

Contents

| | | |
|----------|--|-----------|
| 1 | B.Tech | 3 |
| 2 | MTP | 5 |
| 3 | Work Experience and non-academic project | 6 |
| 3.1 | Interview Portal | 6 |
| 3.2 | workex | 7 |
| 4 | key Projects | 8 |
| 4.1 | Scheduling in 4G LTE | 8 |
| 4.2 | Cellular Simulation | 8 |
| 4.3 | Seminar | 10 |
| 4.4 | Image Dehazing | 11 |
| 4.5 | Basic Image Editor tool in Python | 11 |
| 4.6 | Wavelets | 12 |
| 4.7 | Spam URL classification using Machine Learning | 13 |
| 5 | System Adminstrator, PC Lab | 15 |
| 6 | PGAC, Web Nominee | 16 |
| 7 | Hostel-1, Mess Secretary | 19 |
| 8 | Co-Curricular Activites | 22 |
| 8.1 | Machine Learning | 22 |
| 8.2 | Linux, Vim & Git | 24 |
| 8.3 | Python | 26 |
| 8.4 | Chinese | 27 |
| 8.5 | Digital System Design | 29 |
| 8.6 | National Service Scheme (NSS) | 30 |
| 8.7 | French | 31 |
| 8.8 | World Parliament of Spirituality | 32 |
| 8.9 | Spoken English | 33 |

1 B.Tech

| JAWAHARALAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD HYDERABAD - 500 085, TELANGANA STATE, INDIA. | | | | | | | | | | | | |
|--|---------------------|-----------|---------------------------------|--|-----------------------------|---------------------------------|---|--|-----------|---------------------------------|-------|---------------------------------|
| ACKNOWLEDGED MARKS MEMO / CREDIT SHEET | | | | | | | | | | | | |
| B.Tech : ELECTRONICS & COMMUNICATION ENGINEERING Regd. No. E-0672303 Batch No. 211400119 Name : M ARUN RUMAR ID No. 11841A0421 | | | |  Name of the College : 84-K E.C.UPPAL Month & Year of Final Exam : May, 2015 | | | | | | | | |
| Year of Admission : 2011-2012 | | | | | | | | Class Awarded : FIRST CLASS WITH DISTINCTION | | | | |
| Subject Title | Max Marks in Theory | M ARKS | C R E D I T S | Total | P ER C E N T | S C R I P T S | Subject Title | Max Marks in Lab | M ARKS | C R E D I T S | Total | C R E D I T S |
| | | | | | | | | | | | | |
| I YEAR | | | | | | | | | | | | |
| 1. ENGLISH | 22 | 49 | 71 | 4 | 2 | | MATHEMATICS - I | 23 | 61 | 84 | 6 | |
| 2. MATHEMATICAL METHODS | 24 | 43 | 87 | 6 | 4 | | ENGINEERING PHYSICS | 22 | 39 | 61 | 4 | |
| 3. ENGINEERING CHEMISTRY | 21 | 89 | 73 | 4 | 6 | | COMPUTER PROGRAMMING & DATA STRUCTURES | 21 | 37 | 58 | 6 | |
| 4. ENGINEERING DRAWING | 23 | 80 | 73 | 4 | 8 | | COMPUTER PROGRAMMING LAB | 24 | 41 | 65 | 4 | |
| 5. ENGG. PHYSICS & ENGG. CHEMISTRY LAB | 28 | 80 | 75 | 4 | 10 | | ENGLISH LANGUAGE COMMUNICATION SKILLS LAB | 24 | 47 | 71 | 4 | |
| 6. II WORKSHOP & ENGINEERING WORKSHOP | 21 | 48 | 89 | 4 | | | | | | | | |
| I SEMESTER | | | | II YEAR | | | | II SEMESTER | | | | |
| 1. MATHEMATICS-II | 21 | 86 | 87 | 3 | 1 | | PRINCIPLES OF ELECTRICAL ENGINEERING | 24 | 55 | 79 | 3 | |
| 2. PROBABILITY THEORY & STOCHASTIC PROCESSES | 23 | 31 | 54 | 3 | 2 | | ELECTRONIC CIRCUIT ANALYSIS | 19 | 33 | 49 | 4 | |
| 3. ENVIRONMENTAL STUDIES | 21 | 57 | 78 | 3 | 3 | | PULSE & DIGITAL CIRCUITS | 22 | 42 | 64 | 4 | |
| 4. ELECTRIC CIRCUITS | 18 | 86 | 74 | 4 | 4 | | SWITCHING THEORY & LOGIC DESIGN | 21 | 52 | 73 | 4 | |
| 5. ELECTRONIC DEVICES & CIRCUITS | 20 | 35 | 85 | 4 | 5 | | ELECTROMAGNETIC THEORY & TRANSMISSION LINES | 22 | 38 | 60 | 4 | |
| 6. SIGNALS & SYSTEMS | 22 | 42 | 84 | 4 | 6 | | ELECTRICAL ENGINEERING LAB | 25 | 40 | 65 | 2 | |
| 7. ELECTRONIC DEVICES & CIRCUITS LAB | 28 | 49 | 74 | 2 | 7 | | ELECTRONIC CIRCUIT ANALYSIS LAB | 23 | 48 | 71 | 2 | |
| 8. BASIC SIMULATION LAB | 23 | 46 | 69 | 2 | 8 | | PULSE & DIGITAL CIRCUITS LAB | 24 | 50 | 74 | 2 | |
| I SEMESTER | | | | III YEAR | | | | II SEMESTER | | | | |
| 1. CONTROL SYSTEMS | 22 | 52 | 74 | 4 | 1 | | DIGITAL COMMUNICATIONS | 21 | 33 | 54 | 3 | |
| 2. COMPUTER ORGANIZATION | 20 | 38 | 58 | 4 | 2 | | MANAGERIAL ECONOMICS & FINANCIAL ANALYSIS | 20 | 34 | 54 | 4 | |
| 3. ANTENNAS & WAVE PROPAGATION | 23 | 26 | 49* | 3 | 3 | | DIGITAL SIGNAL PROCESSING | 23 | 36 | 59 | 4 | |
| 4. ELECTRONIC MEASUREMENTS & INSTRUMENTATION | 21 | 46 | 67 | 4 | 4 | | OPERATING SYSTEMS | 22 | 38 | 60 | 4 | |
| 5. ANALOG COMMUNICATIONS | 23 | 51 | 74 | 3 | 5 | | MICROPROCESSORS & MICROCONTROLLERS | 23 | 44 | 67 | 4 | |
| 6. IC APPLICATIONS | 20 | 64 | 84 | 3 | 6 | | DIGITAL SIGNAL PROCESSING (LAB) | 23 | 45 | 68 | 2 | |
| 7. ANALOG COMMUNICATIONS (LAB) | 24 | 49 | 73 | 2 | 7 | | ADVANCED ENGLISH COMMUNICATION SKILLS (LAB) | 24 | 49 | 73 | 2 | |
| 8. IC APPLICATIONS (LAB) | 20 | 48 | 68 | 2 | 8 | | MICROPROCESSORS & MICROCONTROLLERS (LAB) | 24 | 49 | 73 | 2 | |
| I SEMESTER | | | | IV YEAR | | | | II SEMESTER | | | | |
| 1. EMBEDDED SYSTEMS | 24 | 27 | 51 | 4 | 1 | | CELLULAR & MOBILE COMMUNICATIONS | 23 | 50 | 73 | 3 | |
| 2. COMPUTER NETWORKS | 19 | 35 | 54 | 4 | 2 | | RADAR SYSTEMS | 22 | 48 | 70 | 3 | |
| 3. MICROWAVE ENGINEERING | 23 | 33 | 56 | 3 | 3 | | WIRELESS COMMUNICATIONS & NETWORKS | 22 | 26 | 48* | 3 | |
| 4. VLSI DESIGN | 22 | 39 | 61 | 4 | 4 | | INDUSTRY ORIENTED MINI PROJECT | - | 43 | 43 | 2 | |
| 5. DIGITAL IMAGE PROCESSING | 24 | 38 | 62 | 3 | 5 | | SEMINAR | 50 | - | 50 | 2 | |
| 6. MANAGEMENT SCIENCE | 23 | 42 | 65 | 3 | 6 | | MAJOR PROJECT | 60 | 133 | 183 | 10 | |
| 7. MICROWAVE ENGG AND DIGITAL COMMS. LAB | 23 | 47 | 70 | 2 | 7 | | COMPREHENSIVE VIVA | - | 79 | 79 | 2 | |
| 8. E-LAB AND VLSI LAB | 24 | 48 | 72 | 2 | | | | | | | | |

