

# Resume Points' Proof

173079001 - 0

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# 1 Scholastic Achievements

## 1.1 GATE Rank

$$\text{percentile} = \frac{\text{total candidates} - \text{my rank}}{\text{total candidates}}$$

  
Scorecard  
Number  
**QIG6C**

**GATE 2016 Scorecard**  
Graduate Aptitude Test in Engineering

Name: **ANURAAG TUMMANAPALLY**

Registration Number: **EC16S42084107**

Examination Paper: **Electronics and Communication Engineering (EC)**

( Candidate's Signature )



**GATE Score** **749**

Mark out of 100\* **56.15**

Qualifying Marks\*\* **25.0** **22.5** **16.6**

General    OBC (NCL)    SC/ST/PwD

Valid from March 23, 2016 to March 22, 2019

All India Rank in this paper **473**

Number of Candidates Appeared in this paper **152318**

\* Normalized marks for multisession papers

\*\* A candidate is considered qualified if the marks secured are greater than or equal to the qualifying marks mentioned in the relevant category for which a valid category certificate, if applicable, must be produced along with this scorecard.

Digital Fingerprint : 51db92a66eb8bb0f558be4d6fba623

*T. Bhattacharyya*  
Prof. Tirthankar Bhattacharyya  
Organizing Chairperson GATE2016 on behalf of NCB-GATE, for MHRD

The GATE 2016 score is calculated using the formula

$$\text{GATE Score} = S_q + (S_t - S_q) \frac{(M - M_q)}{(\bar{M}_t - M_q)}$$

where,

$M$  is the marks obtained by the candidate in the paper, mentioned on this scorecard in GATE 2016

$M_q$  is the qualifying marks for general category candidate in the paper

$\bar{M}_t$  is the mean of marks of top 0.1% or top 10 (whichever is larger) of the candidates who appeared in the paper (in case of multi-session papers including all sessions)

$S_q = 350$ , is the score assigned to  $M_q$

$S_t = 900$ , is the score assigned to  $\bar{M}_t$

In the GATE 2016 score formula,  $M_q$  is 25 marks (out of 100) or  $\mu + \sigma$ , whichever is greater. Here  $\mu$  is the mean and  $\sigma$  is the standard deviation of marks of all the candidates who appeared in the paper.

Qualifying in GATE 2016 does not guarantee either an admission to a post-graduate program or a scholarship/assistantship. Admitting institutes may conduct further tests and interviews for final selection.

## 1.2 AIEEE Rank

Official URL: [http://resultsarchives.nic.in/cbseresults/cbseresults2012/aieee/aieee\\_cbse\\_2012.htm](http://resultsarchives.nic.in/cbseresults/cbseresults2012/aieee/aieee_cbse_2012.htm)

ALL INDIA ENGINEERING / ARCHITECTURE ENTRANCE EXAMINATION (AIEEE - 2012)		
Roll No:	90105711	
Name:	ANURAAG TUMMANAPALLY	
Mother's Name:	SHYAMALA TUMMANAPALLY	
Father's Name:	RAMESH TUMMANAPALLY	
Category:	GEN	
State Code of Eligibility:	02	
Paper	Subjects	Marks Obtained
Paper-1	Physics, Chemistry & Mathematics	225
Paper-2	Mathematics, Aptitude Test & Drawing	Not Applicable/Not Applied
	B.E./B.Tech	B.Arch
<b>All India Rank</b>		
Overall	7578	-----
Category	6460	-----
<b>State Rank</b>		
Overall	1541	-----
Category	1206	-----
Remarks:		
B.E./B.Tech: - Permitted to fill up choices online for counselling - All Categories		
Yardstick for permission to fill the choices online for counselling for B.E./B.Tech. & B.Arch./B.Planning		
GEN Category	48 Marks	
OBC Category	45 Marks	
SC/ST/ALL PH Category	18 Marks	

