

M. Emre Celebi

Assistant Professor

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Education

- 2003–2006 **Ph.D. in Computer Science and Engineering**, University of Texas, Arlington, TX.
Dissertation Title: *Development of Algorithms for Dermoscopy Image Analysis*
- 2002–2003 **MSc. in Computer Science and Engineering**, University of Texas, Arlington, TX.
Thesis Title: *Content Based Image Retrieval Incorporating Models of Human Perception*.
- 1998–2002 **BSc. in Computer Engineering**, Middle East Technical University, Ankara, Turkey.

Appointments

- Jun 07–Present **Assistant Prof.**, Dept. of Comp. Sci., Louisiana State Univ., Shreveport, LA.
- Jan 07–May 07 **Visiting Assistant Prof.**, Dept. Comp. Sci. and Eng., Univ. of Bridgeport, Bridgeport, CT.
- Aug 06–Jan 07 **Post-Doctoral Fellow**, Dept. of Elec. and Comp. Eng., Univ. of Missouri, Rolla, MO.
- Jun 05–Present **Scientific Consultant**, Stoecker and Associates, Rolla, MO.
- Aug 02–Aug 06 **Research Associate**, Dept. of Comp. Sci. and Eng., Univ. of Texas, Arlington, TX.

Research Interests

Medical Image Analysis, Color Image Processing, Content-Based Image Retrieval, Open-Source Software Development

Grants

- Title: Enhancing Computer Science Education Using CGI Technology
Sponsor: Louisiana Board of Regents
Role: Principal Investigator
Amount: \$90,300 (06/09 – 06/10)
Status: Awarded
- Title: Advanced 3D Computer-Based Modeling and Prototyping Enhancement
Sponsor: Louisiana Board of Regents
Role: Co-Principal Investigator
Amount: \$45,795
Status: Awarded (06/09 – 06/10)
- Title: Investigation of Color Information for Dermoscopy Image Analysis
Sponsor: Aston University
Role: Principal Investigator
Amount: £2,050
Status: Awarded (03/2009 – 04/2009)
- Title: Development of Image Analysis Techniques for the Early Diagnosis of Melanoma
Sponsor: Louisiana Board of Regents
Role: Principal Investigator
Amount: \$110,619
Status: Awarded (06/08 – 06/11)

- Title: Automatic Detection of Critical Dermoscopy Features for Melanoma Diagnosis
Sponsor: National Institutes of Health (NIH)
Role: Post-Doctoral Fellow
Amount: \$794,760
Status: Awarded (09/06 – 09/09)

Publications

Books

- [B1]G. Schaefer, M. E. Celebi, and J. Tepper, eds., *Soft Computing in Medical Image Analysis - Part 2: Neural Networks*. Studies in Computational Intelligence, Springer, 2010.
-

