Apr 9th, 2008 - 5:00 PM

Detecting and Analyzing Milia-Like Cysts for Diagnosis of Malignant Melanoma

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Major:	Electrical Engineering and Applied Mathematics
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Advisor's Department:	Electrical and Computer Engineering
Funding Source:	Missouri S&T Opportunities for Undergraduate Research Experiences (OURE) Program

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Malignant melanoma skin lesions contain several key characteristics that dermatologists search for in order to make a diagnosis. These include but are not limited to size, shape, color, and structures within the lesion. This research project focuses on one specific structure: small white dots within the lesion called milia-like cysts, which, when present, indicate that the lesion is benign, not malignant. Thus, the detection of milia-like cysts can help separate malignant melanoma from benign mimics. The group seeks to improve the reliability of detection of this characteristic as a means of diagnosis by analyzing high-quality images of skin lesions with image-processing tools. This is accomplished by first finding the milia-like cysts in the images by identifying them with the eye under the supervision of a dermatologist, then using the image-processing code to identify the dots, and comparing the results. These results then lead us to adjust the program by changing certain parameters to improve the accuracy and reliability of the code in identifying malignant melanoma.

Michael Nolte was born in Gladstone Missouri and graduated from North Kansas City High School in 2004, after which he came to Missouri S&T. He has participated in three research projects at Missouri S&T and plans to graduate with degrees in Electrical Engineering and Mathematics in December 2008. Michael plans on graduating with an emphasis in power engineering.