3 (# Project Internal= 50, External= 160)

Number of Credits registered for : 200 Aggregate Marks Secured for best : 194

Aggregate Marks Secured : 3862 OUT OF 5200 (74.08%)

Date of Issue : June 14, 2015

Term certified for duly concerned to award of class:

A indicates 'ABSENT'

(Courses registered but not counted for calculation of aggregate)



CONTROLLER OF EXAMINATIONS

2 MTP

Re: points to be verified regarding MTP and se...

Subject: Re: points to be verified regarding MTP and seminar.

From: Kumar Appaiah <akumar@ee.iitb.ac.in>

Date: 19/08/19, 5:57 PM

To: M Arun kumar <173079004@iitb.ac.in>

CC: pg.verifyresume2019itb@gmail.com

Verified.

On Mon, 19 Aug, 2019, 17:22 M Arun kumar, <173079004@iitb.ac.in> wrote:

Dear Sir,

Please verify the following for my resume.

M.Tech Project: An efficient channel estimation scheme in MIMO TDD systems (May'19 - Present)

Guide: Prof. Kumar Appaiah, Electrical Engineering, IIT Bombay

Objective:

To design an efficient channel estimation scheme in Time Division Duplexing (TDD) with the help of feedback in MIMO Communication which will reduce the effect of pilot contamination on MIMO channel estimation.

Completed work:

- Implemented Multi Cell MMSE based MIMO precoding in multiple antenna cellular
- systems which used non-orthogonal pilots for channel estimation.
- Analyzed and implemented co-variance based channel estimation which uses Bayesian estimation in single cell multi antenna system and observed its performance based on rate vs number of antennas.
- Implemented Kalman estimation for multi antenna cellular system.
- Parameterized the feedback for postcoder in massive MIMO TDD systems with multi antenna users.
- Formulated a lower bound on the achievable rate for systems with perfect CSIT and partial CSIR.

Ongoing work:

Working on implementing a basic precoder which utilises the information obtained from Kalman estimate in coordinated MIMO systems.

M.Tech Seminar: Inter cell interference in Multi Cell MIMO systems (Jul'18 - Nov'18)

Guide: Prof. Kumar Appaiah, Electrical Engineering, IIT Bombay

1 of 2

20/08/19, 8:44 PM

Re: points to be verified regarding MTP and se...

- Studied the structure and working of MIMO systems and impact on BER on using Non-orthogonal pilot sequences for channel estimate.
- Simulated BER vs SNR for MIMO systems in Interference and Interference-free scenarios to study the impact of pilot contamination on the performance of the system.

--
Thanks and regards
M.Arun Kumar,
M.Tech,
IITB.

3 Work Experience and non-academic project

3.1 Interview Portal

Re: verification for the work done in department...

Subject: Re: verification for the work done in department admission process for resume.

From: Bikash Kumar Dey <bikash.kr.dey@gmail.com>

Date: 14/08/19, 11:17 AM

To: M Arun kumar <173079004@iitb.ac.in>

CC: Bikash Kumar Dey <bikash@ee.iitb.ac.in>, Madhu belur <belur@ee.iitb.ac.in>, pg.verifyresume2019iitb@gmail.com

This is verified and approved.

Best wishes,
Bikash

On Wed, Aug 14, 2019 at 12:24 AM M Arun kumar <173079004@iitb.ac.in> wrote:

Dear Sir,

Please verify the following points for my resume.

- The EE department holds admission process for PhD twice a year, and another admission process for M Tech once a year.
- Each admission session attracts a large number of applicants.
- Admissions are simultaneously held for different types of positions, some institute funded and others funded by funded projects.
- The selection is based on written test followed by interviews.
- The same candidate is interviewed by multiple panels to judge their merit for various positions.
- The logistics of handling such a complex interview process with more than 20 interview panels over 100 candidates in a restricted time-frame was always very challenging.
- An online platform for the purpose has been under development.
- I took a leading role in building this online system that made automatic coordination across interview committees possible through their interfaces.
- The online system allowed committees to decide in real-time using a cross platform web application about starting/combinig interviews.
- I also built various other peripheral interfaces to collect data at different times from students and other sources to allow all major activities related to the admission to happen through the same system.
- The system was used successfully in the last 3 admission sessions.

Thanks and regards

M.Arun kumar,

3.2 workex

Re: Verification of the work done during my ten...

Subject: Re: Verification of the work done during my tenure at Infosys.
From: Ratnadeep Ponnappalli <Ratnadeep_P@infosys.com>
Date: 16/08/19, 12:04 PM
To: M Arun kumar <173079004@iitb.ac.in>
Cc: "pg.verifyresume2019iitb@gmail.com"
<pg.verifyresume2019iitb@gmail.com>

Hi Arun

I confirm that you have worked on below mentioned activities.
I wish you all the best for future

Regards
Ratnadeep

From: M Arun kumar <173079004@iitb.ac.in>
Sent: Wednesday, August 14, 2019 11:24 AM
To: Ratnadeep Ponnappalli <Ratnadeep_P@infosys.com>
Cc: pg.verifyresume2019iitb@gmail.com <pg.verifyresume2019iitb@gmail.com>
Subject: Verification of the work done during my tenure at Infosys.

