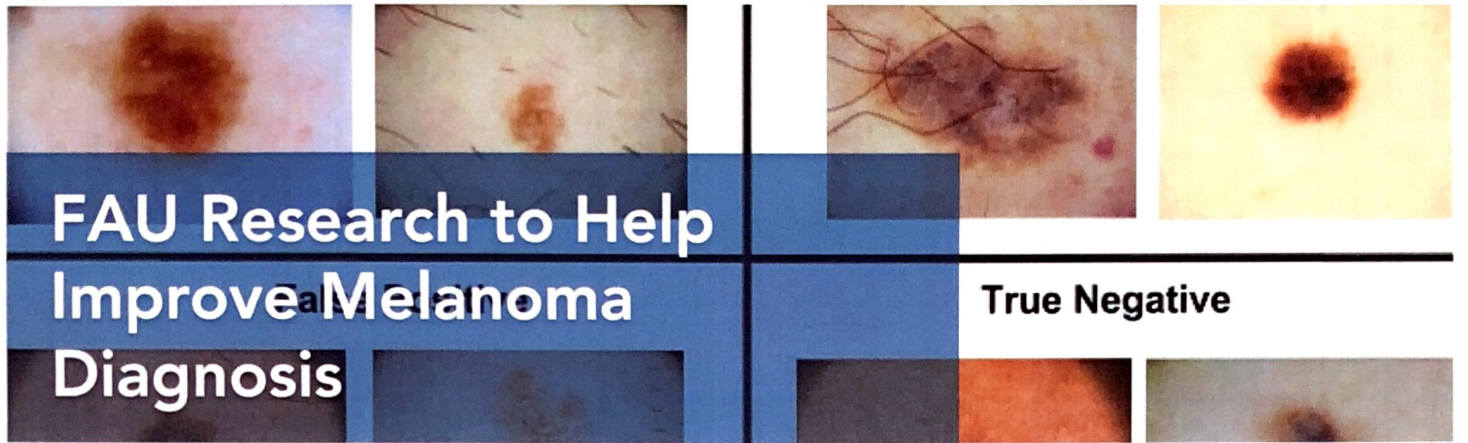


Center for Advanced Knowledge Enablement (CAKE) Research



Too much, too little, just right. It might seem like a line from "Goldilocks and the Three Bears," but actually describes an important finding from researchers in FAU's College of Engineering and Computer Science. They have developed a technique using machine learning – a sub-field of artificial intelligence (AI) – that will enhance computer-aided diagnosis (CADx) of melanoma. Thanks to the algorithm they created – which can be used in mobile apps that are being developed to diagnose suspicious moles – they were able to determine the "sweet spot" in classifying images of skin lesions.

This new finding, published in the Journal of Digital Imaging, will ultimately help clinicians more reliably identify and diagnose melanoma skin lesions, distinguishing them from other types of skin lesions.

Melanoma is a particularly deadly form of skin cancer when left undiagnosed. In the United States alone, there were an estimated 76,380 new cases of melanoma and an estimated 6,750 deaths due to melanoma in 2016. Malignant melanoma and benign skin lesions often appear very similar to the untrained eye. Over the years, dermatologists have developed different heuristic classification methods to diagnose melanoma, but to limited success (65 to 80 percent accuracy). As a result, computer scientists and doctors have teamed up to develop CADx tools capable of aiding physicians to classify skin lesions, which could potentially save numerous lives each year.

Based on the new method that was used the researchers findings suggest that extending the border beyond the lesion to include a

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limited amount of background pixels improves their classifier's ability to distinguish melanoma from a benign skin lesion.

Their method showed an improvement across all relevant measures of performance for a skin lesion classifier.

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PROJECT RESEARCHERS

Lead Author: Prof. Oge Marques, professor, FAU Department of Computer and Electrical Engineering and Computer Science; Collaborator: Prof. Borko Furht, professor, FAU Department of Computer and Electrical Engineering and Computer Science and director of the NSF-sponsored CAKE at FAU.



Borko Furht, Ph.D.

Professor
Department of Computer and Electrical
Engineering and Computer Science
Director, NSF Industry/University Cooperative
Research Center for Advanced Knowledge
Enablement (CAKE), FAU Site
FAU, College of Engineering
and Computer Science
bfurht@fau.edu
561.297.3180

Research Interests

- Multimedia Systems
- Video Coding and Compression
- Internet Engineering



Oge Marques, Ph.D.

Professor
Department of Computer and Electrical
Engineering and Computer Science
FAU, College of Engineering
and Computer Science
omarques@fau.edu
561.297.3857

Research Interests

- Human and Computer Vision
- Medical Image and Video Processing
- Human Computation
- Machine Learning
- Healthcare Technologies
- Mobile and Web-based App Development

About the Center for Advanced Knowledge Enablement

Florida Atlantic University's Cooperative Research Center for Advanced Knowledge Enablement (CAKE), an NSF Industry/University Cooperative Research Center (I/UCRC), encompasses researchers from FAU and Florida International University, and serves as a bridge linking academia, industry, and government in coordinated research initiatives. Research is applicable to many fields, including national defense and homeland security, health care, biomedical science, environmental science, entertainment, finance, and technology services. The members of the CAKE include companies such as JM Family Enterprises; Motorola Mobility; LexisNexis; Tecore Networks; and Emerson Network Power; among others. For more information about the CAKE FAU site, visit cake.fau.edu.

About the Department of Computer and Electrical Engineering and Computer Science

The department of Computer and Electrical Engineering and Computer Science's mission is to serve the community by providing a center for teaching excellence and research. Research in the department is applicable to many fields, including national defense and homeland security, healthcare, biomedical science, environmental science, entertainment, finance and technology services. Faculty have very active research interests in software engineering, networking and communications, multimedia, VLSI design, mobile systems, computer architecture, distributed systems, database systems, internet engineering, digital signal processing, systems and robotics, electromagnetics and RF, and bioengineering. Issues of interest to multiple industries are also explored through partnerships and collaborative research. For more information about the department, please visit ceecs.fau.edu.

About FAU's College of Engineering and Computer Science

Florida Atlantic University's College of Engineering and Computer Science is committed to providing accessible and responsive programs of education and research recognized nationally for their high quality. Course offerings are presented on-campus, off-campus, and through distance learning in bioengineering, civil engineering, computer engineering, computer science, electrical engineering, environmental engineering, geomatics engineering, mechanical engineering and ocean engineering. For more information about the college, please visit eng.fau.edu.



777 Glades Road EE 308
Boca Raton, FL 33431-0991
561.297.3400 | info@eng.fau.edu
eng.fau.edu

