Sarah S. Aboutalib

Iowa City, IA 52246 (760) 917-3290

Email: sarah.aboutalib@gmail.com Website: http://www.sarahaboutalib.com

RESEARCH INTERESTS

I have experience and interest in Deep Learning, Data Science, Human-Computer Interaction, Artificial Intelligence and Cognitive Science. I am interested in the use of mining data using deep learning and machine learning techniques. I am most interested in the application of these methods in non-profit and community beneficial contexts such as healthcare and education. Most currently, my research looks into the application of computer vision and machine learning techniques to radiological data in breast cancer.

EDUCATION

Ph.D. in Computer Science

Carnegie Mellon University (May 2011)

B.S. in Cognitive Science (Specialization in Computation) w/ Honors Overall GPA: 3.7; Minor in Computer Science and Engineering University of California, San Diego (June 2005)

SKILLS

Languages: Python, Java, C/C++, Matlab, Visual Basic, LaTeX, HTML, PHP, XML, SQL, CSS, CSH, JavaScript and Bash Script, easily learns new languages. Content Management Systems: Drupal, Wordpress. Deep Learning Platforms: Caffe. Other languages and applications also: feel free to contact with additional questions. Some Arabic Comprehension.

EXPERIENCE

Postdoctoral Scholar, Univ of Pittsburgh, Biomedical Informatics

(October 2016 – September 2018)

Research in applying machine learning and computer vision techniques to radiological image data to improve breast cancer diagnosis, recall rates, and performance of radiologists.

User Experience Consulting

(May 2012 – December 2015) <u>User Design Projects</u> Create user-friendly modern designs that are intuitive to update and navigate, current projects include: Architectural Design Company – Orchard Lane Non-Profit Organization – Alfaoz Physical Therapy Office – Pure Medical Services <u>Pediatric Dentistry Group – University of Florida</u> (August 2013 – January 2014) University of Pittsburgh, Global Studies Department, CERIS

(May 2012 – April 2013) Manager: Elaine Linn Interview users and create a content management system using Drupal to improve experience of updating and interaction.

Database Consulting, Pure Medical Services

(May 2011 – June 2013) Manager: Armen Badalyan Design and implemented a Database system, including front and backend for a medical office.

Research Assistant, Carnegie Mellon University

(September 2005 – May 2011)

Advisor: Manuela Veloso

Investigating an approach to integrating multiple cues of diverse types (visual, activity, speech, etc.) for more robust object recognition using video data and probabilistic relational learning techniques.

Internship, Lockheed Martin

(June 2009 – August 2009), participating in discussions till present Manager: Mark Gersh Supervisor: Andy Zimdars, Dave Tyler Two projects: (1) Developed vision and assessed feasibility of visual navigation, feature recognition and obstacle avoidance with the robots' limited on-board processors for DARPA LANdroids project (2) Image registration and its Cramer-Rao lower bound for spectral images.

Honors Project & Independent Research, UC San Diego

(September 2004 – June 2005) Developed a computer model of the use of saccades in object recognition. Also, assisted in computer vision project using shared-features.

HONORS/AWARDS

RSNA Trainee Research Prize (November 2017) Women @ IT fellowship (September 2005 – June 2006) Cognitive Science Honors (June 2005) Gates Millennium Scholarship (June 2001-2005)

PUBLICATIONS

Sarah S. Aboutalib, Aly A. Mohamed, Shandong Wu, et al. **Deep Learning to Distinguish Recalled but Benign Mammography Images in Breast Cancer Screening.** Clinical Cancer Research, 2018.

Aboutalib, S., Mohamed, A., Wu, Shandong, et al. **Do pre-trained deep learning models improve computer-aided classification of digital mammograms?** *International Society of Optics and Photonics (SPIE): Medical Imaging,* 2018.

Aboutalib, S., Mohamed A., Zhang L., Wu S. **Deep Learning for Reducing Breast Cancer Recall Rate in Screening Mammogram.** NLM Training Conference, 2018 Aboutalib, S., Mohamed, A., Wu, Shandong, et al. **Automatic identification of nuanced imaging features in recalled but biopsy benign mammogram images.** *Radiology Society of North America (RSNA)*, 2017.

Aboutalib, S. and Veloso, M. **Multiple-Cue Object Recognition on Outside Datasets.** *IEEE/RSJ Intl Conference on Intelligent Robots and Systems (IROS)*, 2010.

Aboutalib, S. and Veloso, M. Cue-based equivalence classes and incremental discrimination for object recognition. *IROS*, 2009.

Aboutalib, S. and Veloso, M. Simulation and Weights of Multiple Cues for Robust Object Recognition. *IROS*, 2007.

Aboutalib, S. and Veloso, M. **Towards Using Multiple Cues for Robust Object Recognition.** In *Proceedings of AAMAS'07*, 2007.

Murphy-Chutorian, E., Aboutalib, S., Triesch, J. **Analysis of a Biologically-Inspired System for Real-time Object Recognition** *Cognitive Science Online, 3.2*:1-14, 2005. ** Thesis document also available, upon request.*

PRESENTATIONS

Aboutalib S, Mohamed A., Zhang L., Wu S. Deep Learning for Reducing Breast Cancer Recall Rate in Screening Mammogram. NLM Training Conference. Abstract Oral Presentation: Focus Session (June 2018)

Aboutalib S, Mohamed A., Zhang L., Wu S. Multi-View Deep Learning for Reducing False Recalls in Screening Mammography. AMIA Annual Meeting, Accepted for Oral Presentation (November 2018)

Aboutalib S, Mohamed A., Wu S. Do pre-trained deep learning models improve computer-aided classification of digital mammograms? SPIE Medical Imaging Conference Proc. (27 February 2018); Oral Presentation

Aboutalib S. Applying Deep Learning to Improve Interpretation of Digital Mammograms towards Reducing False Recall Rates. Open Mic Session at NLM Training Conference, (June 5-6 2017), San Diego, CA.

Aboutalib S, Wu S. Automatic identification of nuanced imaging features in recalled but biopsy benign mammogram images. Radiological Society of North America (RSNA) Conference, (November 29-December 1 2017), Abstract Oral Presentation.