

Shireen Y. Elhabian

CONTACT INFORMATION	Department of Electrical and Computer Engineering University of Louisville Computer Vision and Image Processing Laboratory 2211 South Brook, Lutz Hall, Room #6, Louisville, KY, 40292, USA	<i>Mobile:</i> +1-502-418-3292 <i>E-mail:</i> syelha01@cardmial.louisville.edu <i>WWW:</i> www.cvip.uofl.edu/
OBJECTIVE	Placement in an academic position (i.e., postdoctoral, research scientist or faculty) that allows for advanced research in computer vision, image processing and machine learning with a particular focus on photometric object representation, 3D shape reconstruction, object detection and recognition and facial information processing under variations of illumination, pose, occlusion and expression.	
RESEARCH INTERESTS	Computer vision, geometric modeling, 3D shape reconstruction, object detection and recognition, shape from shading, image processing, analysis and understanding, medical imaging, surface registration and facial recognition under varying pose, illumination, occlusion and expression.	
EDUCATION	University of Louisville , Louisville, Kentucky, USA Ph.D. Candidate, Electrical and Computer Engineering , Dissertation Proposal Defense: June 27th, 2011. Expected to Graduate by May 2012. <ul style="list-style-type: none">• Thesis Topic: <i>Phenomenological Modeling of Image Irradiance</i>• Candidacy: <i>The Interplay between Reconstruction and Recognition</i>• GPA : 4 out of 4• Advisor: Professor Aly A. Farag• Thesis Committee:<ul style="list-style-type: none">• Professor Thomas L. Starr, Associate Dean for Research.• Professor James H. Graham, Chairman of ECE Department.• Professor Robert W. Cohn, Director of ElectroOptics Research Institute and Nanotechnology Center.• Associate Professor Steven Seif, Department of Mathematics.• Area of Study: Computer Vision and Image Processing Cairo University , Cairo, Egypt M.S., Faculty of Computers and Information, April 2005 <ul style="list-style-type: none">• Thesis Topic: : <i>Object Detection and Tracking in Video Sequences</i>• Advisors: Professor Khaled Mostafa, Professor Sanaa ElOla Ahmed• Area of Study: Image Processing Pre-Master, Faculty of Computers and Information, May 2003 <ul style="list-style-type: none">• Project Topic: : <i>Landmine Detection in Egypt</i>• Advisors: Professor Khaled Mostafa, Professor Sanaa ElOla Ahmed• Area of Study: Image Processing• GPA : 4 out of 4 (Excellent With Honors) B.S., Faculty of Computers and Information, May 2002 <ul style="list-style-type: none">• GPA : 3.95 out of 4 (Excellent With Honors - First of Class)• Project : Virtual Reality Toolkit with educational demo	

ACADEMIC
APPOINTMENTS

Research Assistant August 2007 to present
Department of Electrical and Computer Engineering,
Louisville University

Research and Development:

Human identification at a distance for indoor and outdoor environments.
Detection and classification of pulmonary nodules for early lung cancer diagnosis.
Dental 3D probe for orthodontic treatments.
Distinction between autistic corpus callosum and normal ones for autism diagnosis.
Monitoring the Earth's surface through change detection techniques.

Help in Teaching and Preparing Lecture Notes for:

ECE 523: Introduction to Biometrics
ECE 600: Introduction to Shape Analysis
ECE 619: Computer Vision
ECE 643: Introduction to Biomedical Computing
Materials are available at [CVIP Lab website](#)

Teaching Assistant June 2002 to July 2007
Faculty of Computers and Information,
Cairo University

Activities:

Lecturing classes and labs.
Helping students throughout their study (office hours).
Helping students throughout their graduation projects (co-supervision with professors and doctors).
Grading students' assignments.
Grading midterm exams.
Participate in the faculty's projects such as e-learning projects.

Course Instructor September 2005 to July 2007
Faculty of Computer Studies,
Arab Open University

Activities:

Class lecturing.
Grading students' assignments.
Midterm and final exams grading.
Helping students throughout their study (office hours).

EMPLOYMENT

E-Learning Course Developer July 2006 to July 2007
Avicenna Knowledge Center (AKC) ,
Cairo University

Activities:

Designing course layout.
Preparing course notes.

