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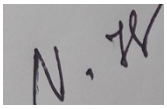
Anand Nagar, Krishnankoil - 626126, Srivilliputtur (via), Virudhunagar District, Tamilnadu.

APPLICATION FOR ADMISSION TO Ph.D. PROGRAMMES

Date of Application:07-12-2020

Department	ELECTRONICS AND COMMUNICATION ENGINEERING	Application No.	202020061
Area of Research	THE	Research Mode	PART TIME



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Qualification

Degree	Discipline	College/university	Year Passed	AVG/CGPA	Class	Mode
B.E	ECE	PERIYAR UNIVERSITY / SAPTAHGIRI COLLEGE OF ENGINEERING	2003	80.3%	FIRST	REGULAR
M.E	APPLIED ELECTRONICS	ANNA UNIVERSITY/ VINAYAKA MISSIONS KIRUPANANDA VARIYAR	2005	79%	FIRST	REGULAR

Experience

Organization	Designation	Experience From	Experience TO	Work Nature
THE OXFORD COLLEGE OF ENGINEERING	LECTURER	2005-07-07	2006-03-07	
THE OXFORD COLLEGE OF ENGG	SENIOR LECTURER	2006-03-07	2010-01-07	
THE OXFORD COLLEGE OF ENGG	ASSISTANT PROFESSOR	2010-01-07	2020-12-07	

Payment Details				
Transaction ID	Reference	Date of transaction	Amount	Status
202020061_201218092916	VHD49569954989	18-12-2020	600	SUCCESS

SYNOPSIS

Conceptualization of a Fault Tolerant Controller for Offshore Marine Installations Using Virtual Instrumentation

Remote drilling platforms are marine installations whose main function is to extract oil and natural gas from the wells. These remote platforms are "unmanned," that is, there are no people living on them. As a result, reliability and availability of the control systems and instrumentation are not only fundamental to ensuring the security and safety of the entire installation, but they are also essential for maintaining the oil field's production and protecting the ecological environment. They are part of a marine offshore complex as illustrated in Figure 1, that includes different platforms, including habitation, production, compression, link, and communications. Remote platforms are separated from the rest of the complex, normally located within two to six kilometers, and communicate with the complex via radio systems, microwaves and frequency linking to the habitation platform, which has a master controller that can communicate with other remote platforms within the marine complex. The purpose of this research is to explore mechanisms for automating such remote offshore platforms located on high seas.

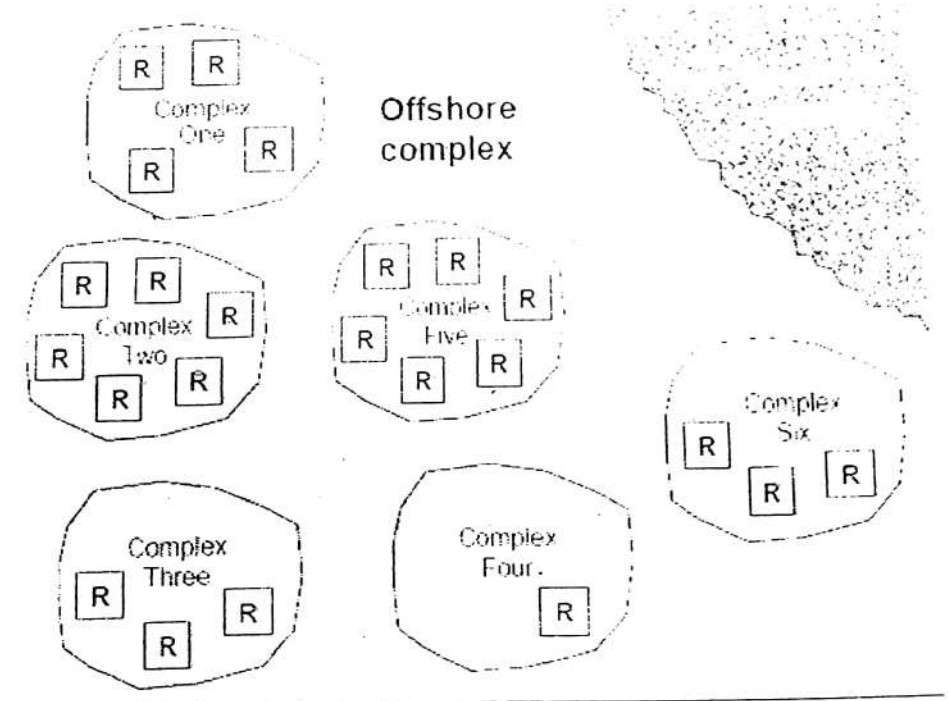

Figure 1: Concept of Offshore and Onshore complex

IMPLEMENTATION

As previously indicated, remote platforms are the output points of gas and oil. Since they are unmanned, it is imperative that the control system used has high availability and is extremely reliable. In order to achieve this goal, a fault tolerant control system that meets the following requirements is proposed:

1. The control system must count with active redundancy in its controller (CPU), power supplies, communications to inputs and outputs, and communication to the habitation platforms.

2. The system must have the capacity to combine input/output modules in a single and redundant configuration.

3. The redundancy of **analog** inputs and outputs must be included in the system without using intermediate devices or relays to transfer the outputs. In addition, redundancy must be continuous and the process completed without disturbance during the transfer.

4. The redundancy in **digital** inputs and outputs must be included in the system without using intermediate devices or relays to transfer the outputs. In addition, redundancy must be continuous and the process completed without disturbance during the transfer.

5. The system should count with redundancy in communication channels to the habitation platforms, allowing bi-directional transfer of information with only one way in the communication ports.