Journal Articles

- [J1]M. E. Celebi, "Real-Time Implementation of Order-Statistics Based Directional Filters," *IET Image Processing*, vol. 3, no. 1, pp. 1–9, 2009.
- [J2]M. E. Celebi, "Distance Measures for Reduced Ordering Based Vector Filters," *IET Image Processing*, 2009. to appear.
- [J3]M. E. Celebi, H. Iyatomi, G. Schaefer, and W. V. Stoecker, "Lesion Border Detection in Dermoscopy Images," *Computerized Medical Imaging and Graphics*, vol. 33, no. 2, pp. 148–153, 2009. [[#5 in the Top 25 Hottest Articles published in CMIG Jan–Mar 2009](#)].
- [J4]M. E. Celebi, H. Iyatomi, G. Schaefer, and W. V. Stoecker, "Approximate Lesion Localization in Dermoscopy Images," *Skin Research and Technology*, vol. 15, no. 3, pp. 314–322, 2009.
- [J5]M. E. Celebi, H. Kingravi, and F. Celiker, "Fast Color Space Transformations Using Minimax Approximations," *IET Image Processing*, 2009. to appear.
- [J6]M. E. Celebi, H. Kingravi, R. Lukac, and F. Celiker, "Cost-Effective Implementation of Order-Statistics Based Vector Filters Using Minimax Approximations," *Journal of the Optical Society of America A*, vol. 26, no. 6, pp. 1518–1524, 2009.
- [J7]M. E. Celebi, G. Schaefer, H. Iyatomi, W. V. Stoecker, J. M. Malters, and J. M. Grichnik, "An Improved Objective Evaluation Measure for Border Detection in Dermoscopy Images," *Skin Research and Technology*, 2009. to appear.
- [J8]B. Shrestha, J. Bishop, K. Kam, X. Chen, R. H. Moss, W. V. Stoecker, S. Umbaugh, R. J. Stanley, M. E. Celebi, A. A. Marghoob, G. Argenziano, and H. P. Soyer, "Detection of Atypical Texture Features in Early Malignant Melanoma," *Skin Research and Technology*, 2009. to appear.
- [J9]W. V. Stoecker, K. Gupta, B. Shrestha, M. Wronkiewicz, R. Chowdhury, R. J. Stanley, J. Xu, R. H. Moss, M. E. Celebi, H. S. Rabinovitz, M. Oliviero, J. M. Malters, and I. Kolm, "Detection of Basal Cell Carcinoma Using Color and Histogram Measures of Semitranslucent Areas," *Skin Research and Technology*, vol. 15, no. 3, pp. 283–287, 2009.
- [J10]J. Xu, K. Gupta, W. V. Stoecker, Y. Krishnamurthy, H. S. Rabinovitz, A. Bangert, D. Calcara, M. Oliviero, J. M. Malters, R. Drugge, R. J. Stanley, R. H. Moss, and M. E. Celebi, "Analysis of Globule Types in Malignant Melanoma," *Archives of Dermatology*, 2009. to appear.
- [J11]H. Zhou, G. Schaefer, A. Sadka, and M. E. Celebi, "Anisotropic Mean Shift Based Fuzzy C-Means Segmentation of Dermoscopy Images," *IEEE Journal of Selected Topics in Signal Processing*, vol. 3, no. 1, pp. 26–34, 2009.
- [J12]K. K. Agarwal, A. Agarwal, and M. E. Celebi, "Python Puts a Squeeze on Java for CS0 and Beyond," *The Journal of Computing Sciences in Colleges*, vol. 23, no. 6, pp. 49–57, 2008.

- [J13]M. E. Celebi and A. Aslandogan, "Robust Switching Vector Median Filter for Impulsive Noise Removal," *Journal of Electronic Imaging*, vol. 17, no. 4, p. 043006, 2008.
- [J14]M. E. Celebi, H. Iyatomi, W. V. Stoecker, R. H. Moss, H. S. Rabinovitz, G. Argenziano, and H. P. Soyer, "Automatic Detection of Blue-White Veil and Related Structures in Dermoscopy Images," *Computerized Medical Imaging and Graphics*, vol. 32, no. 8, pp. 670–677, 2008.
- [J15]M. E. Celebi, H. Kingravi, H. Iyatomi, A. Aslandogan, W. V. Stoecker, and R. H. Moss, "Border Detection in Dermoscopy Images Using Statistical Region Merging," *Skin Research and Technology*, vol. 14, no. 3, pp. 347–353, 2008.
- [J16]H. Iyatomi, H. Oka, M. E. Celebi, M. Hashimoto, M. Hagiwara, M. Tanaka, and K. Ogawa, "An Improved Internet-Based Melanoma Screening System with Dermatologist-like Tumor Area Extraction Algorithm," *Computerized Medical Imaging and Graphics*, vol. 32, no. 7, pp. 566–579, 2008.
- [J17]H. Iyatomi, H. Oka, M. E. Celebi, K. Ogawa, G. Argenziano, H. Soyer, H. Koga, T. Saida, K. Ohara, and M. Tanaka, "Computer-based Classification of Dermoscopy Images of Melanocytic Lesions on Acral Volar Skin," *Journal of Investigative Dermatology*, vol. 128, pp. 2049–2054, Aug 2008.
- [J18]M. E. Celebi, A. Aslandogan, and W. V. Stoecker, "Unsupervised Border Detection in Dermoscopy Images," *Skin Research and Technology*, vol. 13, no. 4, pp. 454–462, 2007.
- [J19]M. E. Celebi, H. Kingravi, and A. Aslandogan, "Nonlinear Vector Filtering for Impulsive Noise Removal from Color Images," *Journal of Electronic Imaging*, vol. 16, no. 3, p. 033008, 2007.
- [J20]M. E. Celebi, H. Kingravi, and B. Uddin, "Fast Switching Filter for Impulsive Noise Removal from Color Images," *Journal of Imaging Science and Technology*, vol. 51, no. 2, pp. 155–165, 2007.
- [J21]M. E. Celebi, H. Kingravi, B. Uddin, H. Iyatomi, A. Aslandogan, W. V. Stoecker, and R. H. Moss, "A Methodological Approach to the Classification of Dermoscopy Images," *Computerized Medical Imaging and Graphics*, vol. 31, no. 6, pp. 362–373, 2007. [[#5 in the Top 25 Hottest Articles published in CMIG Jul–Sep 2007](#)].