Virtual Reality Application Designer June 2002 to September 2003
Virtual Reality Department,
Suzan Mubarak Exploration Center for Science

Activities:

Enhancing employees' programming skills.
Lecturing programming courses in C++.
Participating in research projects.
Problem analysis and solving.

System Analyst and Junior Programmer May 2003 to October 2003
Bullet Proof Soft Company

Activities:

Problem Solving.
Developing desktop applications.

APPRENTICESHIPS
AND TRAINING

Train The Trainer Workshop

July 2005

Faculty of Computers and Information,
Cairo University

Content:

Training process
Training objectives
Trainer and trainees styles
Trainer role
Learning phases
Training tools
Presentation skills

E-learning in TVET processes

August 2005 to September 2005

InWent - Capacity Building International, Germany, sponsored by the Federal Ministry for Economic Cooperation and Development on behalf of the Government of the Federal Republic of Germany

Content:

Learning management systems
Content development
Promotion of internet competencies in general and vocational education
Promotion and implementation of E-Learning and life long learning in an international organization
E-Learning in the field of further education
Support structures in the field of educational media

Introduction to C# programming

January 2002

Microsoft Company in association with Faculty of Computers and Information, Cairo University

Content:

Introducing .Net Technology
C# programming language syntax

Java Programming

July 2001

Faculty of Computers and Information, Cairo University

Network Setup, Simulation and management

July 2001

Telecommunication National Institute

Content:

Basic experience in dealing with Opnet application.
Knowledge enhancement about the practical part of networks.

Object Oriented Programming (C++)

September 1999

Faculty of Computers and Information, Cairo University

REFEREED
JOURNAL
PUBLICATIONS

Shireen Elhabian and Aly Farag. Towards Efficient Image Irradiance Modeling of Convex Lambertian Surfaces Under Single Viewpoint and Arbitrary Illumination, submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence, September 2011, (under review).

Shireen Y. Elhabian, Khaled M. ElSayed, S. H. Ahmed, "Moving Object Detection in Spatial Domain using Background Removal Techniques - State-of-Art" *Recent Patents on Computer Science*, Volume 1, Issue 1, January, 2008, pp. 32-54.

Shireen Y. Elhabian, Khaled M. ElSayed, S. H. Ahmed "Sperm Tracking using Backward Projection", *Egyptian Informatics Journal*, June 2006.

Shireen Y. Elhabian, Khaled M. ElSayed, S. H. Ahmed "Innovated Approach for Automated Snakes Initialization", *Egyptian Informatics Journal*, Vol. 5, No. 1, June 2004, pp. 103-115.

Illumination Modeling

Shireen Elhabian, Ham Rara and Aly Farag, Towards Efficient and Compact Phenomenological Representation of Arbitrary Bidirectional Surface Reflectance, *British Machine Vision Conference (BMVC)*, 2011, accepted to appear.

Shireen Elhabian, Ham Rara and Aly Farag, Towards Accurate and Efficient Representation of Image Irradiance of Convex-Lambertian Objects Under Unknown Near Lighting, *International Conference of Computer Vision (ICCV)*, 2011, accepted to appear.

Shireen Elhabian, Ham Rara, Aly Farag, Modeling Lambertian Surfaces Under Unknown Distant Illumination Using Hemispherical Harmonics, *Eighth Canadian Conference on Computer and Robot Vision (CRV)*, pp.293-300, 2011.

Shireen Elhabian, Ham Rara, Asem Ali, Aly Farag, Illumination-invariant Statistical Shape Recovery with Contiguous Occlusion, *Eighth Canadian Conference on Computer and Robot Vision (CRV)*, pp.301-308, 2011.

Shireen Elhabian, Ham Rara and Aly Farag, On The Use of Hemispherical Harmonics For Modeling Images of Object Under Known Distant Illumination, *International Conference of Image Processing (ICIP)*, 2011, accepted to appear.