6. The system should integrate large size serial ports, which should work in redundancy while communicating to PLCs and intelligent valves.

7. The system should be able to integrate any type of transmitters with digital communication.

8. All devices in the system should be removable while on-line and with power applied.

9. The system should be designed to work in a marine environment subject to high temperatures, vibration, humidity and corrosion caused by extreme weather conditions.

10. The system should have communications when requested or based on reported exceptions, for example, transferring data only when notable changes are reported.

PROPOSED SOLUTION:

The research comprises of developing a mathematical model of the integrated On-shore and Off-shore platforms using Virtual Instrumentation (VI) software. Using VI, it is possible to emulate many standard general purpose instruments. It is also possible to implement sophisticated instrumentation for custom specific applications that cannot be accomplished by standard instruments. Further, the entire control mechanism shall be automated and tested in real time for remote fault tolerant control of Off-shore installations. The fault scenario will be simulated and the design validated against faults.

SPECIFIC AIM OF THE PROJECT

The deep blue sea has always been a place that arouses curiosity and imagination. Mankind has been trying to explore and exploit this mysterious part of the world for decades. The advent of underwater vehicles improves our ability to understand the undersea world. Un- manned Underwater Vehicles (UUVs) fall between two extremes of underwater vehicles: the Remotely Operated Vehicles (ROVs) and the torpedo. They are being widely used in commercial, scientific and military missions for search and survey, decoy and outboard sensors, ocean engineering work service, swimmer support, test and evaluations. With increasing mission durations in these applications, one of the primary concerns is the fault occurrence in actuators, sensors, or components. When failures occur and result in abnormal operations, the only present solution is to abort the mission, and use a damage control to make UUVs surface. Therefore, the problem of reliability and security of UUVs, especially their ability of fault tolerance, has become a major concern. Even though most UUVs use adaptive control systems, the response of the controller is reactive, and no consideration is given to the source or extent of the failures. It is desirable to incorporate a function of fault detection and identification into the control system, so that we can detect and identify actuator and/or sensor failures, and design compensation measures. This is the so-called fault-tolerant control (FTC).

Fault tolerance in dynamic systems is traditionally achieved through the use of parallel redundancy, or hardware redundancy. It uses sensors and actuators in a triplex or quadruplicate redundancy configuration and compares redundant outputs or measurements for consistency. We can apply a voting logic to select a signal with a middle value, so that a single channel or a double-failed channel never affects the plant. We can also declare that a sensor is faulty if its signal deviates too far from the average value of others, assuming that the others remain within a small difference from one another. Parallel redundancy protects against control system component failures or sensor failures in a passive way, since the system remains insensitive to failures. This approach to fault tolerance is straightforward to apply, and it is essential in the control of aircraft, space vehicles, marine vehicles and certain process plants such as nuclear power plants that are safety critical.

The main aim of the project is to develop a mathematical model of the integrated On-shore and Off-shore platforms using Virtual Instrumentation (VI) software. Using VI, it is possible to emulate many standard general purpose instruments. It is also possible to implement

Remote platforms are the output points of gas and oil. Since they are unmanned, it is imperative that the control system used has high availability and is extremely reliable. In order to achieve this goal, a fault tolerant control system that meets the following requirements is proposed:

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BACKGROUND AND JUSTIFICATION

Marine and offshore engineering must deal with many obstacles: physical space constraints, extreme weather conditions, deep water, and remote locations. These constraints create an extreme environment for the engineer to develop a sound, reliable, and safe operating platform. Integration of hull and plant designs is another difficulty for the engineer to overcome. After a marine and offshore facility is turned over to operations, the challenges do not become any easier. Maintaining and operating in a safe environment with access to accurate and reliable data to make informed decisions is critical to improving uptime.

Oil and gas production in the offshore industry is still at very high levels. The demands to extract and process oil and gas from new oil fields offshore has led to a major shift in the technologies chosen for the design and operation of floating production facilities used to both extract and process crude oil and natural gas products. With all of these projects, space is a major constraint, so configuring the process in as small an area as possible is critical to success.

Analysis

Ship piping design, and particularly floating production, storage, and offloading vessel piping, requires rugged installations that can withstand the hull/platform movement associated with wave loads. These analyses involve the consideration of volumes of data that may be overwhelming due to ever-changing boundary conditions. Intergraph analysis solutions provide integrated tools that provide opportunities to improve change management and the iterative information flow that takes place in analyzing and designing these maritime vessels.

Information Management

Engineering, assembling, and operating in challenging environments offshore means quick access to data is required. Resources "on the beach" can be challenged by time, distance, and communication channels.

For a typical new marine, offshore facility, 10 to 15 percent of the total cost goes toward engineering design while 50 to 60 percent of the cost is related to material. Surplus materials caused by ineffective materials management, even to levels of only five percent, can result in the loss of millions of dollars on an average capital project. Without continuous management

of materials, it is difficult to take the appropriate corrective action to prevent schedule delays, material overspend, and increased logistics costs. Delays can often be even more costly when they affect the owner and operator's ability to produce and sell the product. Effectively managing this essential business process in an integrated environment throughout all phases of the project life cycle is vital to reducing cost and delays.

Faults in steering or propulsion machinery on a ship are particularly serious, since the consequence could be loss of maneuvering ability, which a risk to cause major damage to vessel, personnel or environment. Faults related to steering include faults in sensors and local rudder control, fault related to prime propulsion include faults that cause shut-down of ancillary or auxiliary systems or of the main engine. Alarms and simple faults are fairly common on board ships and they cause a stress impact on officers on the watch. Human reaction under stress is sometimes erroneous and if manual intervention to silence an alarm is erroneous, a local fault can escalate to a hazard. Automatic detection and warning of faults is hence desirable before they need urgent attendance. Even better, simple faults could be accommodated by autonomous action within the automation systems, the aim being to maintain availability of critical functions whilst issuing a diagnostic message about the occurrence.

