ANNUAL REPORT

SPIE Alcorn State University Student Chapter

FOR THE YEAR of 2015 - 2016

Prepared by
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http://spie.org/x1742.xml?chapter_id=1064792
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I. Executive Summary

There were three student seminars held on campus in the past year. An official chapter meeting was always followed right after each seminar. There was one additional chapter meeting was organized to elect new chapter officers and to plan the future chapter activities. We are looking forward to increasing the chapter impact on campus in the coming year as well as planning more student activities.

Our Chapter, the SPIE Student Chapter at Alcorn, was established on August 17, 2012. Serving through our Advanced Technologies Department, the Alcorn State SPIE Chapter promotes education, leadership, and training in optics and photonics throughout the campus. We have participated many research seminars and chapter activities involving multispectral imaging for night vision and face recognition, remote sensing, radar imaging, pattern recognition, etc. Some of our work involves partnerships with Homeland Security and Department of Defense. Our chapter goals are to increase awareness about what our organization does and offer more areas of interest to students involving optics and photonic technology.
II. Chapter Membership

20 Chapter Members in 2016-2017

Ryan Foster (President)
Sandeep K. Boggula (Secretary)
Michael Atkins
Jeremy Newsome
Terrell Johnson
Viswanadha Soma Sekhar Vegi
Raghu Ram Meduri
Vinay Kumar Pallerla
Satyanarayana Chowdary Panguluri
Oluwafemi Oloko
Jaccil Hemis
Detrique Sims
Keisha Queen
Deontay Jones
vamshi krishna vakadani
Malcolm Smith
Havish Chowdary Sakhamuri
Akshay Pulupula
Aquasha Martin
Samrat Devunooru

21 Chapter Members in 2015-2016

Zsalicia Jones (former President)
Viswanadha Soma Sekhar Vegi (former Secretary)
Raghu Ram Meduri
Karthik Eti
Mahesh Katakam
Oluwafemi Oloko
Jaccil Hemis
Avinash Poddutoor
Tirhanah Drake
Detrique Sims
Keisha Queen
Deontay Jones
Boddu Santhosh Kumar
Santhosh Reddy Kanaganti
Malcolm Smith
Sai Kiran Mayreddy
Sai Kishore Mayreddy
Sreenadh Reddy Vanteddu
Aquasha Martin
Samrat Devunooru
Aitha Jayaprakash
Title: **Object Detection using Hyperspectral Imaging and ICA**
Speaker: Erol Sarigul, Department of Advanced Technologies, Alcorn State University
Date: 11:30am - 1:00pm **February 4, 2016** (Thursday)

**Abstract**
This presentation will talk about detection algorithm using Hyperspectral Imaging using an Independent Component Analysis (ICA) based linear unmixing concept. Both Hyperspectral imaging and Independent component Analysis are relatively new methods that attempts to detect man made object in hyperspectral image by separating statistically independent sources through ICA from a mixed hyperspectral dataset. The developed algorithm contains two steps. In the first step, ICA based linear unmixing is used to discriminate statistically independent sources to determine end-members in a given dataset as well as their corresponding abundance images. In the second step, unmixing results are analyzed to identify abundance images that correspond to the target class. The performance of the developed algorithm has been evaluated with several real life hyperspectral image datasets.

**Biographical Information**

**Dr. Erol. Sarigul** received both his MSc and Ph.D degrees from Virginia Tech, Blacksburg Virginia in 1999, 2004 respectively. During his PhD study, he specialized in processing of CT and MRI images for both industrial and medical applications. He developed a learning based image processing system for postprocessing of segmented CT and MRI images.

After completion of PhD degree, he joined the Department of Electrical and Computer Engineering of University of South Alabama as a research scientist. His responsibility was to conduct research on hyperspectral image processing for detection of military targets. He was the research program manager who conducts and manages collaborative research effort and communications between the university and Radiance Technology Inc which was primary contractor of the project. During this position, he has established hyperspectral image processing laboratory and supervised graduate students toward their master degree.

