

# **Sanaa Ghouzali, Ph.D**

Department of Information Technology  
College of Computer and Information Sciences  
King Saud University, Riyadh, Saudi Arabia

[sghouzali@ksu.edu.sa](mailto:sghouzali@ksu.edu.sa)

<http://faculty.ksu.edu.sa/sghouzali/>

## **WORK EXPERIENCE**

**December 2011 – present:** Assistant Professor, College of Computer and Information Sciences, King Saud University, Riyadh, Saudi Arabia.

**2009 – 2011: Assistant Professor**, National School of Applied Sciences (ENSA), University of Abdelmalek Essaadi, Tetuan, Morocco.

**2004 – 2008: Teaching Assistant**, Dept. Computer Science, Faculty of Sciences, University of Mohammed V-Agdal, Rabat, Morocco.

## **EDUCATION**

**Doctorate of Philosophy** in Computer Science and Telecommunications, under the joint supervision of the University of Mohammed V-Agdal, Morocco and Cornell University, USA, **March 2009**.

**Master's degree** in Computer Science and Telecommunications, Faculty of Sciences, University of Mohammed V-Agdal, Rabat, Morocco, **November 2003**.

**Bachelor's degree** in Applied Statistics, Faculty of Sciences, University of Mohammed V- Agdal, Rabat, Morocco, **July 2001**.

## **RESEARCH INTERESTS**

Biometric Authentication Systems, Pattern Recognition, Computer Vision, Machine Learning, Feature Extraction and Selection, Data Classification, Image Processing, Information Hiding, Security and Privacy.

## **ACADEMIC ACTIVITIES**

### **1. Courses Taught:**

- Information Security, Network Security, Advanced Network Security
- Distributed Systems, Fundamentals of Multimedia, Image Processing
- Programming Language C, Compilers

### **2. Current membership in professional organizations:**

- Software and Knowledge Engineering Research Group (SKERG), College of Computer and Information Sciences, King Saud University, Riyadh, Saudi Arabia.
- Research Laboratory of Computer Science and Telecommunications (LRIT), Faculty of Sciences, University of Mohammed V-Agdal, Rabat, Morocco.
- IEEE Signal Processing Society – Morocco Section.

### **3. Research Grants**

- Hybrid multi-biometric template protection approach based on Watermarking and Secure Sketch  
Place: General Direction of Research Grants (GDRG), King Abdulaziz City for Sciences and Technology (KACST), Riyadh  
Duration: Sep. 2015 – Aug. 2016  
Responsibility: Principal Investigator
- Design and Analysis of Optimization based algorithms for efficient User Identification  
Place: GDRG, KACST, Riyadh  
Duration: March 2015 – March 2016  
Responsibility: Principal Investigator
- Security Analysis of Biometric Cryptosystems  
Place: Research Group- SKERG, King Saud University  
Duration: February 2013 – May 2014  
Responsibility: Principal Investigator
- Biometric template protection for enhanced security  
Place: Research Center, CCIS, King Saud University  
Duration: November 2012 – April 2014  
Responsibility: Principal Investigator
- Chaos based image steganography algorithm  
Place: Research Center, CCIS, King Saud University  
Duration: November 2012 – April 2014  
Responsibility: Co-Investigator

### **4. Honors and awards:**

- Best R&D project prize awarded by the University of Mohammed V-Agdal for the project 'FastFaceAccess', February 2010, Rabat, Morocco.
- Travel grant awarded for participation in the IEEE International Conference on Image Processing (ICIP), October 2008, San Diego, CA, USA.
- Fulbright grant awarded by the Moroccan-American Commission for Educational and Cultural Exchange (MACECE) to undertake Ph.D. research at Cornell University, between 2005 and 2008.
- 3-year Excellence stipend from the CNRST (the Moroccan National Center for Scientific and Technical Research) between 2004 and 2006.
- Six-month partnership research done at LORIA/INRIA (the French National Institute for Research in Computer Science and Control), Nancy, France.