Fault-tolerant control is a set of techniques developed to handle faults autonomously, increase plant availability and reduce the risk of safety hazards. The aim is to prevent that simple faults develop into serious failures. To automate the handling of faults, it is essential to have tools to analyze the complexity of a case and determine which remedial actions could and should be automated. Fault diagnosis techniques have been the subject of research over the last couple of decades and the field has gained widespread international interest and acceptance. With an accelerated development, recent results include fairly sophisticated design procedures that can assure sufficient robustness to false detection. This is crucial for automatic fault handling since false detection could deteriorate overall reliability.

The project focuses on diagnosis and on-line handling of faults whereas diagnosis for maintenance is not within the scope. The aim is to find inherent redundancy and utilize this to maintain availability if faults occur.

Approach

The design of the project involves the following discrete tasks:

Ist Year Deliverable

1. Literature Survey and Mathematical modeling of integrated onshore and offshore platforms

   Since the platforms are unmanned, it is imperative that the control system used has high availability and is extremely reliable

IInd Year Deliverable

2. Identification and classification of faults
3. Fault diagnosis

IIIrd Year Deliverable

4. Design and development of the fault tolerant controller
5. Testing and validation

Activity Chart

S.NO	TASK	1st HALF YEAR	2nd HALF YEAR	3rd HALF YEAR	4th HALF YEAR	5th HALF YEAR	6th HALF YEAR
1.	Literature Survey & Mathematical modeling of offshore and onshore platform	■	■				
2.	Identification & classification of faults			■			
3.	Fault diagnosis				■		
4.	Design & Development of fault tolerant controller					■	
5.	Testing and validation						■
6.	Preparation of the final report					■	■

Anna University

PROGRESS THROUGH KNOWLEDGE

The Syndicate of the Anna University hereby makes known that **JAYARAJ N** *has been admitted to the* **DEGREE OF MASTER OF ENGINEERING** *in* **Applied Electronics** *having satisfactorily completed the prescribed programme of study and having been certified by duly appointed examiners to be qualified to receive the same and having been placed by them in the* **First Class** *at the Examination held in* **JUNE 2005.**

Given under the Seal of the University

Chennai 600 025
India
November 2005

Registrar

Vice-Chancellor

Reg. No 0052289
Col Code 030 / 207

No. 03732

பெரியார் பல்கலைக்கழகம்
Periyar University

பொறியியல் மற்றும் தொழில்நுட்பவியல் புலம்

FACULTY OF ENGINEERING AND TECHNOLOGY

பெரியார் பல்கலைக்கழக ஆட்சிக்குழு 2003 ஆம் ஆண்டு மே மாத நடந்த மின்னணு மற்றும் தொடர்பியல் தேர்வில் N ஜெயராஜ் என்பவர் முதல் வகுப்பில் தேர்ச்சி பெற்றார் என்று தக்கத் தேர்வாளர்கள் சான்றளித்தபடி பொறியியல் இளையர் என்னும் பட்டத்தை அவருக்குப் பல்கலைக்கழக இலச்சினையுடன் வழங்குகிறது.

The Syndicate of the **Periyar University** *hereby makes known that* **JAYARAJ N** *has been admitted to the* **DEGREE OF BACHELOR OF ENGINEERING in ELECTRONICS AND COMMUNICATION**

he/she having been certified by duly appointed Examiners to be qualified to receive the same and was placed in the **FIRST CLASS** *at the Examination held in* **MAY 2003**

Given under the seal of this University

நாள்
Dated 15-09-2004

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பதிவாளர்
Registrar

துணைவேந்தர்
Vice-Chancellor

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STATEMENT OF MARKS

NAME OF THE CANDIDATE	DATE OF BIRTH	REGISTER NO.	CENTRE CODE
JAYARAJ N	04/01/1981	0052289	030

COURSE	BRANCH	SEMESTER	PUBLICATION CODE	PUBLICATION DATE
UNDER GRADUATE	B.E. ELECTRONICS AND COMMUNICATION	NON-SEMESTER	070	18/08/2000

PAPER CODE	TITLE OF THE PAPER	YEAR APPEARED	INTERNAL ASSESSMENT		UNIVERSITY EXAMINATION		TOTAL		RESULT
		MAY	MARK SECURED	MAXIMUM MARKS	MARK SECURED	MAXIMUM MARKS	MARK SECURED	MAXIMUM MARKS	
99EEN101	TECHNICAL COMMUNICATION IN ENGLISH	2000	019	020	059	080	078	100	PASS
99EMA102	MATHEMATICS (I AND II)	2000	019	020	044	080	063	100	PASS
99EPS103	PHYSICAL SCIENCE	2000	020	020	042	080	062	100	PASS
99EBE104	BASIC ENGINEERING I	2000	019	020	046	080	065	100	PASS
99EBE105	BASIC ENGINEERING II	2000	019	020	059	080	078	100	PASS
99ECS106	COMPUTER SCIENCE	2000	020	020	047	080	067	100	PASS
99EED107	ENGINEERING DRAWING	2000	019	020	009	080	028	100	FAIL
99EPS108	PRACTICAL I - PHYSICAL SCIENCE	2000	019	020	043	080	062	100	PASS
99ECS109	PRACTICAL II - COMPUTER PROGRAMMING	2000	019	020	062	080	081	100	PASS
99EWD110	PRACTICAL III - WORKSHOP AND DRAFTING	2000	018	020	040	080	058	100	PASS

