


C.V.

Personal Data

	
Name	Hussein Karam Hussein Abd-El-Sattar
Sex	Male.
Marital Status	Married.
Nationality	Egyptian.
Date of Birth	16/08/1967.
Place of Birth :	Cairo, Egypt.
Ph.D. Obtained Date:	Sept. 2000 (Tokyo Institute of Technology, Japan)
Major Field	Computer Science
Specific (Minor) Field	Multimedia/Graphic Design/Software Engineering/others
Home Address	212 Nasr City, Emtidad Ramsis 2, Flat 12, Cairo
Home Tel. & Fax.	+202-24054095
Home University Address (Permanent)	Ain Shams University, Faculty of Science, Math. & Computer Science Dept., Abbassia 11566, Cairo, Egypt.
Rank	Associate Professor
Current Job	Associate Professor at Prince Sultan University
Current Job Description	Teaching some Computer Science and Information systems courses for Under-graduate students as well as supervising fourth year student projects.
Current Job Tel.	+966-0530838594 or 01/2694642
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Academic Degree

Institute	Location	Degree	Field	Completion Date (Month, Year)
Ain Shams University	Cairo, Egypt	B.Sc. Excellent with honor	Computer Science	October, 1986 May, 1989
Ain Shams University	Cairo, Egypt	Postgraduate Courses	Computer Science	October, 1991 Sept., 1992
Ain Shams University	Cairo, Egypt	M.Sc.	Computer Science	Oct., 1993 May, 1997
Tokyo Institute of Technology	Tokyo, Japan	Ph.D.	Computer Science	Oct., 1997 Sept., 2000

Previous Employments

Name of Institution	Location	Position	From-To
Ain Shams University	Cairo- Egypt	Demonstrator	1989-1993
Ain Shams University	Cairo-Egypt	Lecturer Assistance	1993-1997
Ain Shams University	Cairo-Egypt	Lecturer	From 2000
Tokyo Institute of Technology	Tokyo, Japan	Visiting Researcher	2000-2002
Bahrain University	Manama-Bahrain	Ass. Prof.	2003-2005
Ahlia University	Manama-Bahrain	Ass. Prof.	2005-2007
Prince Sultan University	Riyadh	Ass. Prof.	2007- Sept. 2009
Prince Sultan University	Riyadh	Associate Prof.	Oct. 2009

Research Activity

- Program committee at the IEEE 4th International Conference Geometric Modelling and Imaging GMAI'09 (14-17 July 2009, Spain)
- Program committee at the IEEE 3rd International Conference Geometric Modelling and Imaging GMAI'08 (London South Bank University), 8-11 July 2008.
- Program committee at the IEEE Computer Graphics International (CGI) conference, Tokyo, Japan, 2003.
- Program committee at the International Journal of Software Engineering and Knowledge Engineering (World Scientific), USA.
- Appointed as a "Recognized Supervisor" of Brunel University, UK, for three years starting from April, 18, 2007.

Other Activities (Committees):

- Member of the Academic and Planning Center committee at Prince Sultan University (PSU).
- Member of the Exam. Committee at Prince Sultan University (PSU).

- Member of the Academic Accreditation & Assessment committee at (PSU).
- Member of the Student Affairs Committee (PSU).
- Member of the Research Committee (PSU).

Student Projects

1. Project Title: Human Resources and Payroll System Development
 - ❖ Type : CO-OP Program
 - ❖ Done By: Turki AlJaid and Hisham Fahad ALGhosn
 - ❖ Supervised by : Dr. Hussein Karam
 - ❖ Place: Prince Sultan University, Riyadh, KSA.
 - ❖ Date: June 2007-January 2008.

2. Project Title: “Computer-Assisted Virtual Learning Environment for improving disability skills”
 - ❖ Type: M.Sc.
 - ❖ Done By: Fatima Al-Dhaen
 - ❖ Supervised by: Dr. Hussein Karam
 - ❖ Place: Ahlia University, College of Math. Sciences and IT, Bahrain
 - ❖ Date: Feb. 2007.
 - ❖ Summary:
 - Computer-assisted virtual learning environment (CVLE) possesses many qualities that give it rehabilitative potential for people with intellectual disabilities, both as an intervention and an assessment. Unlike human tutors, computers are infinitely patient and consistent. It can provide a safe setting in which to practice skills that might carry too many risks in the real world. The expansion of 'care in the community' has highlighted the need for more effective educational and training media for people with learning disabilities. This thesis describes a suggested framework and the development of computer assisted virtual environments (CVLE) which may help to meet this need.