### 1.3 Abacus Competition



## 2 Major Projects and Seminar

## 2.1 E-Mail from Guide

## For MTP, and Seminar

Re: RESUME points verification

### 3 Work Experience

#### 3.1 E-Mail from Lab Incharge

For SysAd in Electrical Department

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:												
<p>Dear Sir,</p> <p>Please Verify our RESUME points, for system administrator, Electrical Department, IIT Bombay</p> <table border="1"><thead><tr><th>Roll No</th><th>Name</th><th>Work Done</th><th>Duration</th></tr></thead><tbody><tr><td>173079001</td><td>Anuraag Tummanapally</td><td><ul style="list-style-type: none"><li>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.</li><li>Provide mail service, storage space, computing and network facilities to the Department.</li><li>Automation of admission process through web based services and Bash Scripts</li></ul></td><td>July 2017-Present</td></tr><tr><td>173079004</td><td>M.Arun Kumar</td><td><ul style="list-style-type: none"><li>Building and maintaining website of EE department, maintaining TA feedback and allotment portals.</li><li>Provide mail service, storage space, computing facilities and network facilities to department.</li><li>Designed online portals and automated Interviews co-ordination in the department admission process.</li></ul></td><td>July 2017-Present</td></tr></tbody></table>	Roll No	Name	Work Done	Duration	173079001	Anuraag Tummanapally	<ul style="list-style-type: none"><li>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.</li><li>Provide mail service, storage space, computing and network facilities to the Department.</li><li>Automation of admission process through web based services and Bash Scripts</li></ul>	July 2017-Present	173079004	M.Arun Kumar	<ul style="list-style-type: none"><li>Building and maintaining website of EE department, maintaining TA feedback and allotment portals.</li><li>Provide mail service, storage space, computing facilities and network facilities to department.</li><li>Designed online portals and automated Interviews co-ordination in the department admission process.</li></ul>	July 2017-Present
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1 of 2												
20/08/19, 4:11 PM												

### 3.2 E-Mail from Instructor

For TA Work

Re: RESUME points verification

Subject: Re: RESUME points verification  
From: D Manjunath <dmanju@ee.iitb.ac.in>  
Date: 20/08/19, 12:29 AM  
To: Anurag Tummanapally <173079001@iitb.ac.in>

Verified

On 20-Aug-2019, at 12:16 AM, Anurag Tummanapally <173079001@iitb.ac.in> wrote:

Dear Sir,  
Please verify my RESUME points.

1. M.Tech Project: OpenFlow Router with eBPF Forwarding Engine (Duration: May'19 - Present)

**Objective:** Create a fast data plane forwarding device for small to medium networks.  
**Completed work:** Put together the functional requirements of controller and switch.  
**Ongoing & future work:**

- Using POX controller to communicate with OpenVSwitch via OpenFlow protocol.
- Using eBPF in kernel space as backend for fast packet forwarding, and less number of packet copies.
- Implementing a level-compressed TRIE for fast lookup.
- Porting the entire system to a SPARC processor on FPGA, as a prototype for IoT deployment
- Benchmark testing of the system

2. Seminar: Open Source Router (Duration: Jul'18 - Dec'18 )

- Studied Click Modular Router, Extended Berkely Packet Filter, Network Processor Architecture and Software Defined Networking (SDN)
- Implemented a basic version of Click modular router, to work as an Ethernet switch.

3. Teaching Assistant: Communication Networks (IIT Bombay, IIT Dharwad) (Duration: Jan'19 - Apr'19)

- Created and evaluated 7 lab experiments, based on socket programming.
- Work also involved traveling, setting up lab experiments and evaluations at IIT Dharwad.

--  
Thanks and Regards,  
Anurag Tummanapally  
M.Tech RA

### 3.3 E-Mail from Past Employer

For Software Developer

Re: RESUME points verification

Subject: Re: RESUME points verification  
From: Hozefa Dhankot <hozefa.dhankot@nykaa.com>  
Date: 21/08/19, 11:03 AM  
To: Anuraag Tummanapally <173079001@iitb.ac.in>  
CC: pg.verifyresume2019iitb@gmail.com

Hi,  
Below details are correct and approved

On Wed, Aug 14, 2019 at 3:48 PM Anuraag Tummanapally <[173079001@iitb.ac.in](mailto:173079001@iitb.ac.in)> wrote:

[Boxbe](#)

Anuraag Tummanapally ([173079001@iitb.ac.in](mailto:173079001@iitb.ac.in)) added themselves to your Guest List | Remove them | Block them

Dear Hozefa,

Please verify the following points, about my work at Nykaa

● **Role:** Software Developer

● **Duration:** June'16 - July'17

● **Roles and Responsibilities:**

- Involved in development of Product listing, Search, and Checkout domains of the website.
- Closely worked with Marketing team to strategically place tracking tags at numerous locations within the company website.

