



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

APPLICATION FOR ADMISSION TO Ph.D. PROGRAMMES

Date of Application:23-11-2020

Department	COMPUTER SCIENCE AND ENGINEERING	Application No.	202020025
Area of Research	MULTIOBJECT TRACKING IN DEEP LEARNING	Research Mode	PART TIME

Name :RAJ D
Date of Birth / Age :09-04-1984 / 36 Years
Gender :MALE
Category :SC
e-Mail ID :rajceg84@gmail.com
Mobile :9600957388



Father's/Husband's Name	DEVARAJ M	Father's/Husband's Occupation	FORMER
Family Income	72000	Residential Type	RURAL
Birth Place	AKKANAYAKKANPATTI	Mother Tongue	TAMIL
Religion	HINDU	Martial Status	MARRIED
Aadhaar No.	637226959514	PAN No.	BLTPR4511A
Physically Challenged	NO	Type of Disability	-

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 MELA PALAYAM TIRUNELVELI
 TIRUNELVELI DIST DISTRICT
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 Pin-627005

Permenant Address:
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 Pin-628303

Qualification						
Degree	Discipline	College/university	Year Passed	AVG/CGPA	Class	Mode
BE	CSE	ANNAUNIVERSITY :: CEG GUINDY CHENNAI	2009	5.98	II CLASS	REGULAR
ME	CSE	ANNAUNIVERSITY ::SCADCET TVL	2017	7.98	FIRST CLASS	REGULAR

Experience				
Organization	Designation	Experience From	Experience TO	Work Nature
SAI RAM GROUP OF INSTITUTIONS	LECTURER	2007-08-14	2010-04-06	TEACHING
KAPI GROUP OF INSTITUTION	HOD AND AO	2010-05-04	2011-10-23	TEACHING AND ADMINISTRATION
SCAD GROUP OF INSTITITIONS	HOD	2011-11-14	2015-07-23	TEACHING
SCAD GROUP OF INSTITITIONS	VICE PRINCIPAL	2017-07-17	2020-11-23	TEACHING AND ADMINISTRATION

Payment Details				
Transaction ID	Reference	Date of transaction	Amount	Status
202020025_201229142935	VINB9605738176	29-12-2020	600	SUCCESS

Video Multi-Object Tracking by Deep Learning

In Single Object Tracking (SOT), the bounding box of the target in the first frame is given to the tracker. The goal of the tracker is then to locate the same target in all the other frames. SOT belongs to the category of detection-free tracking, because one manually gives the first bounding box to the tracker. This means that Single Object Trackers should be able to track whatever object they are given, even an object on which no available classification model was trained.

While in Single Object Tracking (SOT) the appearance of the target is known a priori, in MOT a detection step is necessary to identify the targets that can leave or enter the scene. The main difficulty in tracking multiple targets simultaneously stems from the various occlusions and interactions between objects that can sometimes also have similar appearance. Thus, simply applying SOT models directly to solve MOT leads to poor results, often incurring in target drift and numerous ID switch errors, as such models usually struggle in distinguishing between similar looking intra-class objects. A series of algorithms specifically tuned to multi-target tracking have then been developed in recent years to address these issues, together with a number of benchmark datasets and competitions to ease the comparisons between the different methods.

In Multiple Object Tracking (MOT), as its name indicates, there are multiple objects to track. The tracking algorithm is expected first to determine the number of objects in each frame, and second, to keep track of each object's identity from one frame to the next. MOT is a challenging problem: ID switches are hard to avoid especially in crowded videos, and the nature as well as the number of objects in each frame is unknown, so MOT algorithms strongly rely on detection algorithms, which are themselves not perfect.

Multiple Object Tracking (MOT), also called Multi-Target Tracking (MTT), is a computer vision task that aims to analyze videos in order to identify and track objects belonging to one or more categories, such as pedestrians, cars, animals and inanimate objects, without any prior knowledge about the appearance and number of targets. Differently from object detection algorithms, whose output is a collection of rectangular bounding boxes identified by their coordinates, height and width, MOT algorithms also associate a target ID to each box (known as a *detection*), in order to distinguish among intra-class objects. The MOT task plays an important role in computer vision: from video surveillance to autonomous cars, from action recognition crowd behavior analysis, many of these problems would benefit from a high-quality tracking algorithm.