3. Project Title: “A Study on Multimedia-based Watermarking Techniques”
 - ❖ Type: M.Sc.
 - ❖ Done By: Rana Tanveer
 - ❖ Supervised by: Dr. Hussein Karam
 - ❖ Place: Ahlia University, College of Math. Sciences and IT, Bahrain
 - ❖ Date: Feb. 2007.
 - ❖ Summary:
 - The growth of networked multimedia systems has created the need for the copyright protection of various digital medium, e.g., images, audio clips, video, etc. Copyright protection involves the authentication of ownership and the identification of illegal copies of a (possibly forged) image. The illegal production of copies from digital data plays an increasingly important role in the online world, to prevent this abuse, special measures are required to identify the owner of a file and identify the distributor of illegal copies. One approach used to address this problem is to add a visible or invisible structure to an image that can

be used to seal or mark it. These structures are known as digital watermarks. In this dissertation, we first outline the desirable characteristics of digital watermarks. Previous work in digital watermarking is then summarized and finally we concentrate on developing a new relatively inexpensive hiding technique that hides the existence of secret communication.

4. Project Title: “Real-time Digital Movie Production for Media”
 - ❖ Done By: Yaqoob Alqasimi
 - ❖ Supervised by : Dr. Hussein Karam
 - ❖ Place: Ahlia University, College of Math. Sciences and IT, Bahrain
 - ❖ Date: Feb. 2006-June 2006.
 - ❖ Summary:
 - Real-time movie production requires many resources and consumes greatly time, effort and budget. This project uses Multimedia instructional design process for producing a movie clip. The produced final movie can be objectively used for many purposes such as cinematography, Video clip or teaching aid.

5. Project Title: “An Educational Multimedia System guide to Islamic Principles”
 - ❖ Done By: Dalal Hamad, Farah Khalid and Mona Ahmed
 - ❖ Supervised by : Dr. Hussein Karam
 - ❖ Place: Ahlia University, College of Math. Sciences and IT, Bahrain
 - ❖ Date: Sept. 2005-Dec. 2005.
 - ❖ Summary:
 - Multimedia is an effective tool for many purposes, in particular Multimedia educational technology. This project uses Multimedia authoring tools such as Macromedia Director MX 2004 for designing a complete multimedia system guide to Islamic principles. The project objective is to support a highly interactive and non linear navigation and provide a better communication of information and knowledge in an attractive way and shorter time. An advantage of the produced system is that it gives a quicker way to understand some Islamic principles in attractive way using the embedded Graphical User Interface (GUI).

6. Project Title: “The effect of Multimedia on E-commerce and Consume behavior”
 - ❖ Done By: Fadwa Mohamed Saleh
 - ❖ Supervised by : Dr. Hussein Karam
 - ❖ Place: Ahlia University, College of Math. Sciences and IT, Bahrain
 - ❖ Date: Sept. 2005-Dec. 2005.
 - ❖ Summary:
 - Electronic commerce and Internet technology are fundamentally changing the way the commerce is conducted and how companies do their business. One of the challenges of E-commerce is the design of Web sites which effectively present products and are easy and pleasant to use for customers. The objective of this project is to provide an integral theoretical paradigm that can successfully support a wide array of technical, business and consumer issues involved in online retailing.

7. Project Title: “Multimedia Communication and ATM Structure”
 - ❖ Done By: Layla Faiq Al_Mubarak,
 - ❖ Supervised by : Dr. Hussein Karam
 - ❖ Place: Ahlia University, College of Math. Sciences and IT, Bahrain
 - ❖ Date: Sept. 2005-May 2006.
 - ❖ Summary:
 - The increased dependence upon computer networking as a modern communication media has placed much pressure on scientists to develop robust, powerful and flexible networking models. This project describes Asynchronous Transfer Mode (ATM) networks and tried to enhance its switching mechanism. Comparison between ATM and other high speed LAN technologies quality of service (QoS) is discussed. Finally, a simple simulation model for the ATM multipoint communication is developed via Matlab program.

8. Project Title: “Video Compression Technology for Multimedia Applications”
 - ❖ Done By: Ahmed Matter
 - ❖ Supervised by : Dr. Hussein Karam
 - ❖ Place: Ahlia University, College of Math. Sciences and IT, Bahrain
 - ❖ Date: Sept. 2005-Jan. 2006.
 - ❖ Summary:
 - The development of digital video technology has made it possible to use digital video compression for a variety of telecommunication applications. Standardization of video compression techniques become a high priority because only a standard can reduce the high cost of video compression codec. This project summarizes the standard compression techniques for digital audio and video formats.

9. Project Title: “Using Multimedia to present the problem of Housing”
 - ❖ Done By: Fatima Jassim
 - ❖ Supervised by : Dr. Hussein Karam
 - ❖ Place: Ahlia University, College of Math. Sciences and IT, Bahrain
 - ❖ Date: Jan.2006-June 2006.
 - ❖ Summary:
 - ✚ Multimedia is the use of a computer to present and combine text, graphics, audio and video with links and tools that let the user navigate, interact, create and communicate. It is an effective tool for many purposes to improve our lives (e.g., learning, entertainment, home shopping, and work). This project uses Multimedia authoring tools such as Macromedia Director MX 2004 for addressing the problem of housing which is a world wide problem through a complete multimedia system. The project objective is to support a highly interactive and non linear navigation and provide a better communication of information and knowledge in an attractive way and shorter time.

10. Project Title: “Software System for automatically producing TV Show in Real-time”
 - ❖ Done By: Sayed Baqer, Ali Darwish, and Hassan Mohamed
 - ❖ Supervised by : Dr. Hussein Karam

- ❖ Place: Bahrain University, College of Computer Science and IT, Bahrain
- ❖ Date: Sept. 2004-May 2005.
- ❖ Summary:
 - Rapid advances in Multimedia, broadcasting, and communications led by the internet have opened up new areas for researches and developments. TV show production is one of such areas which consumes greatly time, effort and budget. Moreover, its task is not only targeted mainly at trained professionals but also is seldom easy enough for a director to produce. This project addresses such problems by developing a software system for producing full-featured TV show automatically.

11. Project Title: “A study on Multimedia and Broadcasting with some applications”

- ❖ Done By: Bader SAEED KHALIL
- ❖ Supervised by : Dr. Hussein Karam
- ❖ Place: Ain Shams University, Faculty of Science, Math. & Computer Science Dept., Cairo, Egypt
- ❖ Date: Sept. 2002-May 2003
- ❖ Summary:
 - With rapid progress in communications technology led by the Internet and in the field of broadcasting centered on digital media broadcasting, users can now enjoy a variety of contents and media such as : Web Pages, Video conferencing, distance learning, interactive TV, Movies on demand, VR, etc. The objective of this project is to study, analyze the principle theory underlying such different media topics and perform them practically.

Projects and Thesis Supervising

- ✚ Project Title: “**Applications on CAVE**”
 - ❖ Type : Post-Doctoral
 - ❖ Done By: Hussein Karam
 - ❖ Supervised by : Prof. Masayuki Nakajima
 - ❖ Place: Tokyo Institute of Technology, Graduate School of Information Science and Engineering, Tokyo, Japan.
 - ❖ Date: Oct. 2000-Sept. 2002
 - ❖ Summary:
 - Networked virtual reality (NVR) technology, 3-D computer graphics, broadcasting and multimedia are improved rapidly and will reshape the interface between people and information technology by offering new ways for the communication of information and the visualization of processes. This project focuses on the applications of the NVR technology in science, engineering, interactive art, and the production of character animation with visual effects based on “CAVE” (Cave Automatic Virtual Environment).
- ✚ Thesis Title: “**Multi-resolution Representation and Analysis of surfaces**”
 - ❖ Type: Ph.D.
 - ❖ Done By: Yasser Mohamed Abd-Ellatif
 - ❖ Supervised by : Hussein Karam, Mohamed H. El-Zahar, and Fayed M. Ghaleb

- ❖ Place: Ain Shams University, Faculty of Science, Math. & Computer Science Dept., Cairo, Egypt
- ❖ Date: 2002-2005
- ❖ Summary:
 - Subdivision surfaces are rapidly gaining popularity in computer graphics, modeling, simulation, movie character creation and human character animation. The problem with the subdivision algorithms is that after few subdivision steps, a number of generated meshes will become huge and the number of faces grows exponentially, consequently difficult to manipulate. Due to memory and time restrictions, the number of subdivision steps that can be performed is relatively small. This thesis addressed such problems by proposing new algorithms as a key solution for such a challenge.

Responsible for Courses

- Fundamentals of Computer Science
- Computer Systems and architectures
- Data structure and algorithms
- Painting and Drawing fundamentals
- System Analysis and Design
- Database management systems
- Information systems development
- Project management
- Computer Graphics,
- CAD/CAM technology, Arts, Design and Animation
- Multimedia Authoring Tools
- Instruction Design for Multimedia
- Multimedia Data Delivery
- Distributed Systems and Multimedia
- Multimedia Information systems
- Image processing
- Compiler design
- Software Engineering Methods
- Software Development Methodology
- Internet Technology
- Formal Language and Automata
- Logic Design
- Operating Systems: Dos, UNIX and Windows.
- Graphics Packages, Photoshop, 3ds Max, Maya, Open-Inventor, Director, etc.
- Computer Programming Languages
 - Java and Java scripts
 - HTML
 - C, C++ , OpenGL, Pascal and Ada

Academic Awards

1. **Promotion Certificate in Computer Science** from the **Academy of Scientific Research and Technology, Cairo, EGYPT, 2002.**
<http://www.asrt.sci.eg/body/org2002/orgdef16.htm>
2. I have gotten an **International Promotion Certificate** from the 15th International NICOGRAPH/MULTIMEDIA contest, which was hold in **Tokyo, JAPAN**, December 1999.
3. At the **Computer Graphics International** conference which was hold in **Canmore, Alberta, CANADA, June 1999**, one of my paper titled: "Islamic Symmetric patterns generation based on group theory" has been chosen as the best paper via the international organization committee and some of my results have been chosen as a cover page for the conference proceeding.

Work Experience

Place: Prince Sultan University, Riyadh

Semester: First		Academic Year: 08/09
	Course	Cr. Hrs.
IS 225	System Analysis and Design I	3/4
IS 333	Information System Development	3/4
IS 223	Database Management Systems	3/4

Semester: Second		Academic Year: 07/ 08
	Course	Cr. Hrs.
CS 360	Computer Graphics (Sec. 350)	3/4
CS 360	Computer Graphics (Sec. 337)	3/4
IS223	Database Management Systems	3/4

Semester: First		Academic Year: 07/ 08
	Course	Cr. Hrs.
IS 225	System Analysis and Design I	3/4
IS 333	Information System Development	3/4
IS 223	Database Management Systems	3/4

Others:-

SUBJECT	LEVEL <i>Bachelors (B) or Masters (M)</i>	Academic Year	Name of Institution	Location
Introduction to Computers and IT	(B)	2003-2004	Bahrain University	Manama-Bahrain
Data structure and Algorithms	(B)	2003-2004	Bahrain University	Manama-Bahrain
Computer Programming Languages	(B)	2004-2005	Bahrain University	Manama-Bahrain
Computer Graphics	(B)	2004-2005	Bahrain University	Manama-Bahrain
Computer Systems	(B)	2005-2006	Ahlia University	Manama-Bahrain
Advanced Computer Graphics	(M)	2005-2006	Ahlia University	Manama-Bahrain
Multimedia Authoring (I & II)	(B)	2005-2006	Ahlia University	Manama-Bahrain
Multimedia Data Delivery	(B)	2005-2006	Ahlia University	Manama-Bahrain
Distributed Systems & Multimedia	(B)	2006-2007	Ahlia University	Manama-Bahrain
Instruction Design for Multimedia	(B)	2006-2007	Ahlia University	Manama-Bahrain
Multimedia Information Systems	(M)	2006-2007	Ahlia University	Manama-Bahrain
Software Development Methodologies	(M)	2006-2007	Ahlia University	Manama-Bahrain
Computer Aided Design (CAD)	(B)	2006-2007	Ahlia University	Manama-Bahrain

List of Publications

(International Journals, Conferences and Book Chapters Publications)

Journals Publication

No.	Authors	Title	(Journal/Conference Names)
1	Hussein Karam	A New Plot/Character-based interactive system for Story-based Virtual Reality Applications	International Journal of Image and Graphics, World Scientific, Accepted to Appear, Jan. 2010
2	Hussein Karam	A New Platform for Plot/Character-based Interactive Storytelling Technology	Journal of Applied Computing and Informatics (ACI), KSA Accepted to Appear, 2009
3	Hussein Karam, F. Ghaleb and Y. Abd-Ellatif	Towards Fast and Smooth Subdivision Surface Reconstruction	International Journal of Computers and Applications, Vol. 28, No. 2, pp. 170-176, 2006.
4	M. El-Zahar, F. Ghaleb, Hussein Karam and Y. Abd-Ellatif	An Adaptive Subdivision Scheme with Doo-Sabin Subdivision Surfaces	Journal of the Egyptian Mathematical Society, Vol. 14, pp. 109-120, 2006.
5	Hussein Karam	Automatic generation algorithm of facial caricaturing based on face anthropometry theory	Journal of Engineering and Applied Science, Cairo University, Vol. 50, No. 4, pp. 623-636, 2003.
6	Hussein Karam and M. Nakajima	Automatic generation of 3-D Linear fractal shapes with quadratic map basins animation	International Journal of Science and Art, Tokyo, Vol. 2, No. 1, pp. 61-70, 2002.
7	Hussein Karam, A. Bastanfard, and M. Nakajima	A novel Multi-resolution anthropometrical algorithm for realistic simulation and manipulation of facial appearance	<i>Book Chapter</i> at Advances in Modeling, Rendering and Animation, John Vince and Rae A. Earnshaw Editors, Springer, England , pp. 315-331, 2002

Conferences Publications

No.	Authors	Title	Conference Name	Conference Place/Date
1	Hussein Karam	Robust Interactive Storytelling Framework for Automatic TV Content/Story Production	Proc. of the 7 th International Conf. on Entertainment Computing, ICEC'2008, LNCS 5309, pp. 134-148, Springer	Pittsburgh, PA, USA, September 2008, Carnegie Mellon University
2	Hussein Karam	A Novel Interactive Computer-Based Game Framework: From Design to Implementation	IEEE International Conference Visualization, pp. 123-128	London, July 9-11, 2008
3	Hussein Karam	An Intelligent Tutoring System for improving application accessibility of Disabled learners	5 th IEEE International Conference on Computer Graphics, Imaging and Visualization, pp. 286-290	Penang, Malaysia, 25-28 August, 2008
4	Hussein Karam	A New Framework for Plot-based Interactive Storytelling Generation	5 th IEEE International Conference on Computer Graphics, Imaging and Visualization, pp. pp.317-322	Penang, Malaysia, 25-28 August, 2008
5	Hussein Karam	Towards Realistic Modeling and Re-rendering of Human Skin Aging Animation	IEEE International Conference on Shape Modeling and Applications, pp.102-110, 2002	Canada, 2002
6	M. El-Zahar, F. Ghaleb, Hussein Karam, and Y. Abd-Ellatif	A novel optimized subdivision algorithm for modeling and animation	International Conference on Modeling and Simulation pp. 436-441, 2004	USA, 2004
7	Hussein Karam and M. Nakajima	Towards Realistic Modeling and Rendering of 3D Escape-time deterministic fractal shapes, VSMM'2001, pp. 565-574	IEEE International Conference on Virtual Systems and Multimedia, 2001	USA, 2001
8	Hussein Karam, A. Hassanien and M. Nakajima	Feature-based Image Metamorphosis Optimization algorithm	IEEE International Conference on Virtual Systems and Multimedia, 2001	USA, 2001

Summary of the Research Work

The personal computer PC, Internet, and multimedia developments increase the importance of manipulating images by computers and transmitting them through networks. My research work focuses mainly on image including image processing, graphics, computer image animation, and image modeling and analysis. One of the most elusive goals in computer image animation is the realistic animation of the human face. Human face modeling and animation are very complex tasks because of the physical structure of the face and the dynamics involving its psychological and behavioral aspects. My research work and contribution are given in terms of the following categories of applications.

1. Facial image metamorphosis animation:

Image metamorphosis is a technique for creating a smooth transition between two given images. It plays an important role in a wide range of applications including remote sensing, medical imaging, and machine vision as well as in computer graphics. The problem in image metamorphosis is how to generate an in-between image from two given images and establish the correspondence between the features of them. I addressed such a challenge by proposing an optimization facial image metamorphosis algorithm for generating smooth in-between images. The proposed algorithm generates a smooth warp that reflects feature point correspondences and has a contribution in different applied areas like the interpolation of intermediate planar slices in medical data sets.

2. Facial caricaturing animation:

The art of facial caricaturing is one of the most challenging tasks in computer graphics and other applied areas requiring modeling and rendering not only of face geometry but also of distinctive facial features. For this application, I propose a new algorithm for implementing the theory of facial caricaturing as an automatic computer generator based on face anthropometrical theory.

3. Human skin aging animation:

Reproducing visual aging effects by computer is a difficult and time-consuming task because of the individual shape of the face and the subtle and spatially varying reflectance properties of skin. For this application, a novel facial animation algorithm has been proposed with three techniques based on researches specialized on the human texture perception, bi-directional reflectance distribution function BRDF and the multi-resolution analysis of wavelets.

The proposed algorithm has a contribution in different applied areas like multimedia titles, virtual reality VR systems, interactive games and criminal objects such as finding murders after number of years.

4. Subdivision surfaces for Modeling and Animation

Subdivision surfaces are rapidly gaining popularity in computer graphics, modeling, simulation, movie character creation and human character animation. The problem with the subdivision algorithms is that after few subdivision steps, a number of generated meshes will

become huge and the number of faces grows exponentially, consequently difficult to manipulate. Due to memory and time restrictions, the number of subdivision steps that can be performed is relatively small. I addressed such problems by proposing new algorithms as a key solution for such a challenge. The objective of the proposed technique is to reduce the huge number of the generated meshes and to manage the exponential growth of the number of new polygons created during the subdivision process.

5. Fractal Geometry, Graphics Design, Arts and Photo-Realistic Rendering

Within the last ten years fractal geometry and its concepts have become central tools in most of natural sciences and engineering such as medical imaging, biology, geology, physiology, earth science, etc. Some mathematicians and computer scientists have used fractal geometry to generate study and analyze complex 2D images, while 3D extensions are still aspiring goals and challenging tasks. An extension algorithm for visualizing 3D fractal patterns is proposed. The proposed algorithm makes rendering 3D fractal patterns reliable for interactive machines and has potential to be practically useful tool for graphics applications.

6. Multimedia and Broadcasting Applications

With rapid progress in communications technology led by the Internet and in the field of broadcasting centered on digital media broadcasting, users can now enjoy a variety of contents and media such as:

- Web pages, E-mail, Mobile phone, Networked games,
- Video conferencing which is done between two especially set-up rooms. In each room, one or more cameras are used, and the images are displayed on one or more monitors,
- Interactive TV and video to the home which allow viewers to select, interact with and control video play on a TV set in real time,
- Distance learning in which education takes place through a combination of stored multimedia presentations and participation of the students in which not all of them are in the same place during a class,
- Movies on demand in which a viewer can select from a large library of videos and then play, stop, or reposition the tape or change the speed,
- Media enrichment which indicates the technology for converting various media contents such as text, voice, dynamic images, etc. to another media like Web pages to TV program, TV program to comics, and from chat data to other,
- Virtual Reality which provides very realistic effect through sight and sound, which allowing the user to interact with the virtual world,
- Digital interactive storytelling,

My research is focuses on studying and analyzing the principle theory underlying such different media topics and performs them practically. Therefore, we have to consider the following factors:

- Make user more effective in their information or communication task.
- Reducing learning time.
- Speeding performance.
- Facilitating retention.
- Increasing subjective satisfaction.

7. Digital Interactive Storytelling Systems