

Academic, educational colloquia series continues at IIT

By Swasti Khuntia
LAYOUT EDITOR

The Applied Math Department at IIT hosted two colloquia last week. The first colloquium was organized on Monday on "A Joint Statistical Model for Social Network and Behavior" by Dr. Liping Tong, assistant professor at Loyola University, Chicago.

She talked about how an individual's behavior may be influenced by the behaviors of friends, such as hours spent watching television, playing sports, and unhealthy eating habits. Citing an example, she said two children who enjoy playing the same sport are more likely to become friends.

Dr. Tong talked about actor-based Stochastic modeling (ABSM) methods for the coevolution process, which turns out to be useful when dealing with longitudinal social network and behavior data when behavior variables are discrete and have limited number of possible values. Unfortunately, since the evolution function for behavior variable is in exponential format, the ABSM can generate unrealistic results when the behavior variable is continuous or has a large range. To counter the ABSM's disadvantage,

Dr. Tong has proposed a coevolution process so that the network evolution is based

on an exponential random graph model and the behavior evolution is based on a linear model.

The second colloquium was organized on Wednesday, the topic being "Numerical Approach to Solve Tumor Growth Model with a Free Boundary." The lecture was delivered by Wenrui Hao, PhD candidate at University of Notre Dame.

He talked about the recent progress on a tumor model with PDE, the stability of the solutions, the bifurcation diagram extensions beyond the bifurcation point and the intersection of bifurcation diagram for different bifurcation branch, and possible other types of steady state solutions. Hao also explained his new numerical approach, which is based on Numerical Algebraic Geometry, to explore free boundary problems arising from tumor growth models.

The Chemistry Department at IIT continued their colloquium this week on the topic "Lithium-ion Batteries: Current State and Beyond." The talk was delivered by Dr. Ilias Belharouak, materials scientist and battery specialist, Chemical Science and Engineering Division at Argonne National Laboratory.

Starting the talk, he spoke about the journey for materials design and how discovery was unveiled in the light of the most recent developments in lithium-ion batteries. He also discussed on the implementation of the very challenging lithium-sulfur and lithium-air batteries.

The high cost of cobalt and relatively low specific capacity of LiCoO₂ have been major obstacles against the application of these batteries in transportation where the battery energy density should significantly increase to meet the goals for plug-in hybrid vehicles (PHEVs), and essentially for electric vehicles (EVs). Dr. Belharouak explained how research groups have been under the challenge of inventing and developing new advanced positive electrode materials whose main characteristics is to store more and more electricity per mass and volume.

The Biology Department organized a colloquium on "Interplay between HIV and Wnt/Beta-Catenin Signaling: A Tug of War between Protection and Pathogenesis in the CNS." The talk was delivered by Dr. Lena Al-Harhi, professor, Department of Immunology-Microbiology, Rush University Medical Center, Chicago. Prof. Al-Harhi's research over the past 15 years has focused on HIV/host interactions, with a special emphasis on bridging basic and clinical science in the HIV/AIDS field.

Because of her experience in HIV molecular biology, immunology, and, for the past 5 years, in NeuroAIDS, she has been able to probe mechanistic questions that are clinically relevant to HIV/AIDS. Recently, her group has identified the β -catenin signaling pathway as an important regulator of HIV replication in multiple compartments,

including the central nervous system.

Through multiple NIH funded studies, she is investigating the molecular pathway by which β -catenin inhibits HIV replication, its impacts on HIV neuropathogenesis, and the role of host and viral factors in modulating β -catenin interaction with HIV.

On Thursday, the Physics Department organized an interesting colloquium on "A New Approach to Intro Physics at the University of Illinois." The talk was delivered by Mats Selen, professor, Department of Physics, University of Illinois at Urbana-Champaign. Starting the talk with how all have faced the problem that students come to class unprepared to learn; assigned readings from the text are usually ignored and most students are seeing the material for the first time as you present it in lecture.

The Physics Education Research Group at the University of Illinois has developed a suite of online prelecture activities to address this problem, including animated Multimedia Learning Modules to present students with the required concepts, and checkpoint questions to provide pre-lecture feedback to both students and professor. Several published studies of this approach show a significant improvement of student knowledge and a striking improvement in their attitude toward our calculus based intro physics classes.

OCL Leadership Summit encourages student involvement

By William Syvongsa
TECHNEWS WRITER

There is a stigma with being an IIT student. "IIT students never leave their rooms." "IIT students don't know how to have fun." "There is never anything to do on campus." This mentality has been passed down from class to class, slowly spreading this belief that IIT is not a good university and you will be unhappy your entire time here. In my two and half years at IIT, I realized how untrue these statements are. I decided to go to events that IIT and student organizations of IIT would sponsor. Some events and programs hit the mark while others miss it, but the point is that there was always something to do. I never had an issue occupying my time once I started looking. Between RA programs, student organization events, and exploring Chicago with your friends, IIT is a gemstone of a university. The Student Activities

Fund is used to subsidize and sponsor so many events that other universities can only dream of. Skydiving? Ski trips? Tickets to sporting events, movies, and Broadway in Chicago? We even have traditional university events, such as Homecoming, sporting events, Spring Formal. The student body expects the university to hand them events. News flash: the events are being handed out. You need to know where to look.

The strange thing is that students don't understand that the events and programs that happen are planned by students just like them. That's right, most events that are planned on campus are planned by someone who could be sitting in your class right now, or eating lunch across from you in Center Court, or walking past you in the residence halls. They're hoping that their event goes well, that the decision they made to get involved in their student organization instead of research will pay off in the end. And why shouldn't it? Being involved with a student organization teaches you a lot, in terms of

working on a team, working with professional staff members, and great interpersonal skills. Yes, you are in college to learn, but who says you can have fun at the same time?

If you are a student leader on IIT's campus and agree with everything I wrote, have you heard about the Student Leader Summit? The Summit is planned for Saturday, March

10, from 10:00 a.m. to 6 p.m. and is aimed at bringing together student leaders on campus to learn from workshops and facilitate discussion with each other about how to better improve campus life. The summit isn't just open to student leaders though. If you have an interest in getting involved or want to meet the students that are involved, this is the venue to do so.

IPRO 372: Global Construct Collaborative

By Hannah Rosenthal
TECHNEWS WRITER

First question: do you like music? If the answer is yes, at 9:00 p.m., this Thursday, March 8, come on over to the IIT Tower Auditorium and join IIT A Capella as well as IPRO 372 Global Construct Collaborative for Raise Your Voice: a benefit concert that will help spread education to impoverished communities around the world.

IIT A Capella has generously donated their time and talent to help Global Construct Collaborative take off. Launched from the IPRO 2.0 program last fall, this team of thirteen IIT students has organized to train and inspire leaders in impoverished communities to self-sufficiently conceive and construct safe, sustainable shelter. The team is currently collaborating with partners in Mexico to design, build, and implement a trade school across the border from Pharr, Texas this May. