

## **DR. NIRMALA SAINI**

Assistant Professor (Ad-hoc)

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## **PROFESSIONAL EXPERIENCE**

Jan 2014-Till date: Assistant Professor (Ad-hoc)  
University of Delhi.

Oct 2013- Dec 2013: Project Scientist

Department of Physics, Indian Institute of Technology Delhi.

Duties: Responsible for carrying out innovative research in the area of optical security systems.

2007-2011 :Teaching Assistantship

Department of Physics, Indian Institute of Technology Delhi.

Duties: Responsible for conducting experimental laboratory for post graduate students for optics and general physics.

## **RESEARCH INTEREST**

- ⊕ Biometric security systems
- ⊕ Biometric recognition system
- ⊕ Cryptography and Optical image Encryption

## **RESEARCH PROJECTS GUIDED AND IN PROGRESS**

**Physics (H)** (2014-15) (To simulate double random phase encoding technique)

**Physics (H) III Yr** (To design a vibration free optical table)

**Physics (H) III Yr** (To simulate optical image encryption techniques)

## MEMBERSHIP OF PROFESSIONAL BODIES/SOCIETIES

Optical Society of America (OSA)

### PROFESSIONAL ACTIVITY

Journal Referee service

- ⊕ Optics and Lasers in Engineering
- ⊕ Optics Express
- ⊕ Applied Optics
- ⊕ Optics Communication

### LIST OF RESEARCH PUBLICATIONS

#### (A) Publications in International journals

1. **N. Saini** and A. Sinha, Optics based Biohashing using joint transform correlator, *Optics Communication*, Vol. 283, (2010) pp. 894-902.
2. **N. Saini** and A. Sinha, Optics based Biometric encryption using log polar transform, *Optics Communications*, Vol. 283, (2010) 34-43.
3. **N. Saini** and A. Sinha, Key management of the double random phase encoding method using public key encryption, *Optics & Laser in Engineering*, Vol. 48, (2010) pp. 329-334.
4. **N. Saini** and A. Sinha, Soft biometrics in conjunction with optics based biohashing, *Optics Communications*, Vol. 284, (2011) pp. 756-763.
5. **N. Saini** and A. Sinha, Biometrics based key management of double random phase encoding scheme using error control codes, *Optics & Laser Engineering*, Vol. 51, (2013) pp. 1014-1022.
6. **N. Saini** and A. Sinha, Face and palmprint multimodal biometric systems using Gabor Wigner transform as feature extraction, **Pattern Analysis and Application** Vol. 18 (2015) pp. 921–932.
7. **N. Saini** and A. Sinha, Video encryption using chaotic masks in joint transform correlator, **Journal of Optics**, Vol. 17 (2015) 035701 (8pp).

#### (B) Publications in International conferences

1. **N Saini** and Aloka Sinha, A palmprint recognition system based on Gabor Wigner transform as feature extraction technique, Proc. IEEE International Conference on Hand-based biometrics, 17-18 November 2011, Hongkong.

2. A. Sinha and **N. Saini**, Digital holographic security system based on multiple biometrics, *ACE Conf. on Applications of Computer Engineering*, pp-186 (2010), Penang, Malaysia.
3. **N. Saini** and A. Sinha, Comparative study of biohashing technique using different feature extraction methods, *PHOTONICS– 2010, Int. Conf. on Fiber Optics and Photonics IIT Guwahati*, pp. 458, December 11-15, 2010, Assam, India (Poster Presentation) (**Published as Proc. SPIE 8173, 81730T (2010); doi:10.1117/12.900129.**).
4. **N. Saini** and A. Sinha, Security enhancement of the double random phase encoding method using public key encryption, *PHOTONICS– 2010, Int. Conf. on Fiber Optics and Photonics IIT Guwahati*, pp. 82, December 11-15, 2010, Assam, India (Oral Presentation).
5. **N. Saini** and A. Sinha, Optimal filter design for pattern recognition using simulated annealing, *PHOTONICS – 2008, Int. Conf. on Fiber Optics and Photonics IIT Delhi*, pp. 425, December 13-17, 2008, New Delhi, India (Poster Presentation).

**(C) Publications in National conferences**

1. **N. Saini** and A. Sinha, Optical image encryption using Biometrics, *Proceedings of XXXIIIOSI Symposium on Optics and optoelectronics (2007)* pp. 155-157, December, 18-20, 2007, Tezpur Univ. Assam India (Oral Presentation).
2. **N. Saini** and A. Sinha, Multiple-image encryption using biometrics, *Proceedings of XXXIIIOSI Symposium on Optics and optoelectronics (2007)* pp. 439-442, December, 18-20, 2007, Tezpur Univ. Assam, India (Oral Presentation).