces a pioneering Multi-Controller Software-Defined Networking (SDN) framework meticulously designed for bolstering attack detection and mitigation capabilities within the intricate landscape of Internet of Things (IoT) environments. Leveraging the random forest algorithm, this framework significantly enhances the ability to detect and counter Distributed Denial of Service (DDoS) attacks, a prevalent threat within IoT networks. The proposed Multi-Controller SDN framework orchestrates multiple controllers to collaborate seamlessly, ensuring distributed intelligence and effective collaboration across diverse IoT devices. The integration of the random forest algorithm enables robust and accurate identification of anomalous traffic patterns indicative of potential DDoS attacks. Key aspects of this research include the development and implementation of a scalable and resilient SDN framework capable of dynamically responding to evolving attack vectors within IoT ecosystems. The random forest algorithm, known for its ensemble learning capabilities and adaptability to diverse datasets, is specifically tailored to detect subtle anomalies and patterns associated with DDoS attacks amidst the complexities of IoT traffic. Through comprehensive simulations and practical

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concurrency, and governing the rate at which data is processed. This module plays a critical role in maintaining the stability and efficiency of software applications.

## IoT Traffic Control:

Within the realm of the Internet of Things (IoT), a traffic control module constitutes an integral part of a system designed to oversee and manage communication between IoT devices. It encompasses protocols tailored for efficient data transfer, adept handling of varying data rates, and ensuring the reliability of communication channels. The module serves as a cornerstone for facilitating seamless connectivity and data exchange in IoT ecosystems.
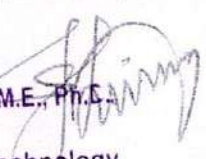
## Web Traffic Control:

For web servers and applications, a traffic control module assumes responsibility for orchestrating the distribution of incoming web traffic across multiple servers. This module, often referred to as a load balancer, balances the workload across servers to prevent overload and maintain high availability of web services. By efficiently managing incoming requests, it enhances the responsiveness and reliability of web applications.

## Transportation and Traffic Management:

In the domain of smart transportation systems, a traffic control module operates as a central component tasked with managing the flow of vehicular and pedestrian traffic. It encompasses functionalities such as traffic signal control, intelligent traffic management, and congestion mitigation strategies. Through effective coordination and optimization of traffic flow, this module contributes to enhancing safety and efficiency in transportation networks.

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evaluations, the framework's efficacy in detecting DDoS attacks is rigorously assessed. Results showcase the framework's ability to accurately identify and mitigate DDoS threats in near real-time, demonstrating its potential to fortify IoT networks against such malicious intrusions. This research contributes a novel approach harnessing the power of Multi-Controller SDN architecture and the random forest algorithm to advance the security posture of IoT environments. The proposed framework not only addresses the intricate challenges posed by DDoS attacks but also paves the way for adaptive and proactive defense mechanisms in the ever-evolving landscape of IoT security.

## Research Project Details :

The proposed work involves designing and implementing a specialized Multi-Controller Software-Defined Networking (SDN) Framework tailored explicitly for detecting and mitigating advanced attacks, particularly Distributed Denial of Service (DDoS) incidents, within Internet of Things (IoT) environments. This framework aims to leverage the random forest algorithm, known for its efficacy in anomaly detection, as a pivotal element for identifying DDoS attack patterns amidst the diverse IoT traffic. The primary objectives encompass the development of an architecture integrating multiple controllers, distributed intelligence, and real-time threat response mechanisms to enhance the framework's scalability, accuracy in attack detection, and adaptive mitigation strategies. The proposed work includes implementing the framework, optimizing the random forest algorithm for efficient anomaly detection, and evaluating its performance through simulations and practical implementations in representative IoT setups. Comparative analysis against existing solutions will demonstrate the framework's superiority in addressing IoT-specific security challenges, thereby contributing to robust and effective defense mechanisms against DDoS attacks in IoT networks. Comprehensive documentation and

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future extension recommendations will further complement this proposed work, aiming to provide a comprehensive solution for advanced attack detection and mitigation in IoT environments using Multi-Controller SDN.
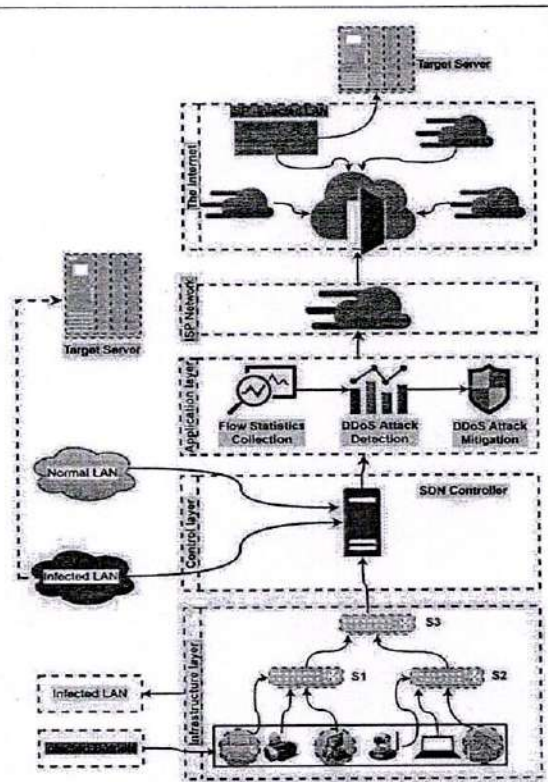