### **5. Organization of Workshops, Symposia, and Exhibitions:**

- The 6th International Symposium on I/V Communications and mobile networks (ISIVC), October 2012, Valenciennes, France.
- The 5th International Symposium on I/V Communications and mobile networks (ISIVC), October 2010, Rabat, Morocco.
- The 3rd International Symposium on Communications, Control and Signal Processing (ISCCSP), March 2006, Marrakesh, Morocco.

**6. Session Chair for Conferences:**

International Conference on Image and Information Processing 2013- Session: Content based Image Retrieval, Shimla, India.

**7. Peer Reviewer for Conferences:**

ISVC'15, C2SI-Berger'15, ISVC'14, ISIVC'14, DICTAP'12, DICTAP'11, ISIVC'10, ISCCSP'08, ETI'08, SIGMAP'07, ISIE'06, ICASSP'06.

**8. Peer Reviewer for Journals:**

Journal of Systems and Software (JSS)- Elsevier, Neurocomputing- Elsevier, King Saud University- Computer & Information Sciences- Elsevier, IET Computer Vision, IET Biometrics.

**9. Service activities (within and outside of the institution):**

Co/Supervision of PhDs (3), Masters (10+) and Bachelors (5+) thesis.

**PUBLICATIONS**

○ *ISI Journal Articles*

- **S. Ghouzali**, M. Lafkih, W. Abdul, M. Mikram, M. El Haziti, D. Aboutajdine, "Trace attack against biometric mobile applications", Mobile Information Systems, 2016.
- M. Lafkih, M. Mikram, **S. Ghouzali**, M. El Haziti, D. Aboutajdine, "Biometric Cryptosystems based Fuzzy Commitment Scheme: a Security Evaluation", Intl. Arab J. of Information Technology, 13(4), 2016.
- O. Nafea, **S. Ghouzali**, W. Abdul, E. U. H. Qazi, "Hybrid multi-biometric template protection using watermarking", The Computer Journal, doi: 10.1093/comjnl/bxv107 (2016).
- C. Moujahdi, G. Bebis, **S. Ghouzali**, M. Mikram, M. Rziza, "Biometric Template Protection Using Spiral Cube: Performance and Security Analysis", International Journal on Artificial Intelligence Tools, 25(1), 2016.
- E. U. H. Qazi, H. Aboalsamh, A. Belghith, H. Muhammad, W. Abdul, M. H. Dahshan, **S. Ghouzali**, "Challenges and solutions for Internet of Things Driven by IPv6", KSII Transactions on Internet and Information Systems, 9(12), pp: 4739-4758, 2015.
- C. Moujahdi, **S. Ghouzali**, M. Mikram, W. Abdul, M. Rziza, "Inter-Communication Classification for Multi-view Face Recognition", Intl. Arab J. of Information Technology, 11(4): 387-395, 2014.
- C. Moujahdi, G. Bebis, **S. Ghouzali**, M. Rziza, "Fingerprint shell: Secure representation of fingerprint template", Pattern Recognition Letters, 45: 189-196, 2014.
- M. Bilal, S. Imtiaz, W. Abdul, **S. Ghouzali** and S. Asif, "Chaos based Zero-steganography algorithm". Multimedia Tools and Applications. 72(2): 1073-1092, 2014.
- M. El Aroussi, M. El Hassouni, **S. Ghouzali**, M. Rziza, D. Aboutajdine, "Local Appearance Based Face Recognition Method Using Block Based Steerable Pyramid Transform", J. of Signal Processing, 91(1): 38-50, 2011.

○ *Refereed Journal Papers*

- E.-U.-H. Qazi, H. Aboalsamh, M. Hussain, W. Abdul, **S. Ghouzali**, "Multimedia Communication in Wireless Sensor Networks—A Review Paper", Journal of Advances in Computer Networks, 3(4): 330-334, December 2015.

