

IGNITE 2023



A DAILY NEWSLETTER

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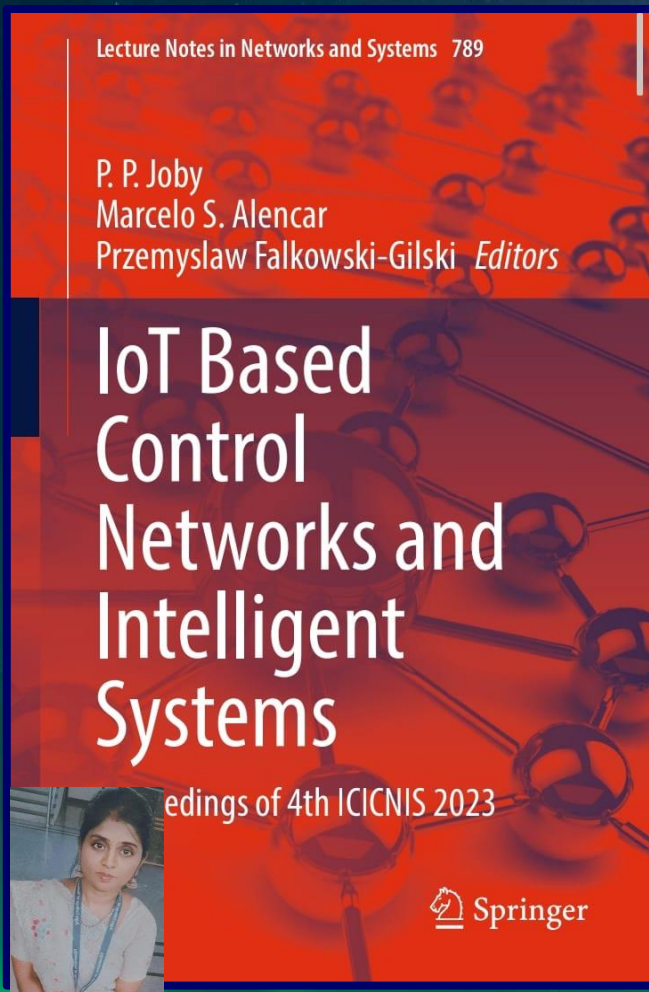
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FACULTY ACHIEVEMENT



High-Performance Intelligent System for Real-Time Medical Image Using Deep Learning and Augmented Reality



G. A. Senthil, R. Prabha, R. Rajesh Kanna, G. Umadevi Venkat, and R. Deepa

Abstract Evolving new diseases demand the need for technology to identify the disease in an effective way. Medical imaging in the field of disease identification helps to identify the disease by scanning the human parts, thereby preventing the increased rate of deaths. Deep learning algorithms make it easier to identify and analyze disease efficiently through medical imaging. The high performance of these models is needed for the disease to be predicted with accurate results. The prediction rate of the disease can be increased by the efficient use of deep learning modules and algorithms. This research involves the use of deep learning models in identifying brain hemorrhage and retinopathy diseases through deep learning algorithms. The deep learning algorithms AlexNet and convolutional neural network (CNN) with the accuracy of 90% and 96%, respectively, are employed for the detection of brain hemorrhage, and ResNet-50 and CNN with accuracy of 70% and 92%, respectively, are used for the identification of retinopathy. The output of the model is displayed using augmented reality (AR), which makes it interactive for the user to analyze the results. The AR display is achieved using the unity engine along with the Vuforia package and using the barracuda package for importing the deep learning model into

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P. P. Joby et al. (eds.), *IoT Based Control Networks and Intelligent Systems*, Lecture Notes in Networks and Systems 789, https://doi.org/10.1007/978-981-99-6586-1_8

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Mrs. G. Umadevi, Assistant Professor, Department of Computer Science and Engineering, published a research paper titled **"IoT-Based Control Networks and Intelligent Systems"** (Springer book series) on 30th November 2023.