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99EED107	ENGINEERING DRAWING	2000	019	020	022	080	041	100	FAIL
EC301	MATHEMATICS III	2000	020	020	067	080	087	100	PASS
EC302	SOLID STATE DEVICES	2000	020	020	073	080	093	100	PASS
303	ELECTRIC CIRCUITS	2000	020	020	065	080	085	100	PASS
EC304	ELECTRICAL ENGINEERING	2000	020	020	044	080	064	100	PASS
EC305	ELECTROMAGNETIC THEORY	2000	020	020	060	080	080	100	PASS
EC306	DIGITAL SYSTEMS AND COMPUTER ARCHITECTURE	2000	020	020	036	080	056	100	PASS
EC307	PRACTICAL-ELECTRON DEVICES AND DIGITAL LABORATORY	2000	020	020	071	080	091	100	PASS
EC308	PRACTICAL - ELECTRICAL ENGINEERING LABORATORY	2000	020	020	075	080	095	100	PASS

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Controller of Examinations i/c

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EC401	MATHEMATICS-IV	2001	020	020	064	080	084	100	PASS
EC402	SIGNALS AND SYSTEMS	2001	020	020	044	080	064	100	PASS
EC403	TRANSMISSION LINES AND WAVE GUIDES	2001	020	020	044	080	064	100	PASS
EC404	NETWORK THEORY AND SYNTHESIS	2001	020	020	059	080	079	100	PASS
EC405	ELECTRONIC CIRCUITS-I	2001	020	020	056	080	076	100	PASS
EC406	OBJECT ORIENTED PROGRAMMING IN C++	2001	020	020	045	080	065	100	PASS
EC407	ELECTRONIC CIRCUITS LAB-I	2001	020	020	079	080	099	100	PASS
EC408	OBJECT ORIENTED PROGRAMMING C++ LABORATORY	2001	020	020	080	080	100	100	PASS

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99EED107	ENGINEERING DRAWING	2001	019	020	AAA	080	AAA	100	AAA
EC501	NUMERICAL METHODS	2001	020	020	056	080	076	100	PASS
EC502	CONTROL SYSTEMS	2001	020	020	057	080	077	100	PASS
EC503	ELECTRONIC CIRCUITS-II	2001	020	020	041	080	061	100	PASS
EC504	ANALOG COMMUNICATION SYSTEMS	2001	020	020	056	080	076	100	PASS
EC505	APPLICATION OF LINEAR INTEGRATED CIRCUITS	2001	020	020	051	080	071	100	PASS
EC506	MICROPROCESSOR AND APPLICATIONS	2001	020	020	048	080	068	100	PASS
EC507	PRACTICAL-ELECTRONIC CIRCUITS LABORATORY - II	2001	020	020	075	080	095	100	PASS
EC508	PRACTICAL-LINEAR INTEGRATED CIRCUITS LABORATORY	2001	020	020	079	080	099	100	PASS

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		MARKS SECURED	MAXIMUM MARKS	MARKS SECURED	MAXIMUM MARKS	MARKS SECURED	MAXIMUM MARKS	
99EED107	ENGINEERING DRAWING	019	020	022	080	041	100	FAIL
EC601	RESOURCES MANAGEMENT TECHNIGUES	020	020	058	080	078	100	PASS
EC602	PROBABILITY THEORY AND RANDOM PROCESSES	020	020	071	080	091	100	PASS
EC603	ANTENNAS AND WAVE PROPAGATION	020	020	056	080	076	100	PASS
EC604	MEAGUREMENTS AND ELECTRONIC INSTRUMENTATION	020	020	048	080	068	100	PASS
EC605	MICROPROCESSOR BASED SYSTEM DESIGN	020	020	060	080	080	100	PASS
EC606	DIGITAL SIGNAL PROCESSING	020	020	038	080	058	100	PASS
EC607	PRACTICAL-MICROPROCESSOR LABORATORY	020	020	079	080	099	100	PASS
EC608	PRACTICAL-COMUNICATION ENGINEERING LABORATORY	020	020	072	080	092	100	PASS

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		MARKS SECURED	MAXIMUM MARKS	MARKS SECURED	MAXIMUM MARKS	MARKS SECURED	MAXIMUM MARKS	
99EED107	ENGINEERING DRAWING	019	020	036	080	055	100	PASS
EC701	ENGINEERING ECONOMICS AND MANAGEMENT	020	020	053	080	073	100	PASS
EC702	STATISTICAL THEORY OF COMMUNICATION	020	020	061	080	081	100	PASS
EC703	MACROWAVE ENGINEERING MICROWAVE TUBES	020	020	066	080	086	100	PASS
EC704	DIGITAL COMMUNICATION SYSTEM	020	020	052	080	072	100	PASS
EC707	PRACTICAL-MICROWAVE LABORATORY	020	020	080	080	100	100	PASS
EC708	PRACTICAL-DIGITAL COMMUNICATION AND SIGNAL PROCESSING LABORATORY	020	020	079	080	099	100	PASS
ECE01	ELECTIVE: SATELLITE COMMUNICATION	020	020	037	080	057	100	PASS
ECE04	ELECTIVE: COMPUTER COMMUNICATION NETWORKS	020	020	051	080	071	100	PASS

--- END OF THE STATEMENT ---

PERIYAR UNIVERSITY * SALEM - 636011 * Controller of Examinations

AAA-ABSENT MP-MALPRACTICE

DATE OF ISSUE : 31/03/2003

CONTROLLER OF EXAMINATIONS

Changes / Overscript(s) should bear competent attestation of the Periyar University with Official seal, else the certificate is invalid.

