

# Dr. Anju Jose Tom

Area of research: Computer Vision (Moving Object Detection)

NIT Calicut

Kerala, India

Homepage: <https://anujosetom.github.io>

Mobile : +91 9745497468



Email: [anujosetom@gmail.com](mailto:anujosetom@gmail.com)

## EDUCATION

- **National Institute of Technology, Calicut** CGPA: 8.75  
*Ph.D in Electronics & Communication Engineering.* Dec. 2016 – May 2020
- **College of Engineering, Cherthala** CGPA: 9.4  
*Master of Technology in Signal Processing.* Aug. 2014 – May 2016
- **Saintgits College of Engineering, Kottayam** CGPA: 8.6  
*Bachelor of Technology in Applied Electronics and Instrumentation.* Aug. 2010 – May 2014
- **St. George Higher Secondary School, Kattappana** 95 %  
*Higher Secondary Education.* July 2008 – July 2010

## RESEARCH

- **Ph.D** NIT, Calicut  
*Research Supervisor: Dr. Sudhish N. George, Asst. Professor, ECED* *Date of Ph.D viva: 26 May 2020*
  - **Thesis Title:** Design of Moving Object Detection Schemes for Challenging Surveillance Environments
  - **Problem Statement:** To design and implement algorithms for moving object detection from surveillance videos which are capable of addressing dynamic background, noisy video data, incomplete video data, subsampled video data and low resolution video data.
  - **Research Proposals and Contributions**
    1. Proposed and implemented a noise robust moving object detection method using tensor low-rank approximation,  $l_{1/2}$ , and TTV Regularizations.
    2. Formulated and realized an optimization algorithm for video completion and simultaneous moving object detection for extreme surveillance environments.
    3. Developed an optimization technique for Tensor Total Variation Regularized Moving Object Detection from Surveillance Videos.
    4. Realized an optimization scheme which performs Simultaneous denoising and moving object detection using low rank approximation in the matrix framework.
    5. Realized an approach to jointly reconstruct and detect moving objects from compressive measurements.
  - **Research Publications**
    1. **Anju Jose Tom**, Sudhish N. George, “A three way optimization technique for noise robust moving object detection using tensor low rank approximation,  $l_{1/2}$  and TTV Regularizations”, *IEEE Transactions on Cybernetics*, Print ISSN: 2168-2267, Online ISSN: 2168-2275, DOI: TCYB.2019.2921827, 2019.
    2. **Anju Jose Tom**, Sudhish N. George, “Video completion and simultaneous moving object detection for extreme surveillance environments”, *IEEE Signal Processing Letters*, 2019, vol 26, pp:577-581.
    3. Shijila B, **Anju Jose Tom**, Sudhish N. George, “Simultaneous denoising and moving object detection using low rank approximation”, *Future Generation Computer Systems*, Elsevier, 2019, vol 90, pp:198-210.
    4. Shijila B, **Anju Jose Tom**, Sudhish N. George, “Moving object detection by low rank approximation and  $l_1$ -TV regularization on RPCA framework”, *Journal of Visual Communication and Image Representation*, Elsevier, 2018, vol 56, pp:188-200.

5. **Anju Jose Tom**, Sudhish N. George, "Simultaneous reconstruction and moving object detection for wireless multimedia sensor networks based surveillance systems", *IEEE Transactions on Image Processing* (under review).
  6. **Anju Jose Tom**, Sudhish N. George, "Video super resolution and joint moving object detection from low-res surveillance videos", *IEEE Transactions on Cybernetics* (under review).
- **Conferences**
    1. **Anju Jose Tom**, Sudhish N. George, "Tensor Total Variation Regularized Moving Object Detection for Surveillance Videos", in *IEEE Int. Conf. on Signal Processing and Communication (SPCOM 2018)*, pp: 327-331, IISc, Bangalore, India, 2018.

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## POST GRADUATION

- **M.Tech - Signal Processing** CEC, Cherthala  
*Project Title: Ripplet Transform based Medical Image Compression* *Aug.2014 - Aug.2016*
  - **Objective:** To design and implement algorithms for Medical Image Compression using Ripplet Transform.

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## UNDER GRADUATION

- **B.Tech** Saintgits, Kottayam  
*Project Title: SMART ROOM using LabVIEW* *Jul. 2010 - May 2014*
- **Awards and Certifications**
  - Prize for Outstanding Student Performance, Department of AEI & PTA, Saintgits College of Engineering
  - Prize for best mini project, Department of AEI, Saintgits College of Engineering
  - Certified LabVIEW Associate Developer (CLAD) (Awarded by National Instruments Corporation.)

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## MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

1. Institute of Electrical and Electronics Engineers (IEEE)
2. International Society of Automation (ISA)

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## TEACHING EXPERIENCE

1. Assistant Professor of BSc. Electronics at CCST College of Science and Technology, Palakkad, One Semester: Jun. 2016 - Nov. 2016  
 Subjects Handled : Basic Electronics, Digital Electronics.

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## PERSONAL PROFILE

- Date of birth: 03 June 1992
- Marital status: Married
- Name of spouse: Mr. Justin George
- **Home address (for communication):** Edamanapottackal (House), East Marady P.O, Muvattupuzha, Kerala, India. Pin: 686673.

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## REFERENCES

Dr. Sudhish N. George  
 Assistant Professor,  
 Dept. of Electronics and  
 Communication,  
 NIT, Calicut,  
 sudhish@nitc.ac.in.

Dr. Bindhya T.  
 Assistant Professor,  
 Dept. of Electronics and  
 Communication,  
 NIT, Calicut,  
 bindhyajayakumar@nitc.ac.in.

Dr. Jimmy Jose  
 Assistant Professor,  
 Dept. of Computer Science  
 Engineering,  
 NIT, Calicut,  
 jimmy@nitc.ac.in.