● **Softwares used:** Magento framework, PHP, Javascript, jQuery, HTML

--  
Thanks and Regards,  
Anuraag Tummanapally  
<https://www.ee.iitb.ac.in/~anuraagt/>

Nykaa #HaseenTuHaseenDin.  
Celebrating the Indian women who have embraced diverse roles in pursuit of their dreams!  
[www.nykaa.com/haseen-tu-haseen-din-nykaa-tvc](http://www.nykaa.com/haseen-tu-haseen-din-nykaa-tvc)

**DISCLAIMER:** This communication is confidential and privileged and is directed to and for the use of the addressee only. The recipient if not the addressee should not use this message if erroneously received, and access and use of this e-mail in any manner by anyone other than the addressee is unauthorized. The recipient acknowledges that FSN E-Commerce Ventures Pvt. Ltd. (and its group of companies) may be unable to exercise control or ensure or guarantee the integrity of the text of the email message and the text is not warranted as to completeness and accuracy.

## 4 Key Course Projects

### 4.1 Verified By DPC

Google Sheet - EE1 Course Verification List

Course Code	Professor	Status
EE602	Prof. Kushal Tuckley	Get Verification yourselves
EE609	Prof. Girish Kumar	Verified
EE610	Prof Amit Sethi	Verified
EE621	Prof. Prasanna Chaporkar	Verified
EE678	Prof. Vikram M. Gadre	Verified
EE679	Prof. Preeti Rao	Get Verification yourselves
EE702	Prof. Subhasis Chaudhuri	Verified(just check student Name)
EE703	Prof. Sibi raj pillai	Will not verify(no moodle is allowed)
EE706	Prof. D. Manjunath	Verified
EE750	Prof. Rajbabu Velmurugan	Verified
EE761	Prof. Jayakrishnan Nair	Get Verification yourselves
EE764	Prof. Abhay Karandikar	Verified
EE766	Prof. Nikhil Karamchandani	Get Verification yourselves
EE769	Prof. Amit Sethi	Verified
EE771	Prof. Animesh Kumar	Final verification Pending (replied once)
EE777	Prof.Gaurav Kasbekar	Verified
EE779	Prof. Rajbabu Velmurugan	Verified
GNR652	Prof. Biplab Banerjee	Verified
GNR638	Prof. Biplab Banerjee	Verified
Quantitative Points		Ignored
<b>Verified does not mean the project which had Quantitative points also got verified</b>		

Figure 1: List of Courses being verified by DPC

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)
173079034	EE750	Prof. Rajabu	2018	<p>Voice light communication</p> <ul style="list-style-type: none"> <li>o Design receiver circuit to detect sent data in ASCII format through cellphone screen light at high frequency</li> <li>o Decoded text mode ASCII characters in both dark and ambient light environment on TSM320C5915 DSP board</li> <li>- See, Spell and Speak</li> </ul>			
173079008	EE750	Prof. V. Rajabu	2018	<p>Developed a character recognition vocabulary kit using Digital Signal Processor(DSP), that identifies an object captured by a camera interfaced to the kit and displays the name of recognized object behind the Financial Crisis.</p> <ul style="list-style-type: none"> <li>- Proven relevance of Barach-Tarski theorem in explaining the relevance of the 2008 financial crisis</li> <li>- Explained failure of VAR model in measuring risk taken in financial crisis using Dallalas theorem</li> <li>- Highlighted the causality of model uncertainty in financial crisis using Shaya &amp; Fiecke-Vondong theorem</li> </ul>			
180070007	EE761	Prof. Jayakrishna	2018	<p>Math behind the Financial Crisis</p> <ul style="list-style-type: none"> <li>- Proven relevance of Barach-Tarski theorem in explaining the relevance of the 2008 financial crisis</li> <li>- Explained failure of VAR model in measuring risk taken in financial crisis using Dallalas theorem</li> <li>- Highlighted the causality of model uncertainty in financial crisis using Shaya &amp; Fiecke-Vondong theorem</li> </ul>			
173079001	EE764	Prof. Abhay Kari	2018	<p>Simulation of Cellular system in LTE</p> <ul style="list-style-type: none"> <li>1. Computed SIR, blocking probat</li> <li>2. Simulated channel aware schemes: Maximum Throughput, Proportional Fair, Throughput to Average scheduling schemes in LTE Downlink.</li> <li>3. Analyzed BER performance for schemes.</li> </ul>			
173079008	EE764	Prof. Abhay Kari	2018	<p>Effect of Mobility on Performance</p> <ul style="list-style-type: none"> <li>- Computed SIR and blocking probability for different cluster sizes and sectoring</li> <li>- Studied handover process and ping-pong rate for different user mobilities and hysteresis values</li> <li>- Simulated CDMA and LTE systems</li> <li>- Analyzed the performance of both - Analyzed BER performance for a single-cell and multi-cell scenario in a CDMA cellular system</li> </ul>			
173079004	EE764	Prof. Abhay Kari	2018	<p>Scheduling in 4G LTE (Jan'18 - Apr'18)</p> <ul style="list-style-type: none"> <li>- Studied about different scheduling</li> <li>- Computed SIR, blocking probability for different cluster sizes and sectoring.</li> <li>- Analyzed handover process and ping-pong rate for different user mobilities</li> <li>- Different scheduling schemes in LTE</li> <li>- Simulation of Cellular wireless system in MATLAB</li> </ul>			
				<p>1)Simulated channel aware schen 2)Used Cell Throughput, Average 3)Computed SIR, blocking probability for different cluster sizes and sectoring. Analyzed handover process and ping-pong rate for different user mobilities 3)studied cell throughput vs number 4)analyzed BER performance for space and time diversity in a slow, flat fading Rayleigh channel.</p>			