Conference Proceedings

- [C1]M. E. Celebi, "Fast Implementation of Vector Directional Filters," in *Proc. IEEE Int. Conf. on Image Processing (ICIP 2009)*, 2009. to appear.
- [C2]M. E. Celebi, H. Iyatomi, and G. Schaefer, "Contrast Enhancement in Dermoscopy Images by Maximizing a Histogram Bimodality Measure," in *Proc. IEEE Int. Conf. on Image Processing (ICIP 2009)*, 2009. to appear.
- [C3]M. E. Celebi, H. Iyatomi, G. Schaefer, and W. V. Stoecker, "Localization of Lesions in Dermoscopy Images Using Ensembles of Thresholding Methods," in *Proc. 3rd Pacific-Rim Symposium on Image and Video Technology (PSIVT 2009)*, vol. 5414 of *Lecture Notes on Computer Science*, pp. 1094–1103, 2009.
- [C4]G. Schaefer, M. Rajab, M. E. Celebi, and H. Iyatomi, "Skin Lesion Extraction in Dermoscopic Images Based on Colour Enhancement and Iterative Segmentation," in *Proc. IEEE Int. Conf. on Image Processing (ICIP 2009)*, 2009. to appear.
- [C5]H. Zhou, G. Schaefer, M. E. Celebi, and M. Fei, "Bayesian Image Segmentation with Mean Shift," in *Proc. IEEE Int. Conf. on Image Processing (ICIP 2009)*, 2009. to appear.
- [C6]M. E. Celebi, G. Schaefer, and H. Iyatomi, "Objective Evaluation of Methods for Border Detection in Dermoscopy Images," in *Proc. 30th Ann. Int. Conf. of the IEEE Engineering in Medicine and Biology Society (EMBS 2008)*, pp. 3056–3059, 20–25 Aug 2008.
- [C7]H. Iyatomi, M. E. Celebi, H. Oka, and M. Tanaka, "An Internet-Based Melanoma Screening System with Acral Volar Lesion Support," in *Proc. 30th Ann. Int. Conf. of the IEEE Engineering in Medicine and Biology Society (EMBS 2008)*, pp. 5156–5159, 20–25 Aug 2008.

