

## In This Issue. . .

- **Visit of Prof.Dr. Andrew Thangaraj:** Professor, Indian Institute of Technology, Madras.
- **Reader's Space:** Machine vision based crop and weed classification.
- **On-going research work:** Current research works done in pattern recognition and computational intelligence laboratory.

Dear friends! **COMPSIG NITT** is a monthly newsletter to share the research work done in the Pattern recognition and computational intelligence laboratory, Department of Electronics and Communication Engineering, National Institute of Technology Trichy.

Concepts, Ideas pertaining to Computational intelligence, Pattern recognition and Signal processing are also included in this newsletter.

We expect the feedback, comments and articles from you all.  
**Issue 2-9: September 2016**

### Team members

1. **Dr.E.S.Gopi, Co-ordinator**
2. **G.JayaBrindha, Ph.D. Scholar.**
3. **Neema.M, Ph.D. Scholar.**
4. **Rajasekharreddy Poreddy, Ph.D Scholar.**
5. **Florintina.C, M.Tech, Communication systems.**
6. **Ankur Satpute, M.Tech, Communication systems.**

## Visit of Prof.Dr. Andrew Thangaraj, Indian Institute of Technology, Madras to NITT



On behalf of ECE Department, we are proud and extremely happy to invite Prof. Andrew Thangaraj, Professor, Indian Institute of Technology Madras to deliver the guest lecture at NITT on October 10, 2016. He received his B.Tech in Electrical Engineering from IIT, Madras, PhD in Electrical Engineering from the Georgia Institute of Technology, Atlanta, USA. He was a postdoctoral researcher at the GTL-CNRS Telecom lab at Georgia Tech Lorraine, France from August 2003 to May 2004. From June 2004, he has been with the Department of Electrical Engineering, IIT Madras, where he is currently a professor. Since January 2012, he has been serving as **Editor for the IEEE Transactions on Communications**. What makes him stupendous are

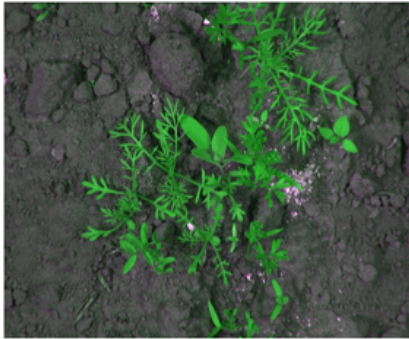
- Areas of information theory, error control coding and information-theoretic aspects of cryptography hold much interest for him.
- He has a list of publications in the areas of wiretap channels & cryptography, codes on graphs & applications, classical coding & applications and network coding.
- He has done an assortment of projects including Physical Layer Security Primitives for Wireless Communications, Codes for Bidirectional Relaying, Software/Hardware Implementations of iterative codes, Secure Network Communications and Quantum Key Distribution.
- He is a proficient course instructor for NPTEL courses from Dec 2011.
- He is a project consultant in organizations such as DEAL (Dehradun), BEL (Bangalore), Saankhya Labs (Bangalore), ORB Analytics (USA) and Calimetrics Inc (USA).
- He was granted patent for Advanced forward error correction and has filed for a patent for Methods and apparatus for improving error indication performance in systems with low-density parity check codes.
- He delivers several riveting lectures in companies and university departments in the domains of basic digital communications, error control coding, turbo codes and LDPC codes.

He has accepted to deliver a talk on Wireless Communications in the morning session, followed by discussion with PG students and research scholars.

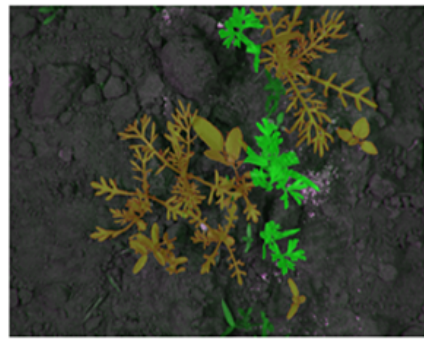
URL: <http://www.ee.iitm.ac.in/~andrew/index.html> [Back to Contents](#)

## READER'S SPACE

In conventional leaf extraction techniques, the images are taken under preferable and ideal condition. These techniques fail to get high accuracy when field images are taken into consideration. This project proposes a technique to extract leaf features from field images and use it to build a classifier to identify crop and weed.



(a) Sample image



(b) Classified image  
(Green color - intended plant,  
yellow color - weed)

Firstly the non-green background is eliminated by setting a proper threshold range on the hue and saturation value for each pixel. From the resulting image, a block of 20x20 pixels is moved across to detect the leaf. Once it detects, the block undergoes feature extraction and dimension reduction and is fed into the trained classifier, which classifies whether the detected leaf is that of crop or weed.

For further discussions contact: Mr. Ankur Satpute, M.Tech Communication Systems. Mail Id: [ankur182709@gmail.com](mailto:ankur182709@gmail.com)

[Back to Contents](#)

## ANALOGY

Consider 3 persons are involved in carrying the loads from the point  $A$  to the point  $B$ . Each person is having different capacity (described by  $k_i$ ) in carrying the load. We need to distribute the energy drinks ( $P$ ) to these three persons so that we can transport maximum load from point  $A$  to point  $B$ . The load carried by the person  $i$  along with their allotted energy drinks (described by  $p_i$ ) is represented as  $c_i = \log_2(1 + \frac{k_i p_i}{n})$ . i.e., Given  $P$  such that  $P = \sum_{i=1}^{i=3} p_i$  and  $k_i$ 's we need to obtain  $p_i$ 's such that  $\sum_{i=1}^{i=3} c_i$  is maximized.



[Back to Contents](#)

## Quotes

*"If you want to shine like a sun. First burn like a sun."* — Dr. A.P.J.Abdul Kalam

## On going research work

- **Linear discrete system for pattern recognition** A linear discrete model is constructed to detect the cultivated region in agricultural fields using Near Infrared (NIR) images.
- **Discrimination of plants and weeds from RGB images** The objective is to discriminate the intended plant and weeds from the images that are captured by robot.
- **Varietal identification of sunflower plants** Aims to identify the varieties of sunflower plants using the features extracted from the leaves such as serration, shape and shouldering.

[Back to Contents](#)

## Feedback

COMPSIG NITT invites articles and innovative ideas from readers for the [Reader's Space](#) column. We expect feedback and comments to monthly newsletter COMPSIG NITT . A facebook group, "COMPSIGNITT" is created for the readers to share their views. Those who are interested can send requests to the facebook group.

[Back to Contents](#)

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