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Institute of Information Technology (IIT)
Jahangirnagar University, Savar Dhaka-1342.

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Current Status: Assistant Professor,
27th October, 2014- Institute of Information Technology (IIT)
till to date Jahangirnagar University
 Savar, Dhaka-1342.

Development and **Development of Mobile Museum Guide Robots (October 2010 – September**
Research Experience: **2013)**

Museum guide robots are one of the important application areas considered in research in human robot interaction. We began by observing and videotaping scenes of actual museum galleries where human guides explained exhibits to multiple visitors. Based on these analyses of the video, we developed a mobile robot system able to create and control spatial formation while guiding multiple visitors inside the gallery from one exhibit to another. The robot has the capability to create the spatial formation at the beginning of explanation after arriving near to any exhibit. Guide robot also has the capability identify interested bystanders and invite them into ongoing explanation session. Museum guide robot should observe visitors to find those who may want to be guided and initiate conversation with them. We developed a model that describes the constraints and expected behaviors in the phase of initiating conversation. This research contributes to the design of a mobile museum guide robotic system that is capable to create and control spatial formation with the visitors in different situations.

Functional and Metabolic Imaging Research Center (FMIC) (March 2007- Dec, 2008)

In this project my responsibility was to analysis the micro-CT images especially medical images. I have worked on removing ring artifacts from flat-panel detector based micro-CT images. I have also worked on correction of distortion from image intensifier based micro-CT images. A commercially available flat-panel detector (C7943CP-02, Hamamatsu, Japan) has been used as a 2D digital x-ray imager in the micro-CT system.

Developing the micro computed tomography (micro-CT) (March 2008-Dec 2008)

Based on a flat panel x-ray detector and a micro-focus x-ray source, we are developing a micro-CT which has spatial resolution of 10 mm. The micro-CT has the fan-beam and cone-beam geometry, and 3D images are reconstructed with the Feldkamp algorithm running on a multi-PC based distributed data processing system. In this project I have worked on fan-beam image reconstruction.

Bio Micro-CT research project (March 2008 – Dec 2008)

Micro-CT (computed tomography) has the spatial resolution of several microns. With micro-CT, we are able to take in vivo images of a small animal with the spatial resolution down to several microns. The micro-CT is essential in bio-imaging studies since we can observe the physiological changes inside the small animal in a non-invasive way. In this project my job was to develop a program for calculating the trabecular bone parameters like bone thickness, bone connectivity density, bone volume ration, trabecular number, trabecular separation.

Professional Experience

October 27, 2014 - till to date

Assistant Professor

Institute of Information Technology (IIT)
Jahangirnagar University
Savar, Dhaka-1342.

April 25, 2013- October 26, 2014

Associate Professor

Department of Computer Science & Engineering
Mawlana Bhashani Science and Technology
University, Santosh, Tangail-1902.

August 24, 2006- April 24, 2013

Assistant Professor

Department of Computer Science & Engineering
Mawlana Bhashani Science and Technology
University, Santosh, Tangail-1902.

August 24, 2003- August 23, 2006

Lecturer

Department of Computer Science & Engineering
Mawlana Bhashani Science and Technology
University, Santosh, Tangail-1902.

September 02, 2002- August 23, 2003

Lecturer

Department of Computer Science
Daffodil Institute of IT,
64/3, Lake Circus, Kalabagan, Dhaka-1205.

Education:

October, 2010 – September, 2013

PhD, Majoring in Science and Engineering, Saitama
University, Japan.

March, 2007- February, 2009	Master of Engineering in Biomedical Engineering, Kyung Hee University, Republic of Korea with CGPA 3.91 (93.30%) out of maximum 4.3.
July, 1996- June, 2002	Bachelor of Science (Engineering) in Computer Science and Engineering, Shahjalal University of Science and Technology, Sylhet, Bangladesh with CGPA 3.44 (68.8%) out of maximum 4.00.
August, 1993- August, 1995	Higher Secondary Certificate Examination (HSC), Sylhet Cadet College, Sylhet, Bangladesh with 1 st division (78.9%).
January, 1988- May, 1993	Secondary School Certificate examination (SSC), Sylhet Cadet College, Sylhet, Bangladesh with 1 st division (88.4%).

Major Courses studied in Science and Engineering (PhD):

Advanced Lectures on Applied Mathematics, Intelligent Robotics, Advanced Lecture on Computer Vision.

Major Courses studied in Biomedical Engineering (M.Sc):

Machine Learning, Magnetic Resonance Imaging (MRI), Advanced Digital Signal Processing, Medical Image Processing, Medical Radiation Engineering, Machine vision, Hybrid Intelligence System, Biomedical Signal Processing, and Information Retrieval Theory.

PhD Thesis

"Mobile Museum Guide Robots Able to Create Spatial Formations with Multiple Visitors"

Department of Information and Computer Sciences, Majoring in Science and Engineering, Saitama University, Japan.