- [C8]J. Lee and M. E. Celebi, "STRG-QL: Spatio-Temporal Region Graph Query Language for Video Databases," in *Proc. SPIE Electronic Imaging Conf.*, vol. 6820, 18–22 Jan 2008.
- [C9]H. Zhou, G. Schaefer, A. Sadka, and M. E. Celebi, "Anisotropic Mean Shift Based Fuzzy C-Means Segmentation of Skin Lesions," in *Proc. 5th Int. Conf. on Soft Computing as Transdisciplinary Science and Technology (CSTST 2008)*, 27–31 Oct 2008.
- [C10]M. E. Celebi, H. Kingravi, J. Lee, A. Aslandogan, W. V. Stoecker, and R. H. Moss, "Fast and Accurate Border Detection in Dermoscopy Images Using Statistical Region Merging," in *Proc. SPIE Medical Imaging Conf.*, vol. 6512 of *SPIE*, 17–22 Feb 2007.
- [C11]H. Iyatomi, H. Oka, M. E. Celebi, M. Tanaka, and K. Ogawa, "Parameterization of Dermoscopic Findings for the Internet-based Melanoma Screening System," in *Proc. IEEE Symposium on Computational Intelligence in Image and Signal Processing (CIISP 2007)*, pp. 189–193, 1–5 Apr 2007.
- [C12]H. Kingravi, M. E. Celebi, and P. Rajauria, "Unsupervised Learning of Manifolds via Linear Approximations," in *Proc. 18th Int. Conf. on Database and Expert Systems Applications (DEXA 2007)*, pp. 54–58, 3–7 Sep 2007. [invited paper].
- [C13]S. Shah, P. Rajauria, J. Lee, and M. E. Celebi, "Classification of Bleeding Images in Wireless Capsule Endoscopy Using HSI Color Space and Region Segmentation," in *Proc. New England American Society for Engineering Education Conf.*, 20–21 Apr 2007.
- [C14]M. E. Celebi, H. Kingravi, and A. Aslandogan, "Detection of Blue-White Veil Areas in Dermoscopy Images Using Machine Learning Techniques," in *Proc. SPIE Medical Imaging Conf.*, vol. 6144 of *SPIE*, pp. 1861–1868, 11–16 Feb 2006.
- [C15]M. E. Celebi and A. Aslandogan, "Human Perception-Driven, Similarity-Based Access to Image Databases," in *Proc. 18th Int. Florida Artificial Intelligence Research Society Conf.*, pp. 245–250, 15–17 May 2005.
- [C16]M. E. Celebi and A. Aslandogan, "A Comparative Study of Three Moment-Based Shape Descriptors," in *Proc. Int. Conf. on Information Technology: Coding and Computing (ITCC 2005)*, vol. 1, pp. 788–793, 4–6 Apr 2005.
- [C17]M. E. Celebi, A. Aslandogan, and P. Bergstresser, "Unsupervised Border Detection of Skin Lesion Images," in *Proc. Int. Conf. on Information Technology: Coding and Computing (ITCC 2005)*, vol. 2, pp. 123–128, 4–6 Apr 2005.
- [C18]M. E. Celebi, A. Aslandogan, and P. Bergstresser, "Mining Biomedical Images with Density-Based Clustering," in *Proc. Int. Conf. on Information Technology: Coding and Computing (ITCC 2005)*, vol. 1, pp. 163–168, 4–6 Apr 2005.
- [C19]M. E. Celebi, W. Guo, and A. Aslandogan, "Skin Lesion Segmentation Using Clustering Techniques," in *Proc. 18th Int. Florida Artificial Intelligence Research Society Conf.*, pp. 364–369, 15–17 May 2005.
- [C20]N. Wei, M. E. Celebi, and G. Geng, "Content Based Retrieval and Classification of Cultural Relic Images," in *Proc. Second Int. Symposium on Neural Networks (ISNN 2005)*, vol. 3497 of *Lecture Notes in Computer Science*, pp. 292–297, 30 May–1 Jun 2005.
- [C21]M. E. Celebi and A. Aslandogan, "Content-Based Image Retrieval Incorporating Models of Human Perception," in *Proc. Int. Conf. on Information Technology: Coding and Computing (ITCC 2004)*, vol. 2, pp. 241–245, 5–7 Apr 2004.
- [C22]I. Noorzaie, A. Aslandogan, and M. E. Celebi, "A System for Distributed Image Acquisition, Content-Analysis and Similarity Retrieval," in *Proc. IEEE Int. Conf. on Information Reuse and Integration (IRI 2004)*, pp. 168–173, 8–10 Nov 2004.