(3)

பெரியார் பல்கலைக்கழகம், சேலம் - 636 011.
PERIYAR UNIVERSITY, SALEM - 636 011. B 029627

STATEMENT OF MARKS

NAME OF THE CANDIDATE	DATE OF BIRTH	REGISTER NO	CENTRE CODE
JAVARAJ N	04/01/1981	0052289	030

BRANCH	YEAR OF APPEARANCE	PUBLICATION CODE	PUBLICATION DATE
B. E. ELECTRONICS AND COMMUNICATION	MAY '2003	078	10/07/2003

PAPER CODE	TITLE OF THE PAPER	INTERNAL ASSESSMENT		EXTERNAL EXAMINATION		TOTAL		RESULT
		MARKS SECURED	MAXIMUM MARKS	MARKS SECURED	MAXIMUM MARKS	MARKS SECURED	MAXIMUM MARKS	
ECB01	COMMUNICATION SWITCHING SYSTEMS	020	020	040	080	060	100	PASS
ECB02	PRINCIPLE OF DATA COMMUNICATION	020	020	047	080	067	100	PASS
ECB03	FIBRE OPTIC COMMUNICATION	020	020	066	080	086	100	PASS
ECE12	ELECTIVE: TELEVISION ENGINEERING	020	020	066	080	086	100	PASS
ECE16	ELECTIVE: BIO-MEDICAL INSTRUMENTATION AND APPLICATIONS	020	020	051	080	071	100	PASS
ECB06	PROJECT WORK AND VIVA VOCE	---	---	290	300	290	300	PASS

--- END OF THE STATEMENT ---

PERIYAR UNIVERSITY ★ Controller of Examinations ★ SALEM - 636011

AAA-ABSENT MP-MALPRACTICE

DATE OF ISSUE : 22/07/2003

CONTROLLER OF EXAMINATIONS

Changes / Overscript(s) should bear competent attestation of the Periyar University with Official seal, else the certificate is invalid.

(2)

(3)

ANNA UNIVERSITY

CHENNAI

M.E. DEGREE EXAMINATIONS

STATEMENT OF MARKS

Sl. No. C 443911

Folio No. A889318

NAME OF THE CANDIDATE	JAYARAJN		
COLLEGE OF STUDY	619:Vinayaka Missions Kirupananda Variyar Engineering College	REGISTER NO.	619903401005
PROGRAMME & BRANCH	M.E-Applied Electronics	MONTH & YEAR OF EXAM.	Apr 2004
		DATE OF PUBLICATION	31/07/2004

SEM NO.	SUBJECT CODE	SUBJECT TITLE	IA	UM	TOTAL	TOTAL MARKS IN WORDS	RESULT
		Max. Marks	020	080	100		
		Min. Marks	-	040	050		
02	AX034	Digital Image Processing	020	026	--	*** ****	FAIL
02	AX035	Digital Control Engineering	020	046	066	ZERO SIX SIX	PASS
02	AX134	Analysis and Design of Analog Integrated Circuits	020	046	066	ZERO SIX SIX	PASS
02	AX141	Computer Architecture and Parallel Processing	020	022	--	*** ****	FAIL
02	AX143	Embedded Systems	020	047	067	ZERO SIX SEVEN	PASS
02	VL034	Low Power VLSI Design	020	057	077	ZERO SEVEN SEVEN	PASS
02	AX142	Electronic Design Laboratory	020	079	099	ZERO NINE NINE	PASS

*** End of Statement ***

Controller of Examinations, Chennai-600 025, Anna University

600 025.

12/10/2004

Controller of Examinations

IA - Internal Assessment Marks UM - University Examination Marks AB - Absent

* Applicable only when the candidate obtains passing minimum marks in the University Examination and Total

ANNA UNIVERSITY

CHENNAI

M.E DEGREE EXAMINATIONS

STATEMENT OF MARKS

Sl. No. C 285214

Folio No. A60401

NAME OF THE CANDIDATE	JAYARAJ N	REGISTER NO.	619034001005
COLLEGE OF STUDY	619.Vinayaka Missions Kirupanands Variyar Engineering College	MONTH & YEAR OF EXAM.	Dec 2003
PROGRAMME & BRANCH	M.E-Applied Electronics	DATE OF PUBLICATION	20/02/2004

SEM. NO.	SUBJECT CODE	SUBJECT TITLE	IM	UN	TOTAL*	TOTAL MARKS IN WORDS	RESULT
		Max. Marks	020	080	100		
		Min. Marks	-	040	050		
01	AX033	Neural Networks and its Applications	020	045	065	ZERO SIX FIVE	PASS
01	AX131	Advanced Digital Signal Processing	020	040	060	ZERO SIX ZERO	PASS
02	AX132	Introduction to VLSI Design	020	040	060	ZERO SIX ZERO	PASS
01	AX133	Advanced Digital System Design	020	054	074	ZERO SEVEN FOUR	PASS
01	CM143	High Performance Communication Networks	020	047	067	ZERO SIX SEVEN	PASS
01	MA151	Applied Mathematics for Electronics Engineers	020	046	066	ZERO SIX SIX	PASS

*** End of Statement***

Controller of Examinations, Chennai-600 025, Anna University

Chennai - 600 025

Date : 27/05/2004

Controller of Examinations

IM - Internal Assessment Marks UM - University Examination Marks AB - Absent

* Applicable only when the candidate obtains passing minimum marks in the University Examination and Total

(2)