- M. Zuair, A. Rahhal, W. Abdul, **S. Ghouzali**, E.-U.-H. Qazi, “Spatial Domain Bit Plane Steganography”, International Journal of Innovative Research in Technology & Science (IJIRTS), 3(4):32-37, July 2015.
- M. Lafkih, M. Mikram, **S. Ghouzali**, M. El Haziti, D. Aboutajdine: "Security Analysis of Biometric Cryptosystems: Case Study of Fuzzy Vault Approach", J. of Information Security Research, 3(3): 184-199, December 2012.
- M. El Aroussi, **S. Ghouzali**, M. El Hassouni, M. Rziza, D. Aboutajdine, “Multi-Sage Fusion of Local and Global Features Based Classification for Face Recognition”, Intl. J. on Tomography & Statistics (IJTS), Special issue on ‘Image Processing’, 16(S10), 2010.
- M. El Aroussi, M. El Hassouni, **S. Ghouzali**, M. Rziza, D. Aboutajdine, “Steerable Pyramids Feature Based Classification Using Fisher Linear Discriminant for Face Recognition”, INFOCOMP J. of Computer Science, 8(3): 72–78, 2009.
- **S. Ghouzali**, S. Hemami, M. Rziza, D. Aboutajdine, “Generalized Gausssian Density for Skin Detection in DCT Domain”, Machine Graphics and Vision (MG&V), 18(2), 2009.
- A. Amine, **S. Ghouzali**, M. Rziza, D. Aboutajdine, “An improved Method for Face Recognition Based on SVM in Frequency Domain”, Machine Graphics and Vision, 18(2), 2009.

○ *Refereed Conference Papers*

- M. Lafkih, P. Lacharme, C. Rosenberger, M. Mikram, **S. Ghouzali**, M. El Haziti, W. Abdul, D. Aboutajdine, “Application of a new alteration attack against biometric authentication systems”, Intl. Conf on Anti-Cybercrime (ICACC), Nov. 2015, Riyadh, KSA.
- M. Lafkih, P. Lacharme, C. Rosenberger, M. Mikram, **S. Ghouzali**, M. El Haziti, D. Aboutajdine, “Vulnerabilities of fuzzy vault schemes using biometric data with traces”, Intl. Wireless Communications and Mobile Computing Conf. (IWCMC), Aug. 2015, Dubrovnik, Croatia.
- **S. Ghouzali**, “Watermarking based Multi-Biometrics Fusion Approach”, Intl. Conf. on Codes, Cryptology and Information Security (C2SI-Berger), Springer- LNCS, May 2015, Rabat, Morocco.
- **S. Ghouzali**, S. Larabi Marie-Sainte, “Support Vector Machine based Exploratory Projection Pursuit for User Face Identification”, Intl. Conf. on Information and Communication Technology Research (ICTRC), May 2015, Abu Dhabi, UAE.
- **S. Ghouzali** and W. Abdul, “Private Chaotic Biometric Template Protection Algorithm”, IEEE Intl. Conf. on Image Information Processing (ICIIP), Dec. 2013, Shimla, India.
- M. Bilal, S. Imtiaz, W. Abdul and **S. Ghouzali**, “Zero-steganography using DCT and Spatial Domain”, ACS/IEEE Intl. Conf. on Computer Systems and Applications (AICCSA), May 2013, Fez, Morocco.
- M. Lafkih, M. Mikram, **S. Ghouzali**, M. El-Haziti, D. Aboutajdine, “Biometric Cryptosystems based Fuzzy Vault Approach: Security Analysis”, Intl. Conf. on Innovative Computing Technology (INTECH), Sep. 2012, Casablanca, Morocco.
- M. Lafkih, M. Mikram, **S. Ghouzali**, M. El-Haziti, “Security Analysis of Key-Binding Biometric Cryptosystems”, Intl. Conf. on Image and Signal Processing (ICISP), Springer-LNCS, June 2012, Agadir, Morocco.