Teaching Experience

Louisiana State University - Shreveport

- F08 **CSC 111 (Introduction to Computing)**, *Undergraduate*.
- S08-09 **CSC 115 (Computer Literacy)**, *Undergraduate*.
- F07-08-09, S09 **CSC 135 (Object-Oriented Programming I)**, *Undergraduate*.
- S08 **CSC 145 (Object-Oriented Programming II)**, *Undergraduate*.
- F09 **CSC 242 (Computer Architecture and Organization)**, *Undergraduate*.
- F07-08-09 **CSC 315 (Introduction to Database Systems)**, *Undergraduate*.
- S08 **CST 790 (Digital Multimedia)**, *Graduate*.
- F07, S09 **CST 790 (Digital Image Processing and Analysis)**, *Graduate*.

University of Bridgeport

- S07 **CPSC 502 (Analysis of Algorithms)**, *Graduate*.
- S07 **CPSC 503 (Operating Systems)**, *Graduate*.

Professional Activities

Journal Editorial Board Member

- Int. Journal of Computing and Information Technology (IJCIT)

Journal Guest Editor

- Computerized Medical Imaging and Graphics Special Issue on Skin Cancer Image Analysis (2010)

Workshop Organizer

- Low-Level Color Image Processing, APSIPA Ann. Summit and Conf. (APSIPA ASC 2009)
- Digital Imaging in Cultural Heritage, IEEE Int. Conf. on Image Processing (ICIP 2009)
- Soft Computing in Image Processing and Computer Vision, Int. Symposium on Visual Computing (ISVC 2009)
- 2nd Int. Workshop on Computational Intelligence in Medical Imaging, 9th Int. Conf. on Information Technology and Applications in Biomedicine (ITAB 2009)
- 1st Int. Workshop on Computational Intelligence in Medical Imaging, Int. Conf. on Soft Computing as Transdisciplinary Science and Technology (CSTST 2008)

Program Committee Member

- 11th IASTED Int. Conf. on Computer Graphics and Imaging (CGIM 2010)
- 5th Int. Conf. on Signal-Image Technology and InternetBased Systems (SITIS 2009)
- Int. Workshop on Nature Inspired Biometrics (WNIB 2009)
- Int. Symposium on Computational Modeling of Objects Represented in Images (ComplIMAGE 2010)
- Int. Workshop on Soft Computing in Image Processing and Computer Vision (SCIPCV 2009)
- 13th Int. Fuzzy Systems Association World Congress (IFSA 2009)
- 3rd Int. Workshop on Multimedia Data Mining and Management (MDMM 2009)
- 6th Int. Symposium on Neural Networks (ISNN 2009)
- 11th IASTED Int. Conf. on Signal and Image Processing (SIP 2009)
- IADIS Int. Conf. on Visual Communication (VC 2009)
- Int. Conf. on Computer Vision Theory and Applications (VISAPP 2009)
- Int. Symposium on Visual Computing (ISVC 2008)

- 2nd IEEE Int. Conf. on Semantic Computing (ICSC 2008)
- 2nd Int. Workshop on Multimedia Data Mining and Management (MDMM 2008)
- 1st Int. Workshop on Multimedia Data Mining and Management (MDMM 2007)