ANNA UNIVERSITY

CHENNAI

M.E DEGREE EXAMINATIONS

STATEMENT OF MARKS

Sl. No. C 0588966

Folio No. B364137

NAME OF THE CANDIDATE	JAYARAJN	REGISTER NO.	61903401005
COLLEGE OF STUDY	619.Vinayaka Missions Kirupananda Variyar Engineering College	MONTH & YEAR OF EXAM.	May 2004
PROGRAMME & BRANCH	M.E-Applied Electronics	DATE OF PUBLICATION	22/02/2005

SEM. NO	SUBJECT CODE	SUBJECT TITLE	IM	UM	TOTAL	TOTAL MARKS IN WORDS	RESULT
		Max. Marks	020	080	100		
		Min. Marks	-	040	050		
02	AX034	Digital Image Processing	020	055	075	ZERO SEVEN FIVE	PASS
02	AX141	Computer Architecture and Parallel Processing	020	070	090	ZERO NINE ZERO	PASS
03	AX031	ASIC Design	020	059	079	ZERO SEVEN NINE	PASS
03	AX039	Internetworking Multimedia	020	054	074	ZERO SEVEN FOUR	PASS
03	CI034	Digital Instrumentation	020	053	073	ZERO SEVEN THREE	PASS

*** End of Statement***

Controller of Examinations, Anna University, Chennai-600 025.

Controller of Examinations

IM - Internal Assessment Marks UM - University Examination Marks AB - Absent

* - When the candidate obtains passing minimum marks in the University Examination and Total

(3)

ANNA UNIVERSITY

CHENNAI

M.E. DEGREE EXAMINATIONS

STATEMENT OF MARKS

Sl. No. C 0903521

Folio No. B459112

NAME OF THE CANDIDATE	JAYARAJ N	REGISTER NO.	61903401005
COLLEGE OF STUDY	519:Vinayaka Missions Kirupananda Variyar Engineering College	MONTH & YEAR OF EXAM.	Apr' 2005
PROGRAMME & BRANCH	M.E-Applied Electronics	DATE OF PUBLICATION	18/08/2005

SEM. NO.	SUBJECT CODE	SUBJECT TITLE	IM	UM	TOTAL *	TOTAL MARKS IN WORDS	RESULT
		Max. Marks	120	480	600		
		Min. Marks	-	240	300		
04	AX233	Project Work	115	446	561	FIVE SIX ONE	PASS

*** End of Statement***

Controller of Examinations Chennai-600 025

Chennai - 600 025.

Date : 07/10/2005

V. Jayaraj

Controller of Examinations

IM - Internal Assessment Marks UM - University Examination Marks AB - Absent

* Applicable only when the candidate obtains passing minimum marks in the University Examination and Total.

CERTIFICATE S NO B 0109150

DIRECTORATE OF GOVERNMENT EXAMINATIONS, MADRAS-600 006

MATRICULATION EXAMINATION

X STANDARD

ISSUED UNDER THE AUTHORITY OF THE GOVERNMENT OF TAMIL NADU

Certified that

JAYARAJ N

has passed in the MAR 95

MATRICULATION Examination and secured the following marks

SUBJECT	MAX	MARKS
ENGLISH	200	130 ONE THREE ZERO
SEC. LANG TAMIL	200	166 ONE SIX SIX
MATHEMATICS	200	183 ONE EIGHT THREE
SCIENCE	300	226 TWO TWO SIX
HISTORY & GEOGRAPHY	200	153 ONE FIVE THREE
TOTAL	1100	0858 ZERO EIGHT FIVE EIGHT

DATE OF BIRTH	REGISTER NO	TMR CODE NO & DATE
04-21-81	216155	N515048 17.05.95
MATRICULATION SCHOOL		CLASS
CRISTALAND MAT HSS KRISHNAGIRI		FIRST

A PASS IN THE MATRICULATION EXAMINATION REQUIRES A MINIMUM OF THIRTY FIVE PERCENT OF MARKS IN EACH ONE OF THE FIVE SUBJECTS. THIS INCLUDES PASSING UNDER THE COMPARTMENTAL SYSTEM ALSO.

SECRETARY
BOARD OF MATRICULATION
EXAMINATION
TAMIL NADU

N. Jayaraj

Candidate's Signature

CERTIFICATE S. NO. AB 2545214

DEPARTMENT OF GOVERNMENT EXAMINATIONS MADRAS 600 006

HIGHER SECONDARY COURSE CERTIFICATE

GENERAL EDUCATION

ISSUED UNDER THE AUTHORITY OF THE GOVERNMENT OF TAMIL NADU

Certified that

JAYARAJ N *appeared for the* MAR.1998

Higher Secondary Examination and obtained the following marks :

SUBJECT	MARKS OBTAINED FOR 200
TAMIL	172 ONE SEVEN TWO
ENGLISH	175 ONE SEVEN FIVE
PHYSICS	159 ONE FIVE NINE
CHEMISTRY	142 ONE FOUR TWO
BIOLOGY	181 ONE EIGHT ONE
MATHEMATICS	170 ONE SEVEN ZERO
TOTAL MARKS :	0999 ZERO NINE NINE NINE

GROUP CODE 501

DATE OF BIRTH	REGISTER NO.	TMR CODE NO. & DATE
04/01/81	637343	G177183 05.06.1998

SCHOOL

KRISHLAND MHSS KRISHNAGIRI

MINIMUM FOR A PASS : 70 MARKS OUT OF 200 IN EACH SUBJECT. THIS INCLUDES PASSING UNDER THE COMPARTMENTAL SYSTEM ALSO.