Recently, more and more of such algorithms have started exploiting the representational power of deep learning (DL). The strength of Deep Neural Networks (DNN) resides in their ability to learn rich representations and to extract complex and abstract features from their input. Convolutional neural networks (CNN) currently constitute the state-of-the-art in spatial pattern extraction, and are employed in tasks such as image **classification** or **object detection**, while **recurrent neural networks (RNN)** like the **Long Short-Term Memory (LSTM)** are used to process sequential data, like audio signals, temporal series and text. Since DL methods have been able to reach top performance in many of those tasks, we are now progressively seeing them used in most of the top performing MOT algorithms, aiding to solve some of the subtasks in which the problem is divided.

In this research work, it is proposed to develop the algorithms that make use of the capabilities of deep learning models to perform Multiple Object Tracking, focusing on the different approaches used for the various components of a MOT algorithm and putting them in the context of each of the proposed methods. While the MOT task can be applied to both 2D and 3D data, and to both single-camera and multi-camera scenarios, in this survey we focus on 2D data extracted from videos recorded by a single camera.

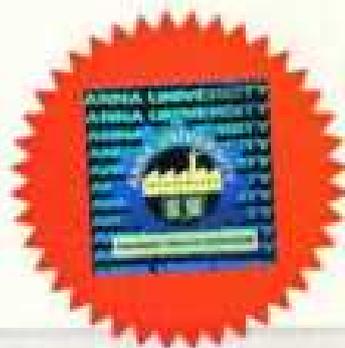
Anna University



Reg.No. 952815405006/RC

The Syndicate of the Anna University hereby makes known that
RAJ D has been admitted to the **DEGREE OF MASTER OF ENGINEERING** in **COMPUTER SCIENCE AND ENGINEERING** under the *Faculty of Information and Communication Engineering*, having completed the prescribed programme of study and having been certified by the duly appointed examiners to be qualified to receive the same, and has been placed in **FIRST CLASS** at the Examination held in **JUNE 2017** .

Given under the Seal of the University



Chennai 600 025
India
June 2018


Controller of Examinations


Registrar


Vice-Chancellor



ANNA UNIVERSITY, CHENNAI - 25
M.E. DEGREE EXAMINATIONS
CONSOLIDATED STATEMENT OF GRADES



R097203939933D

Folio No. AUU1626300

NAME OF THE CANDIDATE	RAJ D			REGISTER NO.	952815405006
DATE OF BIRTH	09-APR-84	GENDER	MALE	MONTH & YEAR OF LAST APPEARANCE	JUN 2017
COLLEGE OF STUDY	SCAD COLLEGE OF ENGINEERING AND TECHNOLOGY			REGULATIONS	2013
PROGRAMME & SPECIALIZATION	M.E. Computer Science and Engineering				

SEM NO	COURSE CODE	COURSE TITLE	CREDITS	LETTER GRADE	GRADE POINT	MONTH & YEAR OF PASSING
01	CP7101	Design and Management of Computer Networks	3	C	7	JAN 2016
01	CP7102	Advanced Data Structures and Algorithms	3	C	7	JAN 2016
01	CP7103	Multicore Architectures	3	B	8	JAN 2016
01	MA7155	Applied Probability and Statistics	4	D	6	JUN 2017
01	CP7004	Image Processing and Analysis	3	C	7	JAN 2016
01	NE7002	Mobile and Pervasive Computing	3	B	8	JAN 2016
01	CP7111	Advanced Data Structures Laboratory	2	S	10	JAN 2016
01	CP7112	Case Study - Network Design (Team Work)	1	S	10	JAN 2016
02	CP7201	Theoretical Foundations of Computer Science	4	B	8	NOV 2016
02	CP7202	Advanced Databases	3	D	6	JUN 2016
02	CP7203	Principles of Programming Languages	3	B	8	NOV 2016
02	CP7204	Advanced Operating Systems	3	A	9	NOV 2016
02	CP7014	Software Architectures	3	B	8	NOV 2016
02	NE7005	Protocols and Architecture for Wireless Sensor Networks	3	D	6	JUN 2016
02	CP7211	Advanced Databases Laboratory	2	B	8	JUN 2016
02	CP7212	Case Study - Operating Systems Design (Team Work)	1	S	10	JUN 2016
03	CP7301	Software Process and Project Management	4	D	6	NOV 2016
03	CP7022	Software Design	3	D	6	NOV 2016
03	CP7024	Information Retrieval Techniques	3	C	7	NOV 2016
03	CP7029	Information Storage Management	3	C	7	NOV 2016
03	CP7311	Project Work (Phase I)	6	S	10	NOV 2016
04	CP7411	Project Work (Phase II)	12	S	10	JUN 2017