- C. Moujahdi, **S. Ghouzali**, M. Mikram, M. Rziza, G. Bebis, “Spiral Cube for biometric Template Protection”, Intl. Conf. on Image and Signal Processing (ICISP), Springer-LNCS, June 2012, Agadir, Morocco.
- C. Moujahdi, **S. Ghouzali**, M. Mikram, D. Aboutajdine, “Multi-view Face Recognition” (in Arabic), Intl Computing Conf. in Arabic (ICCA), May 2011, Riyadh, Saudi Arabia.
- **S. Ghouzali**, M. El Aroussi, M. El Hassouni, M. Rziza, D. Aboutajdine, “Statistical Block-based Skin Detection”, Intl. Symp. on I/V Communications and Mobile Networks (ISIVC), Sep. 2010, Rabat, Morocco.
- M. El Aroussi, **S. Ghouzali**, M. El Hassouni, M. Rziza, D. Aboutajdine, “Face Recognition Using Enhanced Fisher Linear Discriminant”, Intl. Conf. on Signal-Image Technology & Internet-based Systems (SITIS), Nov. 2009, Marrakesh, Morocco.
- M. El Aroussi, M. El Hassouni, **S. Ghouzali**, M. Rziza, D. Aboutajdine, “Novel face recognition approach based Steerable Pyramid Feature Extraction”, IEEE Intl. Conf. on Image Processing (ICIP), Nov. 2009, Cairo, Egypt.
- M. El Aroussi, M. El Hassouni, **S. Ghouzali**, M. Rziza, D. Aboutajdine, “Curvelet Feature Based Classification Using Linear Discriminant Analysis for Face Recognition”, Intl. Conf. on Software, Knowledge, Information Management and Applications (SKIMA), Oct. 2009, Fez, Morocco.
- M. El Aroussi, **S. Ghouzali**, M. El Hassouni, M. Rziza, D. Aboutajdine, “Curvelet-Based Feature Extraction with B-LDA for Face Recognition”, ACS/IEEE Intl. Conf. on Computer Systems and Applications (AICCSA), May 2009, Rabat, Morocco.
- M. El Aroussi, M. El Hassouni, **S. Ghouzali**, M. Rziza, D. Aboutajdine, “Block based Curvelet Feature Extraction for Face Recognition”, Intl. Conf. on Multimedia Computing and Systems (ICMCS), April 2009, Ouarzazate, Morocco.
- **S. Ghouzali**, M. El Aroussi, A. Amine, M. Rziza, D. Aboutajdine, “Combined Face Recognition Classifiers based DCT and LBP Feature Sets”, African Conf. on Research in Computer Science (CARI), Oct. 2008, Rabat, Morocco.
- **S. Ghouzali**, S. Hemami, M. Rziza, D. Aboutajdine, E. M. Mouaddib, “A skin detection algorithm based on Discrete Cosine Transform and Generalized Gaussian Density”, IEEE Intl. Conf. on Image Processing (ICIP), Oct. 2008, San Diego, CA, USA.
- **S. Ghouzali**, A. Amine, M. Rziza, D. Aboutajdine, “Enhancing Feature Vectors Similarity in DCT Domain for Efficient Face Detection”, Intl. Symp. on I/V Communications and Mobile Networks (ISIVC), July 2008, Bilbao, Spain.
- A. Amine, **S. Ghouzali**, M. Rziza, D. Aboutajdine, “Investigation of Feature Dimension Reduction based DCT/SVM for Face Recognition”, IEEE Symp. on Computers and Communications (ISCC), July 2008, Marrakesh, Morocco.
- M. El Aroussi, A. Amine, **S. Ghouzali**, M. Rziza, D. Aboutajdine, “Combining DCT and LBP Feature sets For Efficient Face Recognition”, Intl. Conf. on Information & Communication Technologies: from Theory to Applications (ICTTA), April 2008, Damascus, Syria.
- A. Amine, **S. Ghouzali**, M. Rziza, D. Aboutajdine, “Face Detection in still Color Image Using Skin Color Information”, IEEE-EURASIP Intl. Symp. on Communications, Control and Signal Processing (ISCCSP), March 2006, Marrakesh, Morocco.