N. Jayaraj
Candidate's Signature

Secretary
BOARD OF HIGHER SECONDARY EXAMINATION
TAMIL NADU

CERTIFICATE S. NO. AB 3025782

DEPARTMENT OF GOVERNMENT EXAMINATIONS MADRAS 600 006

HIGHER SECONDARY COURSE CERTIFICATE

GENERAL EDUCATION

ISSUED UNDER THE AUTHORITY OF THE GOVERNMENT OF TAMIL NADU

Certified that

JAYARAJ N *appeared for the* MAR.1999

Higher Secondary Examination and obtained the following marks :

SUBJECT	MARKS OBTAINED FOR 200
1ST IMPROVEMENT	
**********	**********
**********	**********
PHYSICS	188 ONE EIGHT EIGHT
CHEMISTRY	179 ONE SEVEN NINE
BIOLOGY	180 ONE EIGHT ZERO
MATHEMATICS	171 ONE SEVEN ONE
TOTAL MARKS :	0718 ZERO SEVEN ONE EIGHT

GROUP CODE 501

DATE OF BIRTH	REGISTER NO.	TMR CODE NO. & DATE
04/01/81	905665	G283452 28.05.1999

SCHOOL

PRIVATE

MINIMUM FOR A PASS : 70 MARKS OUT OF 200 IN EACH SUBJECT. THIS INCLUDES PASSING UNDER THE COMPARTMENTAL SYSTEM ALSO.

N. Jayaraj
Candidate's Signature :

Secretary
BOARD OF HIGHER SECONDARY EXAMINATION
TAMIL NADU

VINAYAKA MISSION'S
KIRUPANANDA VARIYAR ENGINEERING COLLEGE

(Approved by the Govt. of Tamil Nadu & AICTE, New Delhi and Affiliated to the Anna University, Chennai.)

AN ISO CERTIFIED INSTITUTION

SALEM-636 308, TAMILNADU, INDIA.

FS : 75736
ISO 9001 : 2000

TRANSFER CERTIFICATE

S.No. 440

Regd. No. 619034010005

1. Name of the Student	...	N. JAYARAJ
2. Nationality	...	INDIAN
3. Religion	...	HINDU
4. Caste	:	Yadhava
5. Sex	:	Male / ~~Female~~
6. Name of the Father/~~Guardian~~	:	M. Narayanan
7. Date of Birth as entered in the Admission Register in figures and words	:	04.01.81 (Four–One–Eighty one)
8. Date of Admission and course in which admitted (the year to be entered in words)	:	August 2003 (Two Thousand Three)
9. Class in which the student was studying at the time of leaving	:	Final Year M.E (A.E)
10. Whether qualified for Promotion to higher class	:	REFER THE MARK SHEET
11. Whether the student has paid all fees due to the college	:	YES / ~~NO~~
12. Student's Conduct and Character	:	good.
13. Date on which the student actually left the college	:	June 2005
14. Date on which application for transfer certificate was made	:	08/08/06

KV

Date : 08/08/06

VINAYAKA MISSIONS KIRUPANANDA VARIYAR ENGINEERING COLLEGE
Periya Seeragapadi
SALEM - 636 308

P. SENGUTTUVAN, M.E.,
PRINCIPAL
VMKV ENGINEERING COLLEGE
PERIY SEERAGAPADI
SALEM - 636 308

CHILDREN'S EDUCATION SOCIETY (Regd.)
Administrative Office :
1st Phase, J.P. Nagar, Bengaluru - 560 078. ✆ : 080 - 61754501 - 502 Fax: 080 2654 8658

THE OXFORD COLLEGE OF ENGINEERING

(Recognized by the Govt. of Karnataka, Affiliated to Visvesvaraya Technological University, Belagavi &
Approved by A.I.C.T.E., New Delhi, Accrediated by NAAC & NBA New Delhi and Recognized by UGC under section 2(f))
Bommanahalli, Hosur Road, Bengaluru - 560 068.
✆ : 080 61754601 / 602 / 604 Fax: 080 25730551
E-mail: engprincipal@theoxford.edu Web: www.theoxford.edu

Estd. 1974

Ref No. : TOCE/EST/2019-20 ***Date: December 17, 2020***

SERVICE CERTIFICATE

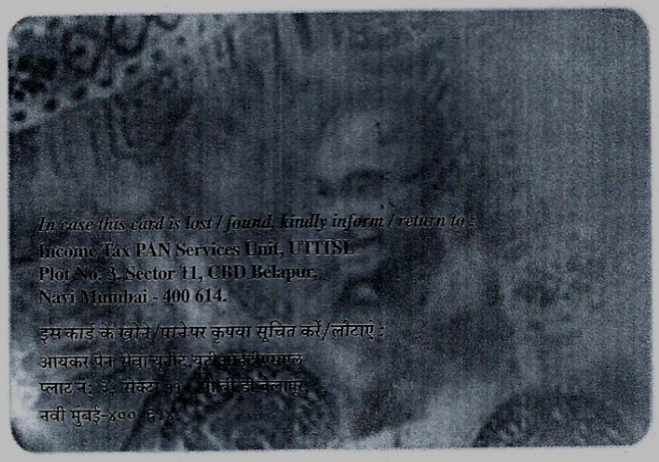
This is to certify that **Mr. Jayaraj N,** is working as Assistant Professor in the Department of Electronics & Communication Engineering of this college from 11.07.2005 to till date.

This certificate is issued for the purpose of applying for Ph.D at Kalasalingam University, Tamil Nadu.