Figure 2: Course: Wireless and Mobile Communication

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)
15D070045	EE610	Prof. Amit Sethi	2018	<p>LIME: Low Light Image Enhancement</p> <ul style="list-style-type: none"> <li>- Established a newly developed algorithm on python for low light imaging using a standard set of images. Studied various algorithms and took a set of test images to test the performance.</li> <li>- Automatic license plate recognition</li> </ul>			
15D070060	EE610	Amit Sethi	2018	<p>BIOMETRIC IDENTIFICATION Bi</p> <ul style="list-style-type: none"> <li>- Implemented and performed various morphological operations on images of vehicles to extract license plate area. Identified the license plate using the optimized image processing algorithm.</li> <li>- Image Processing   Color Processing BASIC IMAGE EDITOR   Image Processing - Course Project Guide Prof. Amit Sethi, Departmental Project, Amit Sethi, Department of Electrical Engineering.</li> <li>- Addressed the whole process of IIT Bombay</li> <li>- Examined the major 4 steps on I - Created a GUI using MATLAB for extracting information from images and enhance the image quality</li> <li>- Implemented Histogram Equalisation, Gamma correction, Log transformation, Gaussian Blurring techniques</li> </ul>			
15D070034	EE610	Prof. Amit Sethi	2018	<p>Black and White Image Colorization</p> <ul style="list-style-type: none"> <li>1. Trained CNN-based regression and classification models for predicting the ab channels of colored landscape images from their L channel in the Lab color space</li> <li>2. Utilized class re-balancing for obtaining more vibrant images and annealed mean for predicting a value from multi-modal output distribution in classification model</li> </ul>			
15D110003	EE610	Prof. Amit Sethi	2018	<p>Image Dehazing</p> <ul style="list-style-type: none"> <li>1. Developed a Web based cross- Image Dehazing through Depth estimation</li> <li>2. Showcased Histogram Equalizer 1. Estimated Depth of a scene, using Color Attenuation Prior and Dark Channel Prior.</li> <li>3. Implemented full inverse filtering, 2. Using the estimated depth, reconstructed a haze-free image based on atmosphere degradation model</li> </ul>			
173079001	EE610	Prof. Amit Sethi	2018	<p>Image Colorization: Implemented algorithm for automated image colorization by training neural network in Python</p> <ul style="list-style-type: none"> <li>- Image Colorization using Local Binary Pattern, and its reconstruction using CNN, Image Processing Prof. Amit Sethi   CNN   Lossy Compression,   July'18</li> <li>- Implemented the reconstruction of images using Local Binary Pattern cascaded with LZW lossless compression</li> <li>- Proposed and implemented reconstruction of images using CNN with skip connections obtained after noisy restoration(fixed and random number based) of compressed images</li> </ul>			
15D070014	EE610	Amit Sethi	2018	<p>Image Colorization: Implemented algorithm for automated image colorization by training neural network in Python</p> <ul style="list-style-type: none"> <li>- Image Colorization using Local Binary Pattern, and its reconstruction using CNN, Image Processing Prof. Amit Sethi   CNN   Lossy Compression,   July'18</li> <li>- Implemented the reconstruction of images using Local Binary Pattern cascaded with LZW lossless compression</li> <li>- Proposed and implemented reconstruction of images using CNN with skip connections obtained after noisy restoration(fixed and random number based) of compressed images</li> </ul>			
150010002	EE610	Prof. Amit Sethi	2018	<p>Deep Neural Network (DNN) based Image Restoration</p> <ul style="list-style-type: none"> <li>- Averaging 3x3 kernel = Implemented and used filter</li> <li>- Programmed in MATLAB for img ~ Calculated PSNR and SSIM Image editor GUI</li> </ul>			