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INTERNATIONAL JOURNAL OF CAST METALS RESEARCH
https://doi.org/10.1080/13640461.2023.2285176

RESEARCH ARTICLE

Enhancing mechanical and functional properties of LM25 alloy through squeeze cast hybrid nanocomposite incorporating breadfruit seed husk ash and graphite nanoparticles

Perlasamy Kalyannan^a, Murugan Perumal^a, J. Manivannan^a and R. Venkatesh^a

^aDepartment of Mechanical Engineering, Saveetha School of Engineering, SIMATS, Chennai, Tamil Nadu 600119, India; ^bDepartment of Mechanical Engineering, Saveetha School of Engineering, SIMATS, Chennai, Tamil Nadu 600119, India

ABSTRACT

In this research, effective utilization of agro waste breadfruit seed husk ash particle (SHA) as reinforcement purpose in LM25 alloy matrix enhanced with the inclusions of 3, 5, and 9wt% of graphite (Gr) nanoparticle (50nm) via squeeze cast liquid processing executed with 200MPa applied compressive pressure. This developed cast examined LM25 alloy and its composites for density, percentage of porosity, microstructure, ultimate tensile strength, abrasion, and corrosion behaviour. From the experimental result, the LM25/10wt% SHA/9wt% Gr hybrid nanocomposite has low density (2.554g/cc), an excellent ultimate tensile strength of (181±1.8 MPa), superior abrasion resistance (0.332mm³/m) under 40N load at 0.75m/sec, and good corrosion resistance (0.00382mm/year) compared to cast LM25 alloy. The inclusions of SHA and Gr proved their presence in LM25 alloy has good mechanical strength and maximum abrasion and corrosion resistance to overcome the drawbacks of conventional stir-cast LM25 alloy, which is poor wear resistance.

ARTICLE HISTORY

Received 8 August 2023
Accepted 10 November 2023

KEYWORDS

Breadfruit seed husk ash; characteristics behaviour; LM25 alloy; squeeze cast

1. Introduction

Metal matrix composites were the trend for the current scenario and are used in various engineering applications to overcome the behaviour drawbacks of monolithic alloy [1]. The aluminium alloy-based mono and hybrid composites gained significance in various engineering applications like aerospace [2] and automotive [3] due to low density, good castability behaviour recycling ease, better thermal stability and good elongation percentage [4]. It was synthesised through a solid-state [5] and liquid-state process [6]. Due to important aspects, the Metal Matrix Composite (MMC) was synthesized by the liquid-state process and was familiar with complex shape production with low fabrication cost compared to the solid-state process [7]. The Al-Fe-Si alloy hybrid composites were prepared with goat dung ash and Si₃N₄ liquid stir cast technique, and their particle distribution (microstructure) and mechanical properties were investigated. The output results of this investigation reported that the particle distribution was homogeneous and facilitated maximum tensile and impact strength compared to cast Al-Fe-Si alloy [8]. Coconut shell ash-developed aluminium alloy (AA7075) composite performance was enhanced by adding alumina particles via ultrasonic support stir casting process. Its

microstructure showed the uniform distribution of reinforcement results in increased tensile strength, damping factor and better corrosion resistance [9]. Waste fly ash reinforced Al-10Mg alloy composite mechanical and thermal behaviour was enhanced by introducing silicon carbide nanoparticles via gravity stir cast and found the enhanced value of tensile, hardness and high thermal stability compared to cast Al-10Mg alloy [10]. Recent research has worked towards attaining specific objectives like lightweight, superior tensile strength, good abrasion wear resistance and excellent corrosion resistance with an increase in the contents of reinforcements during the fabrication of aluminium alloy hybrid composite via a liquid-state process.

2. Literature review

2.1. Based on reinforcements

In past decades, the aluminium alloy nanocomposite prepared with inorganic particles like nitride [11], oxide [12], carbide particles [13] and organic waste ash particles [14] found progressive improvement in mechanical, thermal and wear behaviour. Due to this, most of the research investigations focus on synthesising the hybrid nanocomposite with different types of

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Dr.P. Murugan, Associate Professor and Head, Department of Chemical Engineering, has published a paper titled 'Enhancing mechanical and functional properties of LM25 alloy through squeeze cast hybrid nano composite incorporating breadfruit seed husk ash and graphite nanoparticles', in the International Journal of Cast Metals Research-SCIE Indexed Journal in the month of November

2023.

