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"The most exciting phrase to hear in science, the one that heralds new discoveries, is not 'Eureka!', but 'That's funny…'" Author-Isaac Asimov

OTD's Tech Transfer News

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Second Quarter Activity

OTD is pleased to announce that it has signed a license agreement with Kaltoons, LLC, for *3D Real-time Digital Puppet*, a technology developed by **Daniel Bailey** in the IRC department, and the artist in residence, **Kevin Kallaugher**.

Congratulations to **Gregory Payne**, Chemical Biochemical Engineering department, for his recently issued patent entitled, *Polysaccharide-based Polymers and Methods of Making the Same*, U.S. patent #7,138,373.

This office received four invention disclosures this quarter. Thank you to: **Daniel Bailey**, **Chad Eby**, **Kevin Kallaugher**, **Shane Lynch**, and **Eric Smallwood**, IRC department, for *3D Real-time Digital Puppet*; **Iordan Kostov**, **Nirmala Chandrasecharan**, and **Govind Rao**, CAST/CBE department, for *Ratiometric Fluorescence Alcohol Sensor Based on Solvatochromic Polymeric Dyes*; **Leah Tolosa**, **Hung Lam**, **Iordan Kostov**, and **Govind Rao**, Chemical Biochemical Engineering department, for *Fluorophore Based Temperature Sensor*; and **Iordan Kostov**, **Derek Smith**, and **Govind Rao**, CAST, for *Imager for SPCE-enabled Sensing Systems and Arrays*.

OTD encourages UMBC faculty to discuss their discoveries with our office as early in the research as possible, and to disclose the invention to OTD before submitting a manuscript for publication, or speaking at a meeting, conference, or seminar. UMBC's invention disclosure form can be found at www.umbc.edu/otd Forms.

Featured Technology

This featured technology, *Method of Remote Detection of Vapors,* was developed by **Bradley Arnold**, **Lisa Kelly**, **Alexander Schill**, and **Dustin Levy** of the Chemistry and Biochemistry department.

The development of ultra-high power pulsed lasers with extremely short pulse durations has opened the door to a vast array of applications that would never have been dreamed of even a few years ago. Our laboratory has developed a method of detecting potentially dangerous chemical vapors from a distance of 100 meters or more. This method uses the fact that ultra-short laser pulses must have a distribution of wavelengths (Heisenburg was certain about this) and that different

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Interview with a UMBC Inventor

Chein-I Chang is a Professor in the CSEE Department

Prof. Chang, tell us a little about yourself and your background.

My background is very diversified. I received my B.S degree in Mathematics from Soochow University in Taiwan, my M.S. in Mathematics from the Institute of Mathematics National Tsing Hua University in Taiwan, my M.A. in Applied Mathematics from the State University of New York, my M.S. degree in Computer Science, and M.S.E.E. degree from the University of Illinois, and my Ph.D. degree in Electrical Engineering from UMCP. I have actually spent 16 years working toward my advanced degrees in four different disciplines. I believe my background is rather unique, but it gives me an edge to see problems from different aspects.

You already have two issued U.S. patents, with seven more pending. Can you describe these inventions to us?

I actually have three issued patents, two U.S. and one foreign. My inventions can be categorized into three major areas: (1) computer aided diagnosis (CAD) for breast cancer detection, (2) text detection for video images, and (3) hyperspectral imaging. The research in CAD for breast cancer detection has been increasingly important in the detection of breast cancer in its early stage. It develops CAD systems for mammography screening to provide radiologists with a second opinion with their medical diagnosis. The research in text detection in video images is to extract text from a video image for information retrieval. It has been a crucial element in visual information retrieval systems which require text to store and catalog images. The research in hyperspectral imaging has received the most attention and considerable interest in recent years. Its applications range from agriculture, ecology, geology, and forestry, to environmental monitoring, law enforcement, defense, military, and intelligence gathering. My Remote Sensing Signal and Image Processing Lab has conducted research in designing and developing algorithms for hyperspectral data exploitation. Five patents are currently pending and many more will come from this area.

What do you find to be the most difficult

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Interview with Chein-I Chang cont'd

aspects of your research?

The most difficult aspects of my research are: (1) finding funding sources to support my research, (2) finding companies to commercialize my research, and (3) filing patent applications for my inventions.

What has been your experience with patenting your inventions?

Most of my seven pending patent applications were filed at least five years ago and have not received their first reviews back from the United States Patent and Trademark Office. Patenting my inventions has been an extremely slow process.

Has there been a point during the patent process when you thought your patents would never issue?

Yes. But this does not mean that the ideas for my patents are not justified. It is simply because the inventions may still be in their infancy, and considered to be premature compared to the rest of the technology out there.

Is there anything you know now, that you wish you'd known before you started this process?

I was very active in filing my enabling technologies in the late 1990's. My research was on the brink of a breakthrough. Many techniques that were developed in my lab during that time, are now being used in the field. All of my pending patents, but one, were filed before 2000, and have not issued yet. The applications have been at the United States Patent and Trademark Office for more than six years. If I had known it was going to take this long, I might not have done this at all.

If you could give just one piece of advice to a beginning inventor, what would that be?

Be patient, and do all the hard work by yourself. Don't let slow progress frustrate you.

Chein-I Chang is the author of the book *Hyperspectral Imaging: Techniques for Spectral Detection and Classification*, and is working on his second book, *Hyperspectral Imaging: Signal Processing Algorithm Design and Analysis,* due to be released in 2007.

Featured Technology cont'd

This technology was randomly chosen from over 160 technologies reported to OTD.

wavelengths of light travel at different speeds in air. This distribution of wavelengths can be arranged such that the light pulse becomes more intense at a controlled distance from our laser. Molecules in the volume of space where the light becomes most intense become excited and they can emit light of a different color (they fluoresce). The color of the emitted light is a characteristic of the molecules that were excited. If enough molecules are excited initially, the emitted light can stimulate other excited states to emit light and we get ***l***ight ***a***mplification by the ***s***timulated ***e***mission of ***r***adiation (**laser**). One laser is used to create a different, free-standing, vapor laser that sends a light pulse back to us. The color of the light pulse that is returned, depends upon the molecules that were excited initially. All we have to do is monitor the color of the light pulse returning to us so that we can identify the molecules that produced it.

Lisa Kelly

Brad Arnold

Wacky Patent

United States Patent

David P. Coughlin

Fireplace with Waterfall

Patent Number: 6,901,925

Date of Patent: June 7, 2005

Abstract

A fireplace including a fire box having a means for producing flames, a trough positioned in front of the fire box, and a hood positioned above the fire box and extending out from the fireplace beyond the front opening. Positioned in the trough is a plumbing assembly having a pump and piping for transporting water through an opening in the hood. The hood extends outward beyond the fire box such that water will fall freely in front of the fire box containing the flames and into the trough.

Picture found at www.hearthfalls.com

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