*** End of Statement ***

Cumulative Grade Point Average : 7.97

Classification : FIRST CLASS

Medium of Instruction : ENGLISH

Chennai - 600 025.

Date 31/08/2017

SIGNATURE OF THE STUDENT



CONTROLLER OF EXAMINATIONS

Anna University Chennai



Reg. No.20032238/RG

The Syndicate of the Anna University Chennai hereby makes known that
RAJ D *has been admitted to the Degree of Bachelor of Engineering in*
COMPUTER SCIENCE AND ENGINEERING *under the Faculty of*
Information and Communication Engineering, having completed the
prescribed programme of study through the College of Engineering Guindy
Campus *of this University and having been certified by the duly appointed*
examiners to be qualified to receive the same, and has been placed in **SECOND**
CLASS *at the Examination held in* **APRIL 2009.**

Given under the Seal of the University



Chennai 600 025
India

February 2010 *Controller of Examinations*

RU/11/10/00011

Registrar

Vice-Chancellor

RU/11/10/00011



FX POLYTECHNIC COLLEGE

Approved by All India Council for Technical Education / Affiliated to Directorate of Technical Education, Chennai
ISO 9001:2015 Certified Institution / Run by St.Xavier's Educational Trust / A Unit of SCAD Group of Institution

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28.02.2020

SALARY CERTIFICATE

This is to certify that **Mr. D. Raj** is working as the Vice Principal and Head of Department of Computer Science and Engineering at our Institution since 14.11.2011.

His last drawn salary is as per the details given below:

Basic Pay	: Rs. 17350
GP	: Rs. 2603
DA	: Rs. 1995
HRA	: Rs. 1250
ALLOWANCE	: Rs. 5200

GROSS SALARY	: Rs. 28398

NET SALARY : Rs. 28398

(Rupees Twenty Eight Thousand Three Hundred & Ninety Eight Only)



[Signature]
28/2/2020
PRINCIPAL

PRINCIPAL
580, FX POLYTECHNIC COLLEGE
AMBAI ROAD, THARUVAI,
TIRUNELVELI-627 356.

आयकर विभाग
INCOME TAX DEPARTMENT



भारत सरकार
GOVT. OF INDIA

RAJ

DEVARAJ

09/04/1984

Permanent Account Number

BLTPR4511A

Signature



08012013

इस कार्ड के खोने / पाने पर कृपया सूचित करें / लौटायें :
आयकर पैन सेवा इकाई, एन एन सी एल
तीसरी मंजिल, सफायर चेंबरस,
बानेर टेलिफोन एक्सचेंज के नजदीक,
बानेर, पुना - 411 045.

*If this card is lost / someone's lost card is found,
please inform / return to :*

Income Tax PAN Services Unit, NSDL
3rd Floor, Sapphire Chambers,
Near Baner Telephone Exchange,
Baner, Pune - 411 045.

Tel: 91-20-2721 8080, Fax: 91-20-2721 8081
e-mail: tininfo@nsdl.co.in



இந்திய அரசாங்கம்
Government of India



ராஜ தேவராஜ்
Raj Devaraj

பிறந்தவருடம்/Year of Birth: 1984
ஆண்பால் / Male



6372 2695 9514

ஆதார் - சாதாரண மனிதனின் அதிகாரம்



இந்திய தனிப்பட்ட அடையாள ஆணைய அமைப்பு
Unique Identification Authority of India

முகவரி: S/O தேவராஜ், 1/149
தெற்கு தெரு, அக்கநாயக்கன்பட்டி,
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SC