[**EXTERNAL EMAIL**]

Dear Sir,

Can you please verify the following points

Position: Systems Engineer (Dec'15 - Jul'17)

Tools Used: Oracle Peoplesoft.

- Roles and responsibilities: Part of the team which developed an application which automates billing for the customers of the client.
- Wrote SQL queries to fetch data to the module and to develop features using Oracle Peoplesoft ERM tool.
- Assisted in designing billing template in XML and in completion of Technical Document Report for the project.

Thanks and regards
M.Arun Kumar,
M.tech, IITB.

4 key Projects

4.1 Scheduling in 4G LTE

Verified By DPC

| A | B | C | D | E | F | G | H | I | J | K | L |
|-------------|-------------|-------------------|----------------|--|---|--------------------------------------|--------------------------------------|---|---|---|---|
| Roll number | Course code | Instructor Name | Year of course | 1st Project Description (with title) | 2nd Project Description (with title) | 3rd Project Description (with title) | 4th Project Description (with title) | | | | |
| 150670007 | EE761 | Prof. Jayakrishna | 2018 | <p>Math behind the Financial Crisis - Proved relevance of Banach-Tarski theorem in explaining the emergence of the 2008 financial crisis - Explained failure of VaR risk measure in heavy-tailed risks seen in financial crisis using Daubens theorem - Highlighted the cruciality of Model uncertainty in financial crisis using Sibuya & Fréchet-Hoeffding theorem</p> <p>Simulation of Cellular system in N</p> <p>Different Scheduling Schemes in LTE</p> <ol style="list-style-type: none">1. Computed SIR, blocking probat2. Analyzed BER performance for | <p>1. Simulated channel aware schemes: Maximum Throughput, Proportional Fair, Throughput to Average scheduling schemes in LTE Downlink.</p> <p>2. Used Cell Throughput, Average user throughput, and Jain Fairness Index as metrics to compare the scheduling</p> | | | | | | |
| 173079001 | EE764 | Prof. Abhay Kar | 2018 | 3. Analyzed BER performance for schemes. | | | | | | | |
| 173079008 | EE764 | Prof. Abhay Kar | 2018 | <p>Effect of Mobility on Performance - Studied handover process and ping-pong rate for different user mobilities and hysteresis values - Simulated CDMA and LTE system</p> <p>Analyzed the performance of both</p> <p>Scheduling in 4G LTE (Jan18 - Apr18)</p> | <p>- Evaluated BER performance for space and time diversity scenarios in a slow flat fading Rayleigh channel</p> <p>- Simulation of Cellular System in Octave/MATLAB (Jan18 - April18)</p> | | | | | | |
| 173079004 | EE764 | Prof. Abhay Kar | 2018 | <p>Studied about different scheduling</p> <p>Different scheduling schemes in N</p> | <p>Computed SIR, blocking probability for different cluster sizes and sectoring. Analyzed handover process and ping-pong rate for different user mobilitie</p> <p>Simulation of Cellular wireless system in MATLAB</p> | | | | | | |
| 173079005 | EE764 | Prof. Abhay Kar | 2018 | <p>1)Simulated channel aware scheme 2)Used Cell Throughput, Average 3)Studied cell throughput vs numo 4)Simulated Maximum throughput</p> <p>Title : Simulation of Cellular System in MATLAB</p> | <p>1)Computed SIR, blocking probability for different cluster sizes and sectoring. Analyzed handover process and ping-pong rate for different user mobilitie</p> <p>2)Analyzed BER performance for space and time diversity in a slow, flat fading Rayleigh channel.</p> <p>3)Analyzed BER performance for a single-cell and multi-cell scenario in a CDMA cellular system.</p> | | | | | | |

4.2 Cellular Simulation

Verified By DPC

| A | B | C | D | E | F | G | H | I | J | K | L |
|-------------|-------------|-------------------|----------------|--|---|--------------------------------------|--------------------------------------|---|---|---|---|
| Roll number | Course code | Instructor Name | Year of course | 1st Project Description (with title) | 2nd Project Description (with title) | 3rd Project Description (with title) | 4th Project Description (with title) | | | | |
| 150670007 | EE761 | Prof. Jayakrishna | 2018 | <p>Math behind the Financial Crisis - Proved relevance of Banach-Tarski theorem in explaining the emergence of the 2008 financial crisis - Explained failure of VaR risk measure in heavy-tailed risks seen in financial crisis using Daubens theorem - Highlighted the cruciality of Model uncertainty in financial crisis using Sibuya & Fréchet-Hoeffding theorem</p> <p>Simulation of Cellular system in N</p> <p>Different Scheduling Schemes in LTE</p> <ol style="list-style-type: none">1. Computed SIR, blocking probe2. Analyzed BER performance fo | <p>1. Simulated channel aware schemes: Maximum Throughput, Proportional Fair, Throughput to Average scheduling schemes in LTE Downlink.</p> <p>2. Used Cell Throughput, Average user throughput, and Jain Fairness Index as metrics to compare the scheduling</p> | | | | | | |
| 173079001 | EE764 | Prof. Abhay Kar | 2018 | 3. Analyzed BER performance for schemes. | | | | | | | |
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| 173079004 | EE764 | Prof. Abhay Kar | 2018 | <p>Studied about different scheduling</p> <p>Different scheduling schemes in N</p> | <p>Computed SIR, blocking probability for different cluster sizes and sectoring. Analyzed handover process and ping-pong rate for different user mobilitie</p> <p>Simulation of Cellular wireless system in MATLAB</p> | | | | | | |
| 173079005 | EE764 | Prof. Abhay Kar | 2018 | <p>1)Simulated channel aware scheme 2)Used Cell Throughput, Average 3)Studied cell throughput vs numo 4)Simulated Maximum throughput</p> <p>Title : Simulation of Cellular System in MATLAB</p> | <p>1)Computed SIR, blocking probability for different cluster sizes and sectoring. Analyzed handover process and ping-pong rate for different user mobilitie</p> <p>2)Analyzed BER performance for space and time diversity in a slow, flat fading Rayleigh channel.</p> <p>3)Analyzed BER performance for a single-cell and multi-cell scenario in a CDMA cellular system.</p> | | | | | | |

4.3 Seminar

Re: points to be verified regarding MTP and se...

Subject: Re: points to be verified regarding MTP and seminar.

From: Kumar Appaiah <akumar@ee.iitb.ac.in>

Date: 19/08/19, 5:57 PM

To: M Arun kumar <173079004@iitb.ac.in>

CC: pg.verifyresume2019iitb@gmail.com

Verified.

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TDD systems (May'19 - Present)

Guide: Prof. Kumar Appaiah, Electrical Engineering, IIT Bombay

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- systems which used non-orthogonal pilots for channel estimation.
- Analyzed and implemented co-variance based channel estimation which uses Bayesian estimation in single cell multi antenna system and observed its performance based on rate vs number of antennas.
- Implemented Kalman estimation for multi antenna cellular system.
- Parameterized the feedback for postcoder in massive MIMO TDD systems with multi antenna users.
- Formulated a lower bound on the achievable rate for systems with perfect CSIT and partial CSIR.