**Figure 1: Architecture of FMDADM Framework**

**Objective of the Research Project :**

**Application Traffic Control:**

In software development, a traffic control module denotes a pivotal component embedded within an application or system responsible for regulating the flow of data or requests. Its responsibilities extend to prioritizing requests, managing

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10.02.2022

To,

Mrs. K. Rajasri,

AP/IT,

RAAK CET, Puducherry – 605 110

Respected Sir,

**Sub: Research & Development – Project Fund – Sanctioned – Reg.**

Good wishes! With immense happiness, we acknowledge your letter dated 21.01.2022 and we feel very glad and proud to accept your project proposal. After many deliberations made by the research scrutiny committee, your proposal has been approved for further process.

| S. No. | Title of the Project | Faculty Name | Duration of the project | Total amount of the project |
|---|---|---|---|---|
| 1 | An IOT based water monitoring System | Mrs. K. Rajasri, AP/IT | 06 months | 0.75 lakhs |

The committee has reviewed your proposal details and they concluded that your project will be useful for society. We hereby assured you that the financial support from our seed fund has been consented to your proposed project and it will be released immediately to initiate the project-related works.

Thanking you, we are looking forward to explore with you.

With warm wishes,

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05.02.2021

To,

Mrs. R. Arputhavalli,

AP/ECE,

RAAK CET, Puducherry – 605 110

Respected Sir,

**Sub: Research & Development – Project Fund – Sanctioned – Reg.**

Good wishes! With immense happiness, we acknowledge your letter dated 25.01.2021 and we feel very glad and proud to accept your project proposal. After many deliberations made by the research scrutiny committee, your proposal has been approved for further process.

| S. No. | Title of the Project | Faculty Name | Duration of the project | Total amount of the project |
|---|---|---|---|---|
| 1 | Efficiency of Crop and weed management in organic farming by robotic system | Mrs. R. Arputhavalli, AP/ECE | 06 months | 0.85 lakhs |

The committee has reviewed your proposal details and they concluded that your project will be useful for society. We hereby assured you that the financial support from our seed fund has been consented to your proposed project and it will be released immediately to initiate the project-related works.

Thanking you, we are looking forward to explore with you.

With warm wishes,

Dr. S. SEENUVASAMURTHI, M.E., Ph.C.
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07.02.2020

To,

Mr. S. Sivachandiran,

AP/IT,

RAAK CET, Puducherry – 605 110

Respected Sir,

**Sub: Research & Development – Project Fund – Sanctioned – Reg.**

Good wishes! With immense happiness, we acknowledge your letter dated 27.01.2020 and we feel very glad and proud to accept your project proposal. After many deliberations made by the research scrutiny committee, your proposal has been approved for further process.

| S. No. | Title of the Project | Faculty Name | Duration of the project | Total amount of the project |
|---|---|---|---|---|
| 1 | Power Consumption Alert System | Mr. S. Sivachandiran, AP/IT | 06 months | 0.65 lakhs |

The committee has reviewed your proposal details and they concluded that your project will be useful for society. We hereby assured you that the financial support from our seed fund has been consented to your proposed project and it will be released immediately to initiate the project-related works.

Thanking you, we are looking forward to explore with you.

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Puducherry - 605 110

With warm wishes,

**SECRETARY**
SECRETARY
Raak College of Engineering and Technology
PUDUCHERRY-605 110

04.02.2019

To,

Mr. P. Manimaran,

AP/MECH,

RAAK CET, Puducherry – 605 110

Respected Sir,

**Sub: Research & Development – Project Fund – Sanctioned – Reg.**

Good wishes! With immense happiness, we acknowledge your letter dated 28.01.2019 and we feel very glad and proud to accept your project proposal. After many deliberations made by the research scrutiny committee, your proposal has been approved for further process.

| S. No. | Title of the Project | Faculty Name | Duration of the project | Total amount of the project |
|--------|---------------------|--------------|-------------------------|-----------------------------|
| 1 | Experimental testing for solar flat plate collector for pasturization of milk boiling process | Mr. P. Manimaran, AP/MECH | 06 months | 0.75 lakhs |

The committee has reviewed your proposal details and they concluded that your project will be useful for society. We hereby assured you that the financial support from our seed fund has been consented to your proposed project and it will be released immediately to initiate the project-related works.

Thanking you, we are looking forward to explore with you.

With warm wishes,

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