Reviewer

- IEEE Transactions on Image Processing
- IEEE Transactions on Signal Processing
- IEEE Transactions on Systems, Man, and Cybernetics Part B
- Journal of the Optical Society of America A
- Journal of Electronic Imaging
- Computer Vision and Image Understanding
- Image and Vision Computing
- Computerized Medical Imaging and Graphics
- Pattern Recognition Letters
- Soft Computing
- Journal of Real-Time Image Processing
- Signal Processing: Image Communication
- IET Image Processing
- Int. Journal of Intelligent Computing in Medical Sciences and Image Processing
- Melanoma Research
- Indian Journal of Dermatology, Venereology, and Leprology
- Int. Journal of Imaging Systems and Technology
- Int. Journal for Computational Vision and Biomechanics
- Int. Journal of Computers and Applications
- Int. Journal of Imaging
- Journal of Digital Information Management
- Iranian Journal of Electrical and Computer Engineering
- 9th Int. Conf. on Intelligence Systems Design and Applications (ISDA 2009)
- 19th Int. Conf. on Artificial Neural Networks (ICANN 2009)
- The 31st Ann. Int. IEEE EMBS Conf. (EMBC 2009)
- The 2009 Int. Conf. on Advances in Social Networks Analysis and Mining (ASONAM 2009)
- 13th Pacific-Asia Conf. on Knowledge Discovery and Data Mining (PAKDD 2009)
- Consortium for Computing Sciences in Colleges South Central Conf. (CCSC-SC 2009)
- 23rd Ann. ACM Symposium on Applied Computing (SAC 2008)
- Consortium for Computing Sciences in Colleges Mid-South Conf. (CCSC-MS 2008)
- 15th European Signal Processing Conf. (EUSIPCO 2007)

Member

- Institute of Electrical and Electronics Engineers (IEEE)
- International Society for Optical Engineering (SPIE)
- The Society for Imaging Science and Technology (IS&T)

Invited Speaker

- "Fast and Effective Color Reduction Using K-Means Clustering" College of Sciences Symposium Series, Louisiana State University, Shreveport, LA, Apr 2009
- "Computer-Aided Diagnosis of Melanoma" Dept. of Dermatology, Ege University, Izmir, Turkey, Mar 2009
- "Numerical Approximations in Color Image Processing" Dept. of Mathematics, Wayne State University, Detroit, MI, Nov 2008
- "Dermoscopy Image Analysis" Louisiana Board of Regents, Louisiana State University, Shreveport, LA, Mar 2008
- "Insight into Academic Job Search" The Institute of Academic Studies, Dallas, TX, Nov 2007
- "Development of Algorithms for Dermoscopy Image Analysis" Bioinformatics Affinity Group, Louisiana State University Health Sciences Center, Shreveport, LA, Oct 2007

- "Visual Computing 101" CSI-LSUS Program for High School Students, Louisiana State University, Shreveport, LA, Jul 2007
- "Automatic Border Detection in Dermoscopy Images" Dept. of Electrical and Computer Engineering, The University of Missouri, Rolla, MO, Jul 2005

Honors, Awards, Certificates

- Selected for inclusion in the 2010 Edition of Who's Who in America (Dec 2008)
- "Learn to Teach Online Program" Certificate (May 2007)
- Oracle Certified Associate Database Administrator (Feb 2004)
- Outstanding Research by a Masters Student award from Lockheed Martin Aeronautics (Feb 2004)
- Silver medal in National Mathematics Competition, Ankara, Turkey (Jan 1997)

Software Development

- Fourier: An open-source image processing and analysis library written in ANSI C. Available at <http://sourceforge.net/projects/fourier-ipal/>

External Collaborators

- Dr. William Stoecker (University of Missouri - Rolla, USA)
- Dr. Randy Moss (University of Missouri - Rolla, USA)
- Dr. Hitoshi Iyatomi (Hosei University, Japan)
- Dr. Gerald Schaefer (Aston University, UK)
- Dr. Rastislav Lukac (Epson Edge, Epson Canada Ltd., Canada)
- Dr. Fatih Celiker (Wayne State University, USA)
- Dr. Huiyu Zhou (Brunel University, UK)
- Dr. Bogdan Smolka (Silesian University of Technology, Poland)
- Dr. Konstantinos Plataniotis (University of Toronto, Canada)
- Dr. JeongKyu Lee (University of Bridgeport, USA)
- Dr. Na Wei (Chang'an University, China)