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Application Details	
APPLICATION NUMBER	202341079532
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	23/11/2023
APPLICANT NAME	1 . Dr. ISHWARYA M. V 2 . Dr. D. ADHIMUGA SIVASAKTHI 3 . Dr. A. SATHIYARAJ 4 . M. MAHARASI 5 . B BALASAIGAYATHRI 6 . RAJA RAJESWARI P U 7 . P. MENAGA 8 . Dr. R RATHEESH 9 . S RAMAMOORTHY
TITLE OF INVENTION	MOBILE APPLICATION BASED SLEEP APNOEA MANAGEMENT SYSTEM FOR BIOMEDICAL EXERTION USING CLOUD SERVER
FIELD OF INVENTION	BIO-MEDICAL ENGINEERING
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	aidshod@act.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	01/12/2023

Application Status



Dr. R. Ratheesh, Assistant Professor, Electronics and Communication Engineering, has published a patent application, “**Mobile Application based Sleep Apnoea Management System for Biomedical Exertion using Cloud Server**” on December 2023.

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Dr. Arul Kulandaivel, HoD, Department of Science and Humanities, has published a research paper, "In silica study of traditional Chinese medicinal compounds targeting Alzheimer's disease amyloid beta-peptide (1-42) " in Chemical Physics Impact, WoS Publications, Listed in Anna University Annexure-I Journal with Impact factor 2.2.

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FACULTY PARTICIPATION



Mrs. Siva Sakthi A, Assistant Professor, Department of Biomedical Engineering, has participated in a one-week online professional development programme on **"Neurorehabilitation and Stroke Management"** organized by the Department of Biomedical Engineering at Karpagam Academy of Higher Education from November 20th November to 25th November, 2023.

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STUDENT ACHIEVEMENT



Elite

NPTEL Online Certification
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This certificate is awarded to
ANUVARSHINI R B
for successfully completing the course
Experimental Biotechnology
with a consolidated score of **60 %**

Online Assignments	22.25/25	Proctored Exam	37.75/75
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Total number of candidates certified in this course: **589**

Jul-Oct 2023
(12 week course)



Prof. T. V. Bharat
Head, Centre for Educational Technology
NPTEL Coordinator, IIT Guwahati



Indian Institute of Technology Guwahati



Roll No: NPTEL23BT56S833510494 To verify the certificate  No. of credits recommended: 3 or 4

Anuvarshini R.B., II-year student, Department of Biomedical Engineering, has successfully completed the NPTEL Certification 12-week course on **“Experimental Biotechnology,”** having secured Elite under the mentorship of Dr. Binu Clara with an aggregate score of 60%.

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STUDENT ACHIEVEMENT



NPTEL Online Certification

(Funded by the MoE, Govt. of India)

This certificate is awarded to

SHIVANI

for successfully completing the course

Experimental Biotechnology

with a consolidated score of **56** %

Online Assignments	20.97/25	Proctored Exam	35.25/75
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Total number of candidates certified in this course: **589**

Jul-Oct 2023
(12 week course)



Prof. T. V. Bharat
Head, Centre for Educational Technology
NPTEL Coordinator, IIT Guwahati



Indian Institute of Technology Guwahati



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— SWAYAM NEEDE, SWAYAM NEEDE —

Roll No: NPTEL23BT56S833506215

To verify the certificate



No. of credits recommended: 3 or 4

Shivani, II year student in the Department of Biomedical Engineering, has successfully completed the NPTEL Certification 12-week course on “**Experimental Biotechnology**” under the mentorship of Dr. Binu Clara with an aggregate score of 56%.

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STUDENT ACHIEVEMENT



NPTEL Online Certification

(Funded by the MoE, Govt. of India)

This certificate is awarded to
LAVANYA E
for successfully completing the course
Experimental Biotechnology
with a consolidated score of **56** %

Online Assignments	21/25	Proctored Exam	35.25/75
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Total number of candidates certified in this course: 589

Jul-Oct 2023
(12 week course)



Prof. T. V. Bharat
Head, Centre for Educational Technology
NPTEL Coordinator, IIT Guwahati



Indian Institute of Technology Guwahati



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Roll No: NPTEL23BT56S833506169

To verify the certificate



No. of credits recommended: 3 or 4

Lavanya E, II-year student in the Department of Biomedical Engineering, has successfully completed the NPTEL Certification 12-week course on “**Experimental Biotechnology**” under the mentorship of Dr. Binu Clara with an aggregate score of 56%.