M.Sc. (Engg.) Thesis

"Analysis of Trabecular Bone Images Taken with a FPD Based Micro-CT ", Department of Biomedical Engineering, Kyung Hee University, Republic of Korea.

B.Sc. (Engg.) Thesis

"Developing an Online Examination System", Department of Computer Science and Engineering, Shahjalal University of Science and Technology, Sylhet, Bangladesh.

List of Publications:

Journals:

1. Mohammad Badrul Alam Miah, **Mohammad Abu Yousuf**, Md. Sohag Mia, Md. Parag Miya, "Handwritten Courtesy Amount and Signature Recognition on Bank Cheque using Neural Network", *International Journal of Computer Applications*, Vol. 118(5):21-26, May, 2015.
2. Md. Zia Uddin, **Mohammad Abu Yousuf**, "A New Method for Human Posture Recognition Using Principal Component Analysis and Artificial Neural Network" *Journal of Scientific Research*, (Accepted and will be published in the Vol. 7(3), 2015).

3. **Mohammad Abu Yousuf**, Yoshinori Kobayashi, Yoshinori Kuno, Keiichi Yamazaki, and Akiko Yamazaki, "A Mobile Guide Robot Capable of Establishing Appropriate Spatial Formations", *IEEJ Transactions on Electronics, Information and Systems*, Vol. 133, No. 1, pp. 28-39, January 2013.
4. **Mohammad Abu Yousuf**, Yoshinori Kobayashi, Yoshinori Kuno, Akiko Yamazaki, and Keiichi Yamazaki, "Development of a Mobile Museum Guide Robot That Can Configure Spatial Formation with Visitors", Vol. 7389, pp. 423-432, *Lecture Notes in Computer Science (LNCS)*, Springer, Heidelberg, 2012.
5. Mohammad N. Nobi, Faruk Chowdhury, Faysal Mahmood, and **Mohammad A. Yousuf**, "A New Medical Image Segmentation Technique Based on Variational Level Set Method," *International Journal of Computer and Electrical Engineering* vol. 3, no. 5, pp. 690-694, 2011.
6. **M. A. Yousuf** and M. R. H. Rakib, "An Effective Image Contrast Enhancement Method Using Global Histogram Equalization", *Journal of Scientific Research*, Vol. 3(1), pp: 43-50, 2011.
7. M. N. Nobi and **M. A. Yousuf**, "A New Method to Remove Noise in Magnetic Resonance and Ultrasound Images, *Journal of Scientific Research*, Vol. 3(1), pp: 81-89, 2011.
8. **Mohammad Abu Yousuf** and Koushik Kanti Mandal, "An Efficient Ring Artifact Correction Method for a Flat-panel Detector based Micro-CT images", *Journal of Science and Technology, Hajee Mohammad Danesh Science & Technology University, Dinajpur, Bangladesh*, Vol. 8, pp: 103-109, 2010.
9. **Mohammad Abu Yousuf** and Koushik Kanti Mandal," Development of an Image Reconstruction Algorithm for Micro-CT Images using Fan-Beam Filtered Back-projection Method", *Journal of Engineering Science, Khulna University of Engineering and Technology, Khulna, Bangladesh*, Vol. 1, pp: 85-93, 2010.
10. **Mohammad Abu Yousuf** and Muhammad Asaduzzaman, "An Efficient Ring Artifact Reduction Method Based on Projection Data for Micro-CT Images", *Journal of Scientific Research*, Vol. 2(1), pp: 37-45, 2010.
11. **Mohammad Abu Yousuf** and S. M. Saif Shams, "Bangla Braille System: An Affordable System for the Sightless Population", *Asian Journal of Information Technology*, Vol. 6 (6), pp: 696-699, 2007.
12. **Mohammad Abu Yousuf**, Md. Monzurul Ahsan and Md. Abu Sina, "A Comprehensive Study on Data Networking Using Fiber Optical Backbone", *Asian Journal of Information Technology*, Vol. 5 (8), pp: 848-853, 2006.
13. **Mohammad Abu Yousuf**, Nurunnahar Begum, Badrunnessa Sultana and Nurul Amin "Concept of Mobility Based Video-Telephony in Mobile Ad Hoc Network (Manet)" *Asian Journal of Information Technology*, Vol. 5 (8), pp: 829-833, 2006.
14. Md. Mosaddik Hasan, Md. Sazzad Hossain, Shib Nath Datta and **Mohammad Abu Yousuf**, "Binary Insertion Sort: A Modified Way of Sorting", *Asian Journal of Information Technology*, Vol. 5 (7): 678-680, 2006.
15. **Mohammad Abu Yousuf**, Mustafa Hasan, S. M. Saif Shams, "A New Encryption Method for Short Message Service (SMS)", *Asian Journal of Information Technology*, Vol. 5 (1), pp: 65-68, 2006.