Ongoing work:

Working on implementing a basic precoder which utilises the information obtained from Kalman estimate in coordinated MIMO systems.

M.Tech Seminar: Inter cell interference in Multi Cell MIMO systems

(Jul'18 - Nov'18)

Guide: Prof. Kumar Appaiah, Electrical Engineering, IIT Bombay

1 of 2

20/08/19, 8:44 PM

Re: points to be verified regarding MTP and se...

- Studied the structure and working of MIMO systems and impact on BER on using Non-orthogonal pilot sequences for channel estimate.
- Simulated BER vs SNR for MIMO systems in Interference and Interference-free scenarios to study the impact of pilot contamination on the performance of the system.

--
Thanks and regards
M.Arun Kumar,
M.Tech,
IITB.

4.4 Image Dehazing

Verified By DPC

The screenshot shows a Google Sheets document titled "EE1 Course Verification List". The table has columns for Roll number, Course code, Instructor Name, Year of course, and four project descriptions. Projects 24, 25, and 26 are highlighted in red, while others are green. Project 24: "Iris Localisation and Segmentation" (EE610, Prof. Amit Sethi, 2018) - Implemented motion magnification and attenuation prior in Python using cv2. Project 25: "Motion Magnification" (EE610, Prof. Amit Sethi, 2018) - Implemented motion magnification and attenuation in Python using cv2. Project 26: "Enhancement of Low-light & Hazy Images" (EE610, Prof. Amit Sethi, 2018) - Implemented guided filter for haze removal using Luminance map and Dark Channel Prior approach.

| Roll number | Course code | Instructor Name | Year of course | 1st Project Description (with title) | 2nd Project Description (with title) | 3rd Project Description (with title) | 4th Project Description (with title) |
|-------------|-------------|-----------------|------------------|--|--|---|--------------------------------------|
| 24 | 173079024 | EE610 | Prof. Amit Sethi | 2018 Investigated and implemented two different approaches existing in the literature, namely circular houghtransform and total variation model for detecting and segmenting the iris region from a grayscale image. | | | |
| 25 | 173079004 | EE610 | Prof. Amit Sethi | Motion Magnification | Implemented motion magnification and attenuation in python using cv2. | | |
| 26 | 15D070007 | EE610 | Prof. Amit Sethi | Enhancement of Low-light & Hazy Images | Optimized code using vectorization method to reduce the computation time from 3 hours to 30 seconds. | | |
| | | | | Design algorithm for haze removal using Luminance map and Dark Channel Prior approach | Designed algorithm for haze removal using Luminance map and Dark Channel Prior approach using Luminance map and Dark Channel Prior approach using Luminance map and Dark Channel Prior approach. | | |
| 27 | 173079004 | EE610 | Prof. Amit Sethi | 2018 Basic Image Editor tool in Python (Jul'18 - Nov'18) | Basic Image Editor tool in Python (Jul'18 - Nov'18) | | |
| 28 | 15D070006 | EE610 | Amit Sethi | Image Colorization using Convolutional Neural Network | Image Colorization using Convolutional Neural Network | Developed an Image Editor which could perform Image Restoration and other conventional techniques | |
| 29 | 15d070057 | EE610 | Amit Sethi | 2018 Title: Cartoonification of Images, Image editor GUI | Performed Canny edge detection on a median filtered colour image and then performed colour homogenization using Bilateral Filtering and Quantization of images. | | |
| | | | | Created a MATLAB GUI to implement Log, Gamma transform and histogram equalization on images | Created a MATLAB GUI to implement Log, Gamma transform and histogram equalization on images | | |

4.5 Basic Image Editor tool in Python

Verified By DPC

The screenshot shows a Google Sheets document titled "EE1 Course Verification List". The table has columns for Roll number, Course code, Instructor Name, Year of course, and four project descriptions. Projects 24, 25, and 26 are highlighted in red, while others are green. Project 24: "Iris Localisation and Segmentation" (EE610, Prof. Amit Sethi, 2018) - Implemented motion magnification and attenuation prior in Python using cv2. Project 25: "Motion Magnification" (EE610, Prof. Amit Sethi, 2018) - Implemented motion magnification and attenuation in Python using cv2. Project 26: "Enhancement of Low-light & Hazy Images" (EE610, Prof. Amit Sethi, 2018) - Implemented guided filter for haze removal using Luminance map and Dark Channel Prior approach.

| Roll number | Course code | Instructor Name | Year of course | 1st Project Description (with title) | 2nd Project Description (with title) | 3rd Project Description (with title) | 4th Project Description (with title) |
|-------------|-------------|-----------------|------------------|--|---|---|--------------------------------------|
| 24 | 173079024 | EE610 | Prof. Amit Sethi | 2018 Investigated and implemented two different approaches existing in the literature, namely circular houghtransform and total variation model for detecting and segmenting the iris region from a grayscale image. | | | |
| 25 | 173079004 | EE610 | Prof. Amit Sethi | Motion Magnification | Implemented motion magnification and attenuation in python using cv2. | | |
| 26 | 15D070007 | EE610 | Prof. Amit Sethi | Enhancement of Low-light & Hazy Images | Optimized code using vectorization method to reduce the computation time from 3 hours to 30 seconds. | | |
| | | | | Design algorithm for haze removal using Luminance map and Dark Channel Prior approach | Designed algorithm for haze removal using Luminance map and Dark Channel Prior approach using Luminance map and Dark Channel Prior approach. | | |
| 27 | 173079004 | EE610 | Prof. Amit Sethi | 2018 Basic Image Editor tool in Python (Jul'18 - Nov'18) | Basic Image Editor tool in Python (Jul'18 - Nov'18) | | |
| 28 | 15D070006 | EE610 | Amit Sethi | Image Colorization using Convolutional Neural Network | Image Colorization using Convolutional Neural Network | Developed an Image Editor which could perform Image Restoration and other conventional techniques | |
| 29 | 15d070057 | EE610 | Amit Sethi | 2018 Title: Cartoonification of Images, Image editor GUI | Performed Canny edge detection on a median filtered colour image and then performed colour homogenization using Bilateral Filtering and Quantization of images. | | |
| | | | | Created a MATLAB GUI to implement Log, Gamma transform and histogram equalization on images | Created a MATLAB GUI to implement Log, Gamma transform and histogram equalization on images | | |

4.6 Wavelets

Verified By DPC

The screenshot shows a Google Sheets document titled "EE1 Course Verification List". The table has columns for Roll number, Course code, Instructor Name, Year of course, and four project descriptions. Rows 51, 52, 53, 54, 55, and 56 are visible, each containing a different project summary. Row 56 is highlighted in red.