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STUDENT ACHIEVEMENT



NPTEL Online Certification

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This certificate is awarded to

SWETHA H

for successfully completing the course

Experimental Biotechnology

with a consolidated score of **50** %

Online Assignments	20.41/25	Proctored Exam	30/75
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Total number of candidates certified in this course: 589

Jul-Oct 2023
(12 week course)



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Head, Centre for Educational Technology
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Swayam Prakash, Swamya Nisham

Roll No: NPTEL23BT56S733500124

To verify the certificate 

No. of credits recommended: 3 or 4

Swetha H., II year student in the Department of Biomedical Engineering, has successfully completed the NPTEL Certification 12-week course on “**Experimental Biotechnology**” under the mentorship of Dr. Binu Clara with an aggregate score of 50%.

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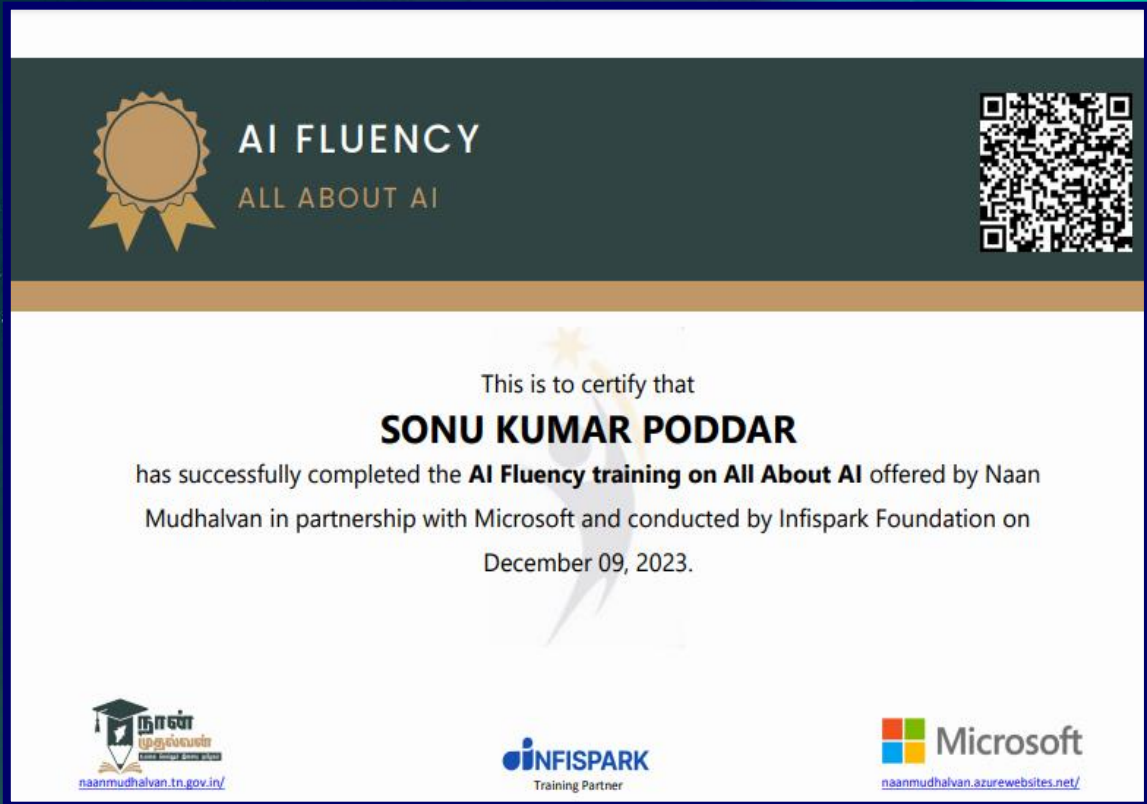


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STUDENT ACHIEVEMENT



Mr. Sonu Kumar Poddar, a II-year student of mechanical engineering, has successfully completed the **AI Fluency training on All About AI** offered by **Naan Mudhalvan** on December 09, 2023.