Shape Recovery

Ham Rara, **Shireen Elhabian**, Thomas Starr, and Aly Farag, "3D Face Recovery from Intensities of General and Unknown Lighting Using Partial Least Squares," Proc. of 2010 IEEE International Conference on Image Processing (ICIP), pp. 4041-4044, 2010

Ham Rara, **Shireen Elhabian**, Thomas Starr, and Aly Farag, "Model-Based Shape Recovery From Single Images Of General And Unknown Lighting," 2009 IEEE International Conference on Image Processing (ICIP), Nov. 7 - Nov. 10, 2009, Cairo, Egypt

Ham Rara, **Shireen Elhabian**, Thomas Starr, and Aly Farag, "Face reconstruction and recognition using a statistical model combining shape and spherical harmonics," IEEE SOUTHEASTCON 2009, March 2009

Amal A. Farag, **Shireen Elhabian**, Abdelrehim H. Ahmed, and Aly A. Farag, Noise Analysis of a SFS Algorithm Formulated under Various Imaging Conditions, 4th International Symposium on Visual Computing, December 1-3, 2008, Las Vegas, Nevada, USA

Ham Rara, **Shireen Elhabian**, Thomas Starr, Aly Farag. A Statistical Model Combining Shape and Spherical Harmonics for Face Reconstruction and Recognition. Biomedical Engineering Conference, CIBEC2008. Cairo International, 1:1-4, 18-20 Dec. 2008.

Biometrics

Mostafa Abdelrahman, **Shireen Elhabian**, Asem Ali and Aly A. Farag, Face Recognition at-a-Distance using Texture, Sparse-Stereo, and Dense-Stereo, International Conference on Multimedia Technology (ICMT), pp. 6690-6695, 26-28 July 2011.

Ham Rara, **Shireen Elhabian**, Asem Ali, Mike Miller, Thomas Starr, and Aly Farag, "Face Recognition at-a-Distance using Texture and Sparse-Stereo Reconstruction," Proc. of IEEE Fourth International Conference on Biometrics: Theory, Applications and Systems (BTAS), pp. 1221-1224, 2010.

Ham Rara, Asem Ali, **Shireen Elhabian**, Thomas Starr, and Aly A. Farag, "Face Recognition at-a-Distance using Texture, Dense- and Sparse-Stereo Reconstruction," Proceedings of the International Conference on Pattern Recognition (ICPR), pp. 1221-1224, 2010.

Ham Rara, **Shireen Elhabian**, Asem Ali, Travis Gault, Mike Miller, Thomas Starr, and Aly Farag, A Framework for Long Distance Face Recognition using Dense- and Sparse-Stereo Reconstruction, 5th International Symposium on Visual Computing (ISVC09), Nov. 30 - Dec. 2, 2009, Las Vegas, Nevada, USA.

Ham Rara, **Shireen Elhabian**, Asem Ali, Mike Miller, Thomas Starr, and Aly Farag, Face recognition at a distance based on sparse-stereo reconstruction, IEEE CVPR Biometrics Workshop, 2009.

Ham Rara, **Shireen Elhabian**, Asem Ali, Mike Miller, Thomas Starr, and Aly Farag, Distant Face Recognition Based On Sparse Stereo Reconstruction, 2009 IEEE International Conference on Image Processing (ICIP), Nov. 7 - Nov. 10, 2009, Cairo, Egypt

Medical Imaging

Amal Farag, Asem Ali, **Shireen Elhabian**, James Graham, Aly Farag, and Robert Falk, Feature-Based Lung Nodule Classification, Proc. of International Symposium on Visual Computing (ISVC), pp. 79-88, 2010.

Ahmed Farag, **Shireen Elhabian**, Mostafa Abdelrahman, James Graham, Aly Farag, Dongqing Chen, and Manuel F. Casanova, Surface Modeling of the Corpus Callosum, Proc. of International Symposium on Visual Computing (ISVC), pp. 9-18, 2010.

Amal Farag, **Shireen Elhabian**, James Graham, Aly Farag, and Robert Falk, Toward Precise Pulmonary Nodule Descriptors for Nodule Type Classification, Proc. of the 13th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI), pp. 626-633, 2010.

Amal Farag, **Shireen Elhabian**, James Graham, Aly Farag, Salwa Elshazly, Robert Falk, Hani Mahdi, Hossam Abdelmunim, and Sahar Al-Ghaafary, Modeling of the Lung Nodules for Detection in LDCT Scans, Proc. of the 32nd IEEE Engineering in Medicine and Biology Society (EMBC), 2010.