Conferences:

1. Mohammad Badrul Alam Miah and **Mohammad Abu Yousuf**, "Detection of Lung Cancer from CT Image Using Image Processing and Neural Network", 2nd International Conference on Electrical Engineering and Information & Communication Technology (iCEEiCT 2015), pp. 101, Jahangirnagar University, 2015.
2. Sazzad Hossain and **Mohammad Abu Yousuf**, "A Facial Emotion Detection System using Fast Artificial Neural Network", (Accepted for the Proceedings of 7th International Conference on Intelligent Human-Machine Systems and Cybernetics (IHMSC, 2015), August 26-27, 2015, Hangzhou, China).
3. Ferdous Hossain, Mithun Kumar Pk and **Mohammad Abu Yousuf**, "Dynamic Thresholding Based Adaptive Canny Edge Detection", (Accepted for the Proceedings of 7th International Conference on Intelligent Human-Machine Systems and Cybernetics (IHMSC, 2015), August 26-27, 2015, Hangzhou, China).
4. **Mohammad Abu Yousuf**, Yoshinori Kobayashi, Yoshinori Kuno, Akiko Yamazaki, and Keiichi Yamazaki, "How to Move Towards Visitors: A Model for Museum Guide Robots to Initiate Conversation", 22nd IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN2013), pp. 587-592, Gyeongju, Korea, 2013.
5. **Mohammad Abu Yousuf**, Yoshinori Kobayashi, Yoshinori Kuno, Keiichi Yamazaki, and Akiko Yamazaki, "Model of Guide Robot Behavior to Explain Multiple Exhibits to Multiple Visitors", *Proc. of International Session of 30th Annual Conference of the Robotics Society of Japan (RSJ 2012)*, pp. 83-86, Sapporo, Japan, September 2012.
6. **Mohammad A. Yousuf**, Yoshinori Kobayashi, Yoshinori Kuno, Keiichi Yamazaki, Akiko Yamazaki, "Establishment of Spatial Formation by a Mobile Guide Robot", *Proc. of 7th ACM/IEEE International Conference on Human-Robot Interaction (HRI), USA*, pp.281-282, March, 2012.
7. **Mohammad Abu Yousuf**, Yoshinori Kobayashi, Akiko Yamazaki, Keiichi Yamazaki, Yoshinori Kuno, "Mobile Guide Robot Capable to Formulate Spatial Formation", *Proc. of 18th Korean-Japan Joint Workshop on Frontiers of Computer Vision (FCV)*, pp. 274-280, 2012.
8. **Mohammad Abu Yousuf**, Yoshinori Kobayashi, Akiko Yamazaki, Yoshinori Kuno, "Implementation of F-Formation and "Pause and Restart" for a Mobile Museum Guide Robot", *Proc. Of International Workshop on Multimodality in Multispace Interaction (MiMI)*, pp. 81-92, December, 2011.
9. **Mohammad Abu Yousuf**, Jung M. Choi, Min H. Cho, and Soo Y. Lee, "Measurement of Bone Parameters from Micro-CT Images using Fuzzy Algorithms ", *Proc. 2008 Korean Society of Medical & Biological Engineering(KOSOMBE) Conference*, pp.505-508, November, 2008 .
10. **Mohammad Abu Yousuf**, Jung M. Choi, Min H. Cho, and Soo Y. Lee, "A Novel Method for Correction of Digital Image Distortion", *Proc. 2008 Korean Society of Medical & Biological Engineering (KOSOMBE) Conference*, pp.67 , May, 2008 .
11. D. H. Lee, J. M. Choi, **Mohammad Abu Yousuf**, M. H. Cho, and S. Y. Lee, "Fan-beam image reconstruction algorithm using half-size detector", *Proc. 2007 Korean Society of Medical & Biological Engineering (KOSOMBE) Conference, (CD-ROM)*, May, 2007.

Research Interest:

- Human - Robot Interaction
- Digital Image Processing.
- Computer Vision.
- Object Recognition.

Academic Achievements

Stood 8th in order of merit in Secondary School Certificate (SSC) Examination in Comilla Board, Bangladesh in 1993 and awarded by the Prime Minister.

Honors and awards

- Japanese Government (Monbukagakusho) Scholarship for PhD program, Saitama University, Japan.
- President scholarship for Masters Degree in Biomedical Engineering by Kyung Hee University, Republic of Korea.
- University Scholarship, for Bachelor of Science (Engineering) degree in Computer Science and Engineering by Shahjalal University of Science and Technology, Sylhet, Bangladesh.
- Higher Secondary Board Scholarship in High School level.

Professional Membership:

Member, IEEE

Member, Bangladesh Association of Saitama University, Japan.

Biography:

Father's Name: Mohammad Abul Hashem
Mother's Name: Mrs. Fatema Khatun
Date-of-Birth: January 1, 1978.
Marital Status: Married
Place of Birth: Dhaka, Bangladesh
Nationality: Bangladeshi
Address: Flat: E4, House, 40, Road: 13, Sector: 13, Uttara, Dhaka.
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References:

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Professor Dr. Md. Alauddin

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I do hereby declare that the above-mentioned statement is supplied by me is true.



(Dr. Mohammad Abu Yousuf)