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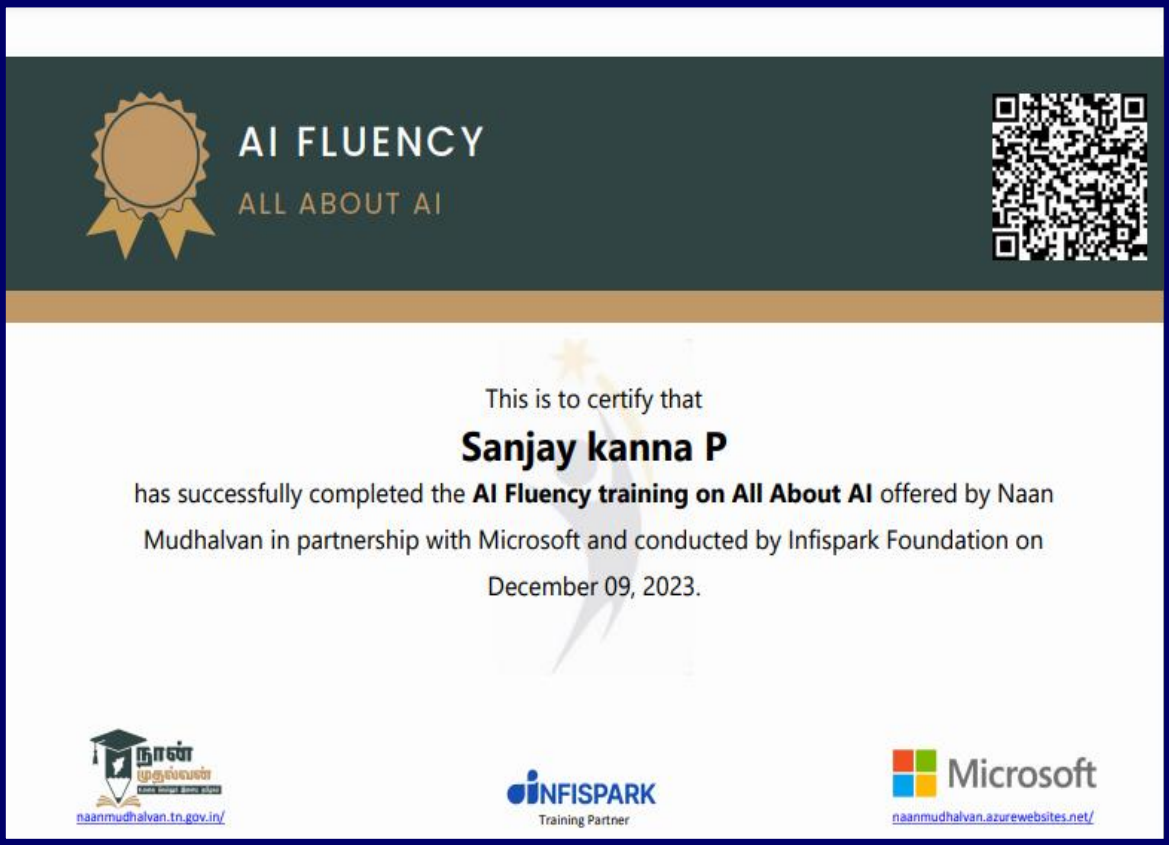


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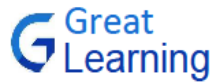


STUDENT ACHIEVEMENT



Mr. Sanjay Kanna P, a II-year student from Mechanical Engineering, has successfully completed the AI fluency training on All About AI offered by Naan Mudhalvan on December 9, 2023.

STUDENT ACHIEVEMENT



CERTIFICATE OF COMPLETION

Presented to

RISHIKUMAR S

For successfully completing a free online course
Data Structures in C



Provided by
Great Learning Academy
(On December 2023)

To verify this certificate visit verify.mygreatlearning.com/KYAKBEET

Rishikumar S., Department of Electrical and Electronics Engineering, II year, has successfully completed an online course on "**Data Structures in C**" on the Great Learning online platform on December 11, 2023.