Ahmed Farag, **Shireen Elhabian**, Mostafa Abdelrahman, James Graham, Aly Farag, Dongqing Chen, and Manuel F. Casanova, Shape Modeling of the Corpus Callosum, Proc. of the 32nd IEEE Engineering in Medicine and Biology Society (EMBC), pp. 4288-4291, 2010.

Shireen Elhabian, Hossam Abd EL Munim, Salwa Elshazly; Aly A Farag, and Mohamed Aboelghar, "Experiments on sensitivity of template matching for lung nodule detection in low dose CT scans," ISSPIT 2007, 1040-1046.

Others

Amal A. Farag, Asem M. Ali, **Shireen Elhabian** and Aly A. Farag, Probability Density Estimation By Linear Combinations Of Gaussian Kernels Generalizations And Algorithmic Evaluation, International Conference on Multimedia Technology (ICMT), pp. 6491-6494, 26-28 July 2011.

Mostafa Abdelrahman, Asem Ali, **Shireen Elhabian** and Aly Farag. Solving Geometric Co-Registration Problem of Multi-Spectral Remote Sensing Imagery Using SIFT-based Features Toward Precise Change Detection. 7th International Symposium on Visual Computing (ISVC). Las Vegas, Nevada, USA, September 26-28, 2011, accepted to appear.

TECHNICAL
REPORTS

Shireen Elhabian and Aly Farag, *Tutorial on Topology*, Computer Vision and Image Processing Laboratory, CVIP Lab, University of Louisville, June 2009.

Shireen Elhabian and Aly Farag, *Tutorial on Computational Geometry*, Computer Vision and Image Processing Laboratory, CVIP Lab, University of Louisville, July 2009.

Shireen Elhabian and Aly Farag, *Tutorial on Curves and Surfaces*, Computer Vision and Image Processing Laboratory, CVIP Lab, University of Louisville, August 2009.

Shireen Elhabian, Amal Farag and Aly Farag, *Tutorial on CT Reconstructions*, Computer Vision and Image Processing Laboratory, CVIP Lab, University of Louisville, January 2009.

Shireen Elhabian, Amal Farag and Aly Farag, *Tutorial on Object Registration*, Computer Vision and Image Processing Laboratory, CVIP Lab, University of Louisville, pp. 120, January 2009.

Shireen Elhabian and Aly Farag, *Tutorial on MRI Reconstructions*, Computer Vision and Image Processing Laboratory, CVIP Lab, University of Louisville, pp. 107, February 2009.

Shireen Elhabian, Amal Farag and Aly Farag, *Tutorial on Camera Calibration*, Computer Vision and Image Processing Laboratory, CVIP Lab, University of Louisville, February 2008.

Shireen Elhabian and Aly Farag, *Tutorial on Stereo Reconstruction*, Computer Vision and Image Processing Laboratory, CVIP Lab, University of Louisville, March 2008.

Shireen Elhabian and Aly Farag, *Tutorial on Shape from Shading*, Computer Vision and Image Processing Laboratory, CVIP Lab, University of Louisville, April 2008.

Shireen Elhabian and Aly Farag, *2D Face Recognition Using PCA, ICA and LDA*, Computer Vision and Image Processing Laboratory, CVIP Lab, University of Louisville, pp. 110, November 2008.

Shireen Elhabian and Aly Farag, *Biometrics in a glimpse*, Computer Vision and Image Processing Laboratory, CVIP Lab, University of Louisville, September 2007.

PAPERS IN
PREPARATION

Shireen Elhabian and Aly Farag. Phenomenological Modeling of Image Irradiance of Arbitrary Surfaces, IEEE Transactions on Pattern Analysis and Machine Intelligence.