சான்றிதழ் எண்
Certificate No : 4579



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

1	9
0	6
0	6

426140

சாதிச்சான்றிதழ்

COMMUNITY CERTIFICATE

திருச்சூர் மாவட்டம் ஆலமத்தூர் வட்டம்

கிராமம் / நகரம், திருத்திருமதி / செல்வி /

செல்வன் இராஜ் தகப்பனார் /

கணவர் பெயர் இராஜ் இந் திருச்சூர் உண்ணி

வகுப்பைச் சார்ந்தவர். தாழ்த்தப்பட்டோர் மற்றும் பழங்குடியினர் உத்திரவுகள் (திருத்தப்பட்ட) சட்டம், 1976, வரிசை எண். 60, படி தாழ்த்தப்பட்ட

பழங்குடியினர் பிரிவைச் சார்ந்தவர் என சான்றளிக்கப்படுகிறது.

This is to Certify that Son of / Daughter of

Thiru of Village / Town

Taluk District of the State of Tamil Nadu belongs to

..... Community, which is recognised as a Scheduled Caste as per the Scheduled Caste and Scheduled Tribe Orders (Amendment) Act, 1976, vide Serial No.

2. திருத்திருமதி / செல்வி / செல்வன் இராஜ்

என்பவரும் அவருடைய குடும்பத்தினரும் தமிழ்நாட்டில் திருச்சூர்

மாவட்டத்தில் ஆலமத்தூர் வட்டத்தில் திருச்சூர்

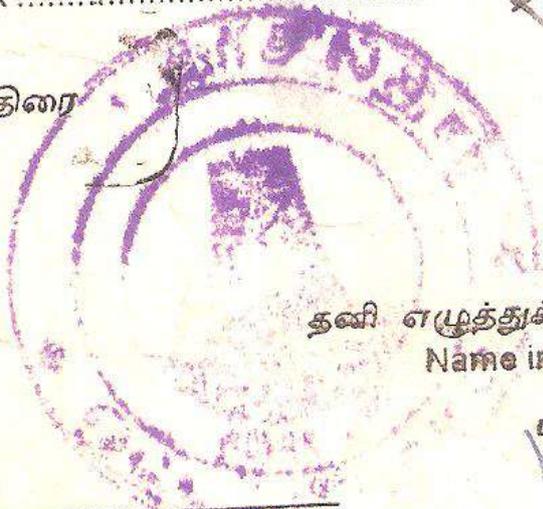
கிராமத்தில் / நகரத்தில் வசித்து வருகிறார்கள் என சான்றளிக்கப்படுகிறது.

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



கையொப்பம்
Signature

நாள்
Date

தனி எழுத்துக்களில் பெயர்
Name in Capital Letters

பதவிப் பெயர்
Designation

Handwritten signature and date: 12.8.01

Date of Registration: 07-03-2020

Certificate from Engineering College/~~Research Organization~~
Where the Candidate is Employed

Certified that Mr./Ms./Mrs. D. RAJ is employed as (Designation) ASST. PROFESSOR in the (Department / Division) COMPUTER ENGINEERING Engineering College / ~~Organization~~ FX POLYTECHNIC COLLEGE. The College / Organization has no objection to forward his / her application for admission to Ph. D. Programme.

FOR FULL-TIME:

The employee will be sanctioned study leave for the minimum duration of the research programme and will be relieved from duty from _____ to _____ in order to undertake Full-time research work in the University Departments/recognized Departments of Engineering Colleges. The necessary relieving order will be given during admission.

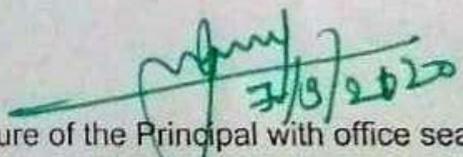
(OR)

FOR PART-TIME:

The employee will be permitted to undertake Part-time research in the University Departments/recognized departments of Engineering Colleges and he/she will be permitted to be present for attending course works, discussion with the supervisor, conduct experiments and participate in seminars and research related discussion. Further, the required facilities at our Institute/ organization will also be provided to the employee for doing research.

(Strike out whichever not applicable)

Place : TIRUNELVELI
Date : 7.03.2020


3/3/2020

Signature of the Principal with office seal / Signature of the
Head of the R&D organization with office seal

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580, FX POLYTECHNIC COLLEGE
AMBALI ROAD, THARUVAI,
TIRUNELVELI-627 356