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STUDENT ACHIEVEMENT



Banupriya, Department of Electrical and Electronics Engineering, II year, has successfully completed an online course on **"Power Point for Beginners"** on the Great Learning online platform on 11.12.2023.

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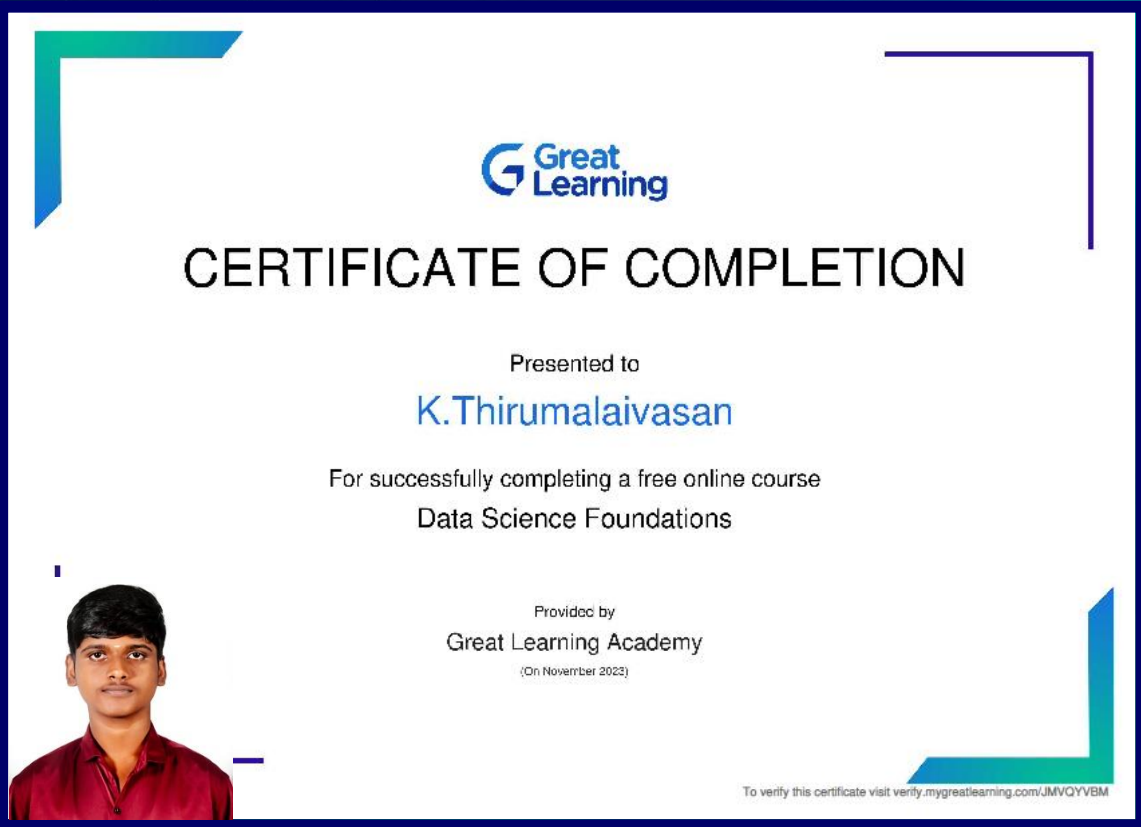


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STUDENT ACHIEVEMENT



K.Thirumalaivasan, Department of Electrical and Electronics Engineering, II year, has successfully completed an online course on "**Data Science Foundations**" on the Great Learning online platform on December 11, 2023.

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STUDENT PARTICIPATION



Jayashree V, II Year, Electronics and Communication Engineering, has participated in the **Hack-Proof Digital Nagrik Quiz** organized by the Indian Cyber Crime Coordination Centre.

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STUDENT PARTICIPATION



Vignesh S., II Year, Electronics and Communication Engineering, has participated in the **Hack-Proof Digital Nagrik Quiz** organized by the Indian Cyber Crime Coordination Centre.

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