REFEREE SERVICE

- *Reviewer at Journal of Pattern Recognition Letters, Elsevier*
- *Reviewer at IET Computer Vision*

HONORS AND AWARDS

- ECE Outstanding Graduate Student Award 2009, Department of Electrical and Computer Engineering, University of Louisville, Louisville, Kentucky, USA.
- Win 1st position in EXPO 2009, Department of Electrical and Computer Engineering, University of Louisville, Louisville, Kentucky, USA.
- Computer Vision Summer School, Sicily, Italy, 2008
- Best Teaching Assistant Award, March 2007, Teaching Members Club, Cairo University, Egypt
- Best Teaching Assistant Award, April 2004, Faculty of Computers and Information, Cairo University, Egypt
- Evaluation Certificate, April 2003, Cairo University, Egypt
- Superiority Award, April 2003, Chamber of Information Technology and Communications (CIT) Egyptian Industries Union
- Superior Student Certification , August 2002, Defense Ministry, Egypt
- Egypt Science Festival Certification, December 2002, Cairo University, Egypt
- Top student in class throughout my undergraduate education in Egypt

TEACHING EXPERIENCE

University of Louisville, Louisville, Kentucky USA

- *Geometric Computer vision*: shape from shading, stereo reconstruction, camera calibration, non-linear optimization techniques.
- *Biometrics*: face recognition (2D/3D), feature extraction, data reduction, iris recognition.

Cairo University, Cairo, Egypt

- *Virtual Reality Laboratory* (Labs: WTK, and OpenGL under VC++)
- *Digital Image Processing* (Labs:MATLAB and Image Processing Toolbox)
- *Signals and Systems* (Labs: MATLAB and Signal Processing Toolbox)
- *Digital Signal Processing* (Labs: MATLAB and Signal Processing Toolbox)
- *Computer Graphics*
- *Multimedia* (Implementation of different compression algorithms using VC++, C# and .Net)
- *Speech Processing* (Labs: Speech processing using MATLAB)
- *Advanced Digital Image Processing* (Labs: Image processing using VC++)
- *Advanced Mathematics* (Labs: MATLAB)
- *Fuzzy Logic and Neural Networks* (Labs: MATLAB Fuzzy Toolbox, and Neural Network Toolbox)
- *Introduction to C++ programming*

APPLICATION AREAS

Biometrics, Object Detection and Recognition, 3D shape recovery, Object Classification and Medical imaging.

SKILLS

Programming Languages

C and C++	Highly Competent
MATLAB	Highly Competent
OpenCV	Fair and In progress
VTK	Fair and In progress
Parallel Programming with CUDA	In progress
C#	Basic
Java	Basic

Software

Microsoft Office	Highly Competent
Latex	Competent

Microsoft Visual Studio
Mathematica

Highly Competent
Basic

Others

Presentations preparation skills
Writing skills
Course preparation skills
Instructing skills

EXPERTISE

Mathematics:

- Real and Complex Analysis, Differential Geometry and Group Theory

Signal Processing:

- Signal and Image Processing, Probability, Random Variables, Stochastic Processes, Information Theory, Pattern Recognition and Machine Learning

Computer Vision:

- Computer Vision, Image Formation and Biometrics

LANGUAGES

Arabic
English
French

Mother Tongue
Fluent - TOEFL score 600
Fair

REFERENCES
AVAILABLE TO
CONTACT

References are chronically ordered.

Prof. Thomas Starr (e-mail: tom.starr@louisville.edu)

- Professor, Electrical and Computer Engineering, University of Louisville
- ★ *Prof. Starr is one of my PhD committee members and the PI of one of my research assistantship projects.*

Prof. Aly A. Farag (e-mail: aly.farag@louisville.edu)

- Professor Electrical and Computer Engineering, University of Louisville
- ★ *Prof. Aly A. Farag is my thesis advisor and the PI of my current research assistantship project.*

William Michael Miller (e-mail: mike@cvip.louisville.edu)

- Research Engineer Scientist Electrical and Computer Engineering, University of Louisville
- ★ *Mr. Miller is the executive manager of the laboratory I am currently working in.*

Prof. Hoda Onsi (e-mail: h.onsi@fci.cu.edu.eg)

(e-mail: drhoda2002a@hotmail.com)

- Professor, Vice Dean of Research and Higher Studies, Faculty of Computers and Information
Cairo University
- ★ *Prof. Hoda Onsi was my department chair and I was one of her teaching assistants.*

Prof. Khaled Mostafa (e-mail: kelsayed@ntgclarity.com)

- Professor, Faculty of Computers and Information
Cairo University
- ★ *Prof. Khaled Mostafa was my pre-master and master supervisor and I was one of his teaching assistants.*