Figure 3: Course: Image Processing

Roll number	Course code	Instructor Name	Year of course pr	1st Project Description (with title)	2nd Project Description (with title)	3rd Project Description (with title)	4th Project Description (with title)
				Distributed Symmetric Function Computation (routing protocol) Investigated Impacts on multipath networks in noisy communication channel with counting algorithms, each comprises of inter and intra cell protocols.			
				Estimated total transmission energy consumption and computational time in wireless sensor network with binary data and long block observations.			
15D070031	EE766	Prof. Nikhil Karai	2019	Gave a lecture on "Distributed Symmetric Function Computation" to discuss energy optimal algorithm in noisy wireless sensor network, in front of 100 students.			
15D070023	EE766	Prof. Nikhil Karai	2019	Random Graphs: • Devised & programmed multiple simulations of different random graphs to compute threshold for properties like full-connectivity, t-complete sets, etc.			
15D070042	EE769	Amit Sethi	2018	Amount detection from a cheque - Implemented the Inception V3 model developed by Google by retraining the model with self-generated dataset including new symbols - comma and dot. 2018 - Image pre-processing in OpenCV to obtain segmented images of each character in the sample amount			
173079001	EE769	Prof. Amit Sethi	2019	House Sale status classification Objective: Based on the input attr. Implementation of DBSCAN Algorithm from scratch 1. Used Random Forest, Support Vector Machine, K-Means, DBSCAN, Grid Search, and Cross validation 2. Utilised the implementation as a backend process for a web-based GUI, which clusters data points and labels them.			
173076003	EE769	Prof. Amit Sethi	2019	Project Title: Speech Recognition using Convolutional Recurrent Neural Network (CRNN) Team Members: B.V.S Anusha (173079001), K.L Phagun (17307007) Description: A Kaggle competition titled "TensorFlow Speech Recognition Challenge" was done for this project. We designed and implemented Convolutional Recurrent Neural Network (CRNN) for Recognition and Classification of certain words in the kaggle challenge. Achieved an accuracy of 92.9% on Kaggle Speech Recognition Challenge data set. The code and results can be found on the Github link : <a href="https://github.com/anushabvs/ML_Project_Speech_Recognition">https://github.com/anushabvs/ML_Project_Speech_Recognition</a>			
				Evolutionary Learning as a scalable alternative to Temporal Difference Learning. Reinforcement learning has been used for training			

Figure 4: Course: Introduction to Machine Learning

## 5 Other Activities & Interests

### 5.1 Certificate from PGAC, IITB

For Volunteer, in Python workshop by PGAC



## 5.2 E-Mail from current OC, Bridgecourse

For Linux session volunteering.

Re: Verification of RESUME points

Subject: Re: Verification of RESUME points  
From: "Department of Electrical Engineering, IIT Bombay"  
<brgecourses.ee@gmail.com>  
Date: 14/08/19, 9:47 AM  
To: Anuraag Tummanapally <173079001@iitb.ac.in>

Hi,

The points mentioned as per the trailing mail are verified to be correct.

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 Tue, Aug 13, 2019 at 11:06 AM Anuraag Tummanapally <[173079001@iitb.ac.in](mailto:173079001@iitb.ac.in)> wrote:

Dear PG Bridge Course Overall Coordinator,

Please verify the following RESUME points

Duration: July 2018  
PG Bridge Course Overall Coordinator: Electrical Department IIT Bombay  
1. Organized a week long program including hands-on workshops, and lectures for PG freshers.  
2. Executed the program effectively for more than 150 students, with a team of 20 volunteers.

Duration: July 2019  
Volunteered for Linux workshop.

--  
Regards,  
Anuraag Tummanapally