PRINCIPAL
The Oxford College of Engineering
Bommanahalli, Hosur Road
Bangalore - 560 068

17/Dec/2020


आयकर विभाग
INCOME TAX DEPARTMENT
भारत सरकार
GOVT. OF INDIA
N JAYARAJ
NARAYANAN
14/01/1981
Permanent Account Number
AJGPJ2153C
Signature


In case this card is lost / found, kindly inform / return to :
Income Tax PAN Services Unit, UTITSL
Plot No. 3, Sector 11, CBD Belapur,
Navi Mumbai - 400 614.
इस कार्ड के खोने/पाने पर कृपया सूचित करें/लौटाएं :
आयकर पैन सेवा यूनिट, यूटीआईटीएसएल
प्लाट नं: 3, सेक्टर 11, सीबीडी बेलापुर,
नवी मुंबई-400 614.

இந்திய அரசாங்கம்
Unique Identification Authority of India
Government of India

பதிவு எண்/Enrolment No. : 2007/13247/60036

To
Jayaraj Narayanan
ஜெயராஜ் நாராயணன்
S/O: Narayanan
dno 1/297-A
RAJAJI NAGAR 1ST CROSS
KATTIKANAPALLI
Krishnagiri
Krishnagiri Indl. Estate,Krishnagiri
Tamil Nadu - 635002
8884990425

13/12/2013

KL624628202FT

62462820

உங்கள் ஆதார் எண் / Your Aadhaar No. :

5851 8385 4919

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

இந்திய அரசாங்கம்
Government of India

ஜெயராஜ் நாராயணன்
Jayaraj Narayanan

பிறந்த நாள்/DOB: 04/01/1981
ஆண்/Male

5851 8385 4919

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

BC

சான்றிதழ் எண்
Certificate No : 409/95

மாவட்ட குறியீடு எண்
District Code
வட்ட குறியீடு எண்
Taluk Code
கிராமக் குறியீடு எண்
Village Code

0	5
0	6
1	22

512691

சாதிச்சான்றிதழ்

COMMUNITY CERTIFICATE

தர்மபுரி மாவட்டம் கிருஷ்ணகிரி வட்டம்
பெர்கெனஹள்ளி கிராமம் / நகரம், திரு / திருமதி / செல்வி /
செல்வன் N. ஐயர்நாஜ் தகப்பனார் /
கணவர் பெயர் நாராயணன் — யாதவர்
வகுப்பைச் சார்ந்தவர். அரசு ஆணை எண். 1564, சமூக நலத்துறை. நாள் 30-7-1985
ப.வ.எண். 141 படி பிற்பட்ட பிரிவைச் சார்ந்தவர் என
சான்றளிக்கப்படுகிறது. 561 P & AR (Perl. S) Dept. 4.10.89

This is to Certify that ..... Son / Daughter of
Thiru ..... of Village / Town .....
Taluk ..... District of the State of Tamil Nadu belongs to .....
..... Community, which is recognised as a Backward Class as
per Government Order (Manuscript Series) No. 1564, Social Welfare Department, dated
30-7-1985 vide Serial No. .....

2. திரு / ~~திருமதி~~ / செல்வி / செல்வன் N. ஐயர்நாஜ்
என்பவரும் அவருடைய குடும்பத்தினரும் தமிழ்நாட்டில் தர்மபுரி
மாவட்டத்தில் கிருஷ்ணகிரி வட்டத்தில் பி முனிபசப்பனஹ
கிராமத்தில் நிரந்தரமாக வசித்து வருகிறார்கள் என சான்றளிக்கப்படுகிறது.

2. It is certified that Thiru / Tmt. / Selvi / Selvan .....
and his / her family ordinarily reside(s) at ..... village / Town
Taluk ..... District of Tamil Nadu.

முத்திரை
Seal

கிருஷ்ணகிரி தாலுகா
கிருஷ்ணகிரி
தனி எழுத்துக்களில்
மின்டையம்.

கையொப்பம் :
Signature

நாள் : 12
Date

பெயர் : D. SUBRAMANIAN 215
Name in Capital Letters ZONAL DEPUTY TAHSILDAR

பதவி பெயர் : KRISHNAGIRI
Designation

Gcp. 26/4—4,90,000 Cps.—8-4-94

12.5.95

CHILDREN'S EDUCATION SOCIETY (Regd.)

Administrative Office :

1st Phase, J.P. Nagar, Bengaluru - 560 078. ✆ : 080 - 61754501 - 502 Fax: 080 2654 8658

THE OXFORD COLLEGE OF ENGINEERING

(Recognized by the Govt. of Karnataka, Affiliated to Visvesvaraya Technological University, Belagavi &
Approved by A.I.C.T.E., New Delhi, Accrediated by NAAC & NBA New Delhi and Recognized by UGC under section 2(f))

Bommanahalli, Hosur Road, Bengaluru - 560 068.

✆ : 080 61754601 / 602 / 604 Fax: 080 25730551

E-mail: engprincipal@theoxford.edu Web: www.theoxford.edu

Estd. 1974

TO WHOM SO EVER IT MAY CONCERN

Certified that **Mr. JAYARAJ N** is employed as **ASSISTANT PROFESSOR** in the **DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING** of **THE OXFORD COLLEGE OF ENGINEERING.**

We have no objection in forwarding his application for the Ph.D. Research Programme (Part Time)

The candidate will be permitted to undertake part time study in the College and will be allowed to be present for discussions with the supervisor, attending course works, conduct of experiments and participations in seminars and related presentations. Further the required facilities at our organization will also be provided to the candidate for doing research.

Date: 17.12.2020

Signature of the Head of Organization with office seal

PRINCIPAL
The Oxford College of Engineering
Bommanahalli, Hosur Road
Bangalore - 560 068