| Roll number | Course code | Instructor Name | Year of course | 1st Project Description (with title) | 2nd Project Description (with title) | 3rd Project Description (with title) | 4th Project Description (with title) |
|-------------|-------------|-----------------|------------------|---|---|--------------------------------------|--------------------------------------|
| 51 | 160070038 | EE621 | Prof. Prasanna C | 2019 Image Denoising with Markov Chain Monte-Carlo • Used Metropolis Hastings technique to obtain acceptance probability of randomly flipped pixel from a noisy image | Markov Chain Monte Carlo (MCMC) Simulation Characterised the asymptotic attractor set for Markov Chains & also convergence of MCMC simulation schemes Implemented thermodynamics inspired Simulated Annealing to derive approximate solutions of TSP | | |
| 52 | 150070006 | EE621 | Prasanna Chpk | 2019 | | | |
| 53 | 160070048 | EE621 | Prof. Prasanna C | 2019 Monte-Carlo Simulations Markov Chains and Queuing Systems • Generated samples of the raised cosine distribution from Uniform distribution using Rejection sampling | Monte-Carlo Simulations Markov Chains and Queuing Systems • Got an acceptance rate of J/M with the finite bound value M , thus verifying the theory of rejection sampling | | |
| 54 | 173079004 | EE678 | Prof. Vikram M. | 2018 Wavelet based leaders and P leaders in Multi Fractal Analysis • Studied about p-exponents and the corresponding multi-resolution quantities called p-leaders which measure negative regularity which appear in most real time signal analysis | Wavelet based leaders and P leaders in Multi Fractal Analysis • Studied about p-exponents and the corresponding multi-resolution quantities called p-leaders which measure negative regularity which appear in most real time signal analysis • Simulated Multi-scale quantities obtained by estimation using DWT based P-leader and were able to prove their convergence with Multi-scale quantities obtained by estimation using DWT based Wavelet leader as P tends to infinity. | | |
| 55 | 173079024 | EE678 | Prof. Vikram Gad | 2018 Title: Super-Resolution of Ear Image using Wavelets and Deep Learning Trained a deep CNN on Nvidia GTX 1080 GPU using USTB-HelloEar dataset (consisting of ~6 lakhs earimages) to predict wavelet packets of low-resolution ear image which is then used | Project Title: Spot Detection of Fingerprints using Wavelets Team Members: B.V.S Anusha (173070001), K.L.Phalguni (173070007) Description: A wavelet based approach was used for classification of True and False fingerprints. | | |
| 56 | | | | | | | |

4.7 Spam URL classification using Machine Learning

Re: Verification of Course Project (EE 777) for resume

Subject: Re: Verification of Course Project (EE 777) for resume
From: "Gaurav S. Kasbekar" <gskasbekar@ee.iitb.ac.in>
Date: 14/08/19, 11:10 AM
To: "Hitesh Kurapati" <hitesh_hk@iitb.ac.in>
CC: pg.verifyresume2019iitb@gmail.com, 173079004@iitb.ac.in, hitesh_hk@iitb.ac.in

Verified.

Thanks and regards,
Gaurav Kasbekar

Dear Sir,

We(Arun Kumar: 173079004,Hitesh Kurapati:173079007), have done course project titled "Common Vulnerabilities in Web Applications & Spam URL classification using Machine Learning" as per course requirements.
Please verify the following points.

- * Exposure of Top-10 vulnerabilities (like external entity attack, SQL injection, Cross site scripting, Broken access control, Broken Authentication etc) of OWASP Standard with practical implementation and proposed solutions.
- * Spam URL classification using Machine Learning Techniques like Logistic Regression, Naive Bayes, Linear Support Vector Machine, One-vs-Rest : 96.97%,96.65%,98.49%,99.17% accuracies respectively.

Thanks and Regards
Hitesh Kurapati

1 of 2

20/08/19, 10:51 PM

5 System Adminstrator, PC Lab

Re: Points to be verified for the work done as System Administrator at P...

Subject: Re: Points to be verified for the work done as System Administrator at PC Lab, EE Department, IITB.
From: Prasanna Chaporkar <chaporkar@ee.iitb.ac.in>
Date: 19/08/19, 9:22 PM
To: 173079001@iitb.ac.in, 173079004@iitb.ac.in, 173079023@iitb.ac.in
CC: pg.verifyresume2019iitb@gmail.com

Verified.

On 16-Aug-2019 4:08 PM, M Arun kumar <173079004@iitb.ac.in> wrote:

Dear Sir,

Please Verify our RESUME points,
for system administrator, Electrical Department, IIT Bombay

| Roll No | Name | Work Done | Duration |
|-----------|----------------------|---|-------------------|
| 173079001 | Anuraag Tummanapally | <ul style="list-style-type: none">Development of EE department website, Dashboard, and maintaining numerous portals like faculty search committee, meeting room booking system, faculty wiki pages and TA allotment portals.Provide mail service, storage space, computing and network facilities to the Department.Automation of admission process through web based services and Bash Scripts | July 2017-Present |
| 173079004 | M.Arun Kumar | <ul style="list-style-type: none">Building and maintaining website of EE department, maintaining TA feedback and allotment portals.Provide mail service, storage space, computing facilities and network facilities to department. | July 2017-Present |

1 of 2

20/08/19, 10:53 PM

Re: Points to be verified for the work done as System Administrator at P...

| | | | |
|-----------|----------------------------|--|-------------------|
| | | <ul style="list-style-type: none">Designed online portals and automated Interviews co-ordination in the department admission process.Handled the Department M.Tech and PhD Admission process; Helped in generation of admit cards, coordinating the answer sheet corrections. | |
| 173079023 | Pilankar Prathamesh Milind | <ul style="list-style-type: none">Responsible for ensuring uninterrupted email, storage, network & computing facilities of the DepartmentInstalled and configured the faculty and student mail server, network file server for faculties, computational server, puppet server, PXE server, calendar server; Handled the software requirements of students and facultiesHandled the Department M.Tech and PhD Admission process; Helped in generation of admit cards, coordinating the answer sheet corrections and publishing of results | July 2017-Present |

--
Thanks and regards
M.Arun Kumar,
M.Tech,
IITB.

6 PGAC, Web Nominee

Re: Verification of points for resume

Subject: Re: Verification of points for resume
From: "General Secretary Academic Affairs (PG)" <gsecaapg@iitb.ac.in>
Date: 14/08/19, 10:52 AM
To: 173079001@iitb.ac.in, 173079004@iitb.ac.in
CC: pg.verifyresume2019iitb@gmail.com

To whomsoever it may concern,
This is to certify that Anuraag T and M. Arun Kumar have served as Web Nominees in the PG Academic Council for 2018-19.

We are thankful for their contributions to the PGAC during the course of their tenure.