After successfully completing the project, he has joined Alcorn State University as an Assistant Professor in Department of Advanced Technology. Currently, he teaches engineering and technology classes in the Department as well as involved collaborative research projects with several faculties spanning from biomedical imaging to defense and homeland security areas. His research area covers signal/image processing, robotics and automation, embedded system programming, IoT (internet of things).
Dr. Erol Sarigul Presenting

SPIE Members in the session
III. Chapter Events -- 2015-2016 SPIE Student Seminar (2)

Title: **Software security analysis and assessment model for the web-based applications**
Speaker: Yong Wang, Department of Computer Science, Alcorn State University
Date: 11:30am - 1:00pm **April 7, 2016** (Thursday)

Abstract
For web-based applications, a security analysis was conducted in order to identify software vulnerabilities and develop a new security assessment model. During such an analysis, the major security vulnerabilities observed in the open web proxy honeypot during the data collection time from February to March 2005 were computer worm attacks in Code Red and Nimda, AWSTAT attacks, unauthorized access request (HTTP error code 403), MS-SQL version overflow attacks, etc. To develop the security assessment model, we extended the generic security model for a single component system to multiple components using the multidimensional Markov process model. The resulting model was applied to the most popular software systems. The software system availability in security is computed using real data, and the mean time to security failure is calculated. This paper not only provides the software vulnerability analysis of the web-based applications, but also details the software security assessment for multiple component systems.

*Keywords*: Software security, assessment model, web-based applications, Markov process model

Biographical Information

Yong Wang received his doctor degree in information security from Texas A&M University at College Station Texas in 2008. Before he received his doctor degree, he worked as software engineering in IOS in switch at Nortel. Then he worked as senior network analysis at Texas A&M University. There, he developed several network systems using SNMP protocol to manage CISCO, Alcatel, 3Com switches (1000 switches, more than 50000 end users). He worked in applied security in firewalls, port scans, patch software systems for long time. His recently works focus on security availability assessment, mean time security failure assessment, optimal security patch estimation using stochastics process model, risk assessment based on vulnerability report, risk assessment based on attack trees, and rule-based access control through authentication.
Dr. Wang Presenting

SPIE Members and Audience
III. Chapter Events -- 2015-2016 SPIE Student Seminar (3)

Title: **Sharing the Experience of SPIE Student Chapter Leadership Workshop**

Speaker: Viswanadha Vegi, Department of Advanced Technologies, Alcorn State University

Date: 11:30am - 1:00pm **September 27, 2016** (Tuesday)

**Abstract**

Mr. Vegi (Secretary of the SPIE Alcorn Chapter) will share his experience in attending the SPIE Student Chapter Leadership Workshop at San Diego in August 2016. We will have some fun lighting activities. You all are welcome to join us. Free gifts from SPIE will be distributed on a first-come-first-serve basis. The detailed abstract will be sent later.
III. Chapter Events -- 2015-2016 SPIE Student Chapter Meeting

Topic: To elect new Chapter Officers and discuss chapter activities
Organizers: Dr. Zheng and Mr. Vegi
Date: November 17, 2016 (Thursday)

We had a chapter meeting and new chapter officers were elected: Chapter President: Mr. Ryan Foster, and Chapter Secretary: Mr. Sandeep Kumar Boggula. Mr. Foster is confident to serve as a president and he proposes to organize more chapter activities involving students. Mr. Boggula is relatively new to the chapter and eager to serve the members and students. The chapter attracts 20 student members this year. Dr. Zheng told the new members about the opportunities and benefits as a SPIE Student Chapter and answered some questions from the members.
IV. Planned Chapter Events

2016-2017 SPIE Alcorn Student Seminar I

Date: January 2017
Speaker: Dr. Yan (Alcorn State University)
Title: Applications in Applied Mathematics
V. Chapter Funding/Expenses


**Fund**

For year 2015-2016 we received the Chapter Activity Grant: $900.00. There was a $50 balance from year 2014-2015.

**Expenses**

Our Chapter Activity Grant was used as follows:

- Refreshments of 3 Seminars and 1 Meeting: $700
- Mileage for Seminar Speaker: $100
- Others (Flyers, Newsletters, Posters): $150

**Current Balance**: $0
VI. Future Plans

For the period of 2016-2017

- Organize a professor lecture series on campus: $400 for refreshments & supplies
- Organize a student lecture series: $200 for refreshments & supplies
- Invite industry or academic speakers from external institutes: $200 for refreshments & supplies
- Maintain Chapter Newsletter, Flyer, Poster: $100 for materials

We will request $900 that will meet the budget ($900) for the proposed activities in the coming year.
VII. Officer Information

**Chapter President**: Ryan Foster  
Email: rfoster@students.alcorn.edu

**Chapter Secretary**: Sandeep Kumar Boggula  
Email: sboggula@students.alcorn.edu

**Faculty Advisor**: Dr. Yufeng Zheng  
Email: yzheng@alcorn.edu  
Phone: 601-877-6490

Former Chapter President: Zsalicia Jones  
Email: zjones@students.alcorn.edu

Former Chapter Secretary: Viswanadha Soma Sekhar Vedi  
Email: vvegi@students.alcorn.edu