Regards,
Aditya Chalishazar

On 2019-08-12 18:21, Anuraag Tummanapally wrote:

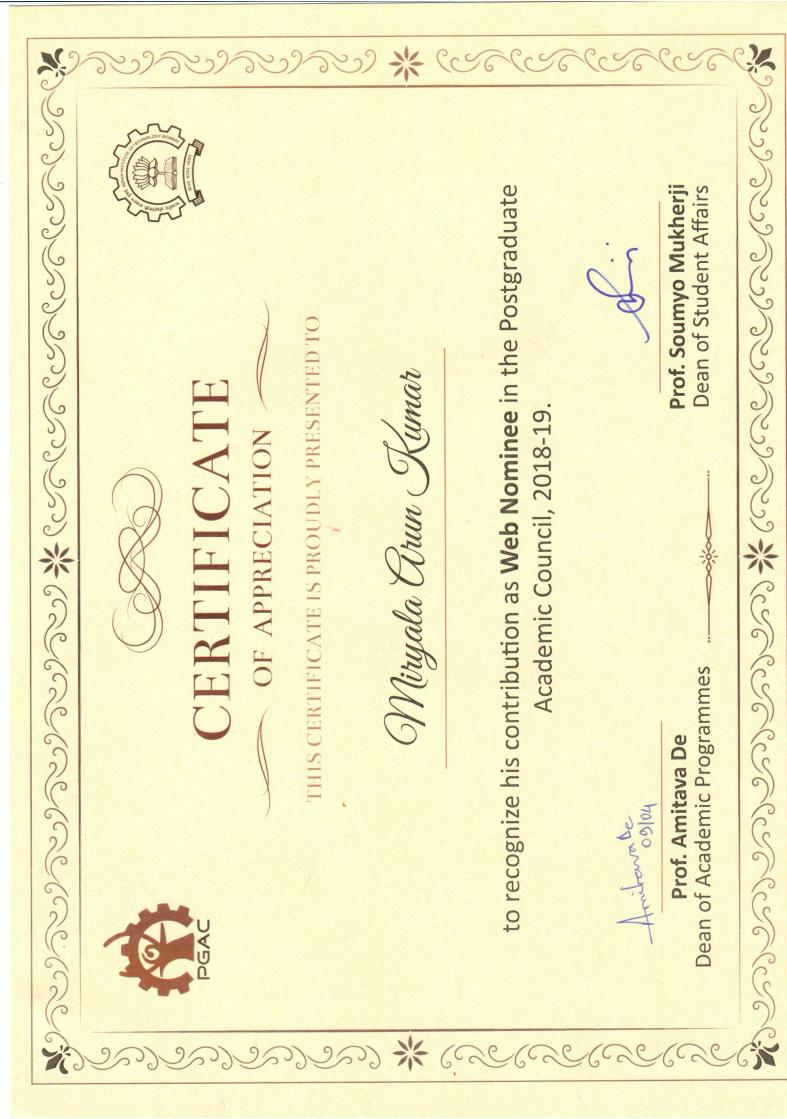
Dear General Secretary,

Following is the list of positions held and work done, please approve them.

| Roll No | Name | Position held | Work done | Term duration |
|-----------|----------------------|---------------|--|-------------------|
| 173079001 | Anuraag Tummanapally | Web Nominee | 1. Developed website for PGAC from scratch 2. Created GitHub account for development of PGAC web site 3. Tools / Softwares used: Bootstrap, HTML, PHP, CSS | July'18 - June'19 |
| 173079004 | M. Arun Kumar | Web Nominee | 1. Developed website for PGAC from scratch 2. Created GitHub account for development of PGAC web site 3. Tools / Softwares used: Bootstrap, HTML, PHP, CSS | July'18 - June'19 |

--
Regards,
Anuraag Tummanapally

--
Aditya Chalishazar
General Secretary
Academic Affairs (PG)
Indian Institute of Technology Bombay
Powai, Mumbai - 400076
Phone: +91-99-30-62-6982
Gmail: gsaa.pg[at]gmail.com



7 Hostel-1, Mess Secretary

Re: Fwd: Verification of points for various previous positions held in H-1.

Subject: Re: Fwd: Verification of points for various previous positions held in H-1.
From: "General Secretary H1" <gsech1@iitb.ac.in>
Date: 13/08/19, 2:21 PM
To: pg.verifyresume2019@iitb@gmail.com
CC: gsech1@iitb.ac.in, 173079001@iitb.ac.in, 173079007@iitb.ac.in, 173079006@iitb.ac.in, 173079004@iitb.ac.in

To whomsoever it may concern,

Dear Sir/Madam,

This is to verify that the following students have carried out the responsibilities as per their positions mentioned.

Thanks & Regards,
Deepak Ranjan Padhi
G.Sec (in charge)
Hostel-1

Dear General Secretary,

Following is the list of positions held and work done during the council term please approve them.

| Roll No | Name | Position held | Work done | Term duration |
|-----------|--------------|----------------|-----------|---------------|
| 173079004 | M.Arun kumar | Mess Secretary | | |

1. Managed all mess related activities for a mess which catered for 250+ students with an approximate budget of 8,00,000/- per month.
2. Responsible for verification of mess bills, coordinating with vendors.
3. Reduced mess bill from Rs 140/- per student per day to around Rs

1 of 3

20/08/19, 11:55 PM

Re: Fwd: Verification of points for various previous positions held in H-1.

- 114/- per students per day in span of two months.
4. Were able to continue smooth functioning of mess services even in the absence of Mess Councilor.
 5. Minimized the average waste from 25-30kg to 3-8kg.
 6. Increase in transparency in kitchen and counter area by installing camera and by conducting random checks on the vendors.

June 17- Mar 18
173079001
Anuraag Tumanapally
Web Secretary

1. Development and Maintenance of Hostel-1 Web site and Computer.
2. Installed digital notice board in mess area.

June 17- Mar 18
173079006
Abhishek Kumar
Computer Councilor

1. Maintenance of internet network and resolution of network issues as and when faced.
2. Design and maintenance of hostel web site and continuous updation of hostel activities.
3. Uninterrupted Network and Computer services to all the inmates of the hostel round the clock.

June 18-Mar 19
173079007
Hitesh Kurapati
Maintenance Secretary

1. Responsible for the proper maintenance and smooth functioning of the hostel of 250+ inmates.
2. Played a leading role in design of Annual maintenance contract for

2 of 3

20/08/19, 11:55 PM

Re: Fwd: Verification of points for various previous positions held in H-1.

the hostel.
3. initiated action plan to renovate unused land to garden area.

June'17-Mar'18

173079007

Hitesh Kurapati
Election & Awards Committee Member

1. Worked in a team of 4 as a part of election committee to conduct hostel council election and awards distribution among outgoing council members for their exceptional service to the hostel.
2. was responsible for conducting election in hostel with 250+ inmates.
3. Part of Awards committee and was responsible for selecting Awardees among applied contestants and awards distribution.

Mar19-June 19

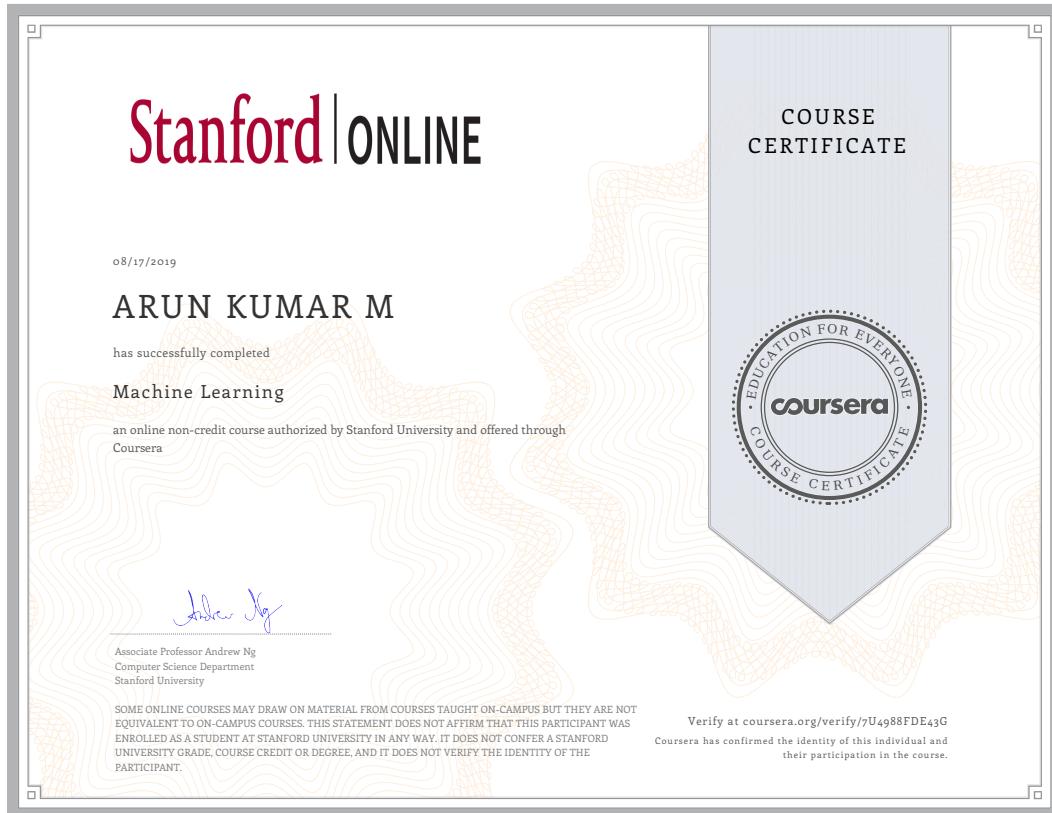
*PS: Some of the points mentioned for mess and maintenance are taken from hostel-1 annual magazine ANUBHOOTI April 2018, and can be used for verification. *

--
Thanks and regards
M.Arun kumar.



8 Co-Curricular Activites

8.1 Machine Learning



8.2 Linux, Vim & Git

Re: Verification for work done as a part of bridge course 2019.

Subject: Re: Verification for work done as a part of bridge course 2019.
From: "Department of Electrical Engineering, IIT Bombay" <bridgetcourses.ee@gmail.com>
Date: 20/08/19, 11:09 PM
To: 173079004@iitb.ac.in
CC: Pg Verifyresume2019iitb <pg.verifyresume2019iitb@gmail.com>

verified

Warm Regards,
Narendra Gangwar | Samiksha Baid | Suvajit Das
Bridge Courses Overall Coordinators,
Department of Electrical Engineering,
IIT Bombay
+91-7838877657 | +91-8668391739 | +91-6290928883

On Mon, Aug 19, 2019 at 6:38 PM M Arun kumar <173079004@iitb.ac.in> wrote:

Hi,

Please verify the following points

| Roll no | Name | Work done | Year |
|-----------|--------------|--|------|
| 173079004 | M.Arun Kumar | <ul style="list-style-type: none">Conducted an introductory session on Linux, Vim and Git as a part of Bridge Course which helps in smooth transition of new joiners to institute.Volunteered for an introductory session on Python which was conducted as a part of Bridge Course for a group of more than 100 M.tech students | 2019 |

1 of 3

20/08/19, 11:12 PM

Re: Verification for work done as a part of bridge course 2019.

| | | | |
|-----------|---|---|-----------|
| 173079001 | Anuraag tummanapally | <ul style="list-style-type: none">Volunteered for an introductory session on Linux, Vim and Git which was conducted as a part of Bridge Course.Volunteered for an introductory session on Python which was conducted as a part of Bridge Course for a group of more than 100 M.tech students | 2019 |
| 173079003 | Nikhar P Rakhshia | <p>Teaching Assistant: Math Preliminaries, Bridge Course, IIT Bombay (Jul'18, Jul' 19)</p> <ul style="list-style-type: none">Designed the tutorial problem set and helped students to get acquainted with the IITB curriculum.Responsible for conducting tutorial sessions on fundamental mathematical concepts for new entrants. <p>Conducted a tutorial on LATEX in Bridge Course at IIT Bombay. (Jul' 2019)</p> | 2018-2019 |
| 17307R002 | Nayak Premanand Alias Sachin Vinayak | Conducted a bridge course tutorial on introduction to python for a group of more than 100 M.tech students | 2019 |
| 173079005 | Patil Akhilesh Subhash | Conducted an introductory session on Linux, Vim and Git as a part of Bridge Course which helps in smooth transition of new joiners to institute. | 2019 |
| 173079023 | Pilankar Prathamesh Milind | Conducted an introductory session on Linux, Vim and Git as a part of Bridge Course which helps in smooth transition of new joiners to institute. | 2019 |
| 173079023 | Pilankar Prathamesh Milind | Conducted an introductory session on ngSpice as a part of Bridge Course which helps in smooth transition of new joiners to | 2018 |

2 of 3

20/08/19, 11:12 PM

Re: Verification for work done as a part of bridge course 2019.

|_____|institute.|_____|

--
Thanks and regards
M.Arun Kumar,
M.Tech,
IITB.

8.3 Python

Re: Verification for work done as a part of bridge course 2019.

Subject: Re: Verification for work done as a part of bridge course 2019.
From: "Department of Electrical Engineering, IIT Bombay" <bridgecourses.ee@gmail.com>
Date: 20/08/19, 11:09 PM
To: 173079004@iitb.ac.in
CC: Pg Verifyresume2019iitb <pg.verifyresume2019iitb@gmail.com>

verified

Warm Regards,
Narendra Gangwar | Samiksha Baid | Suvajit Das
Bridge Courses Overall Coordinators,
Department of Electrical Engineering,
IIT Bombay
+91-7838877657 | +91-8668391739 | +91-6290928883

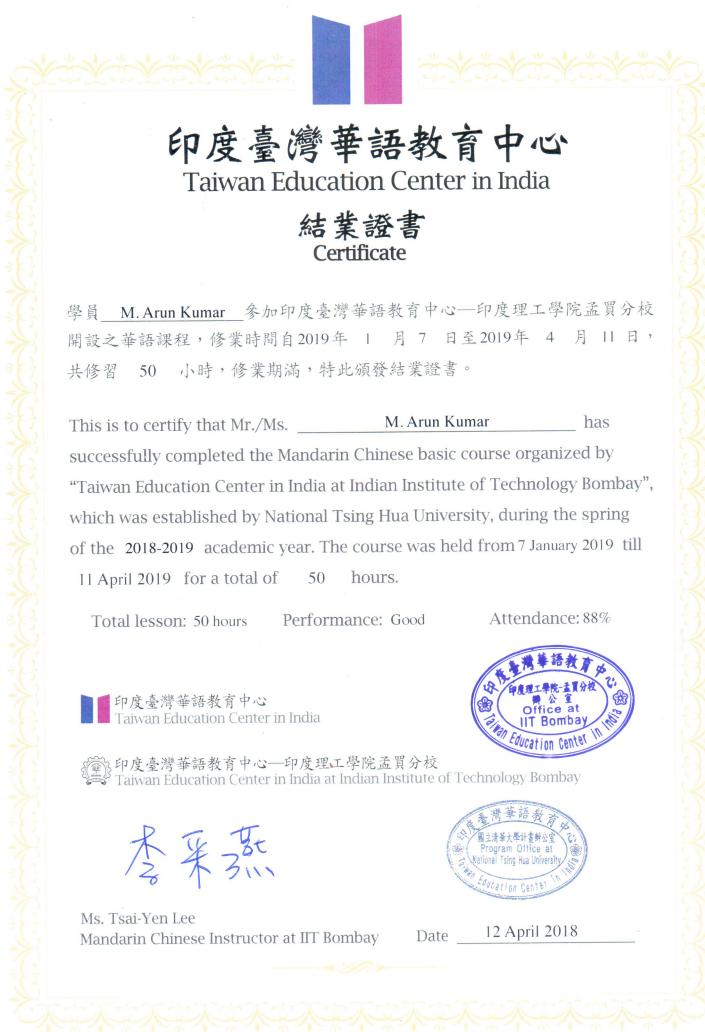
On Mon, Aug 19, 2019 at 6:38 PM M Arun kumar <173079004@iitb.ac.in> wrote:

Hi,

Please verify the following points

| Roll no | Name | Work done | Year |
|-----------|--------------|--|------|
| 173079004 | M.Arun Kumar | <ul style="list-style-type: none">Conducted an introductory session on Linux, Vim and Git as a part of Bridge Course which helps in smooth transition of new joiners to institute.Volunteered for an introductory session on Python which was conducted as a part of Bridge Course for a group of more than 100 M.tech students | 2019 |

8.4 Chinese





印度臺灣華語教育中心
Taiwan Education Center in India

結業證書
Certificate

學員 **M. Arun Kumar** 參加印度臺灣華語教育中心—印度理工學院孟買分校開設之華語課程，修業時間自 2018 年 8 月 6 日至 2018 年 11 月 2 日，共修習 50 小時，修業期滿，特此頒發結業證書。

This is to certify that Mr./Ms. **M. Arun Kumar** has successfully completed the Mandarin Chinese basic course organized by "Taiwan Education Center in India at Indian Institute of Technology Bombay", which was established by National Tsing Hua University, during the Autumn of the 2018-2019 academic year. The course was held from 6 August 2018 till 2 November 2018 for a total of 50 hours.

Total lesson: 50 hours Performance: Good Attendance: 96 %

 印度臺灣華語教育中心
Taiwan Education Center in India

 印度臺灣華語教育中心—印度理工學院孟買分校
Taiwan Education Center in India at Indian Institute of Technology Bombay

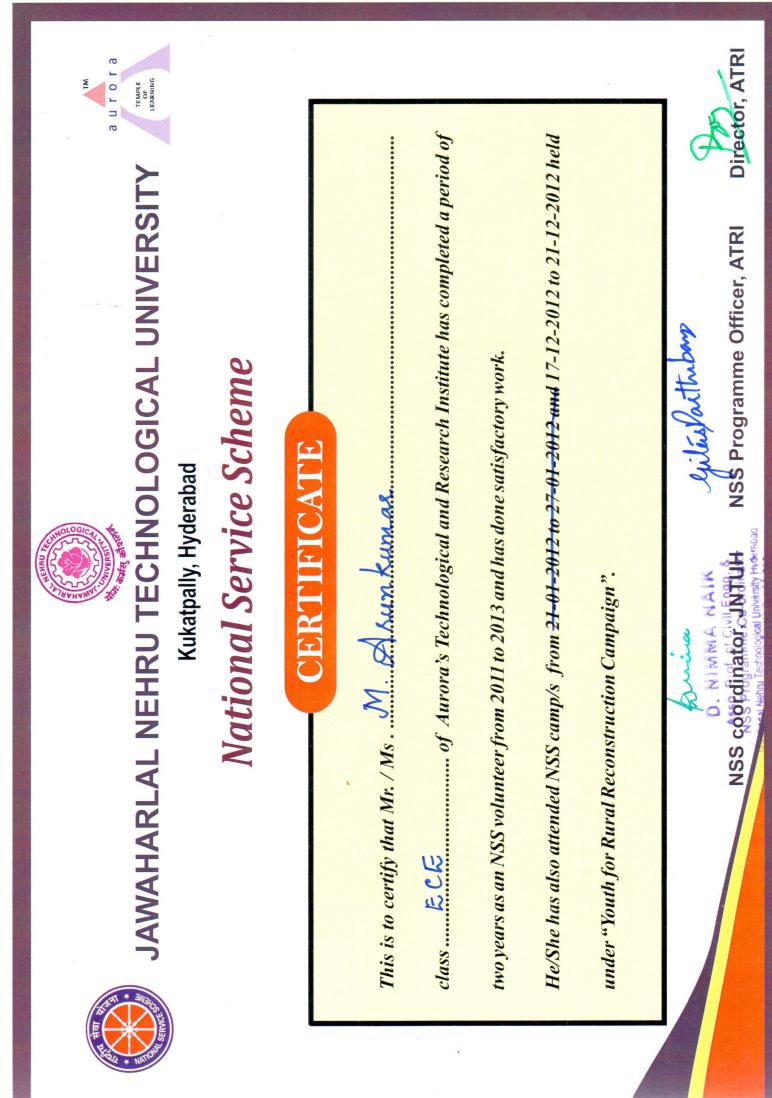


Ms. Tsai-Yen Lee
Mandarin Chinese Instructor at IIT Bombay Date 9 November 2018

8.5 Digital System Design



8.6 National Service Scheme (NSS)



8.7 French



8.8 World Parliament of Spirituality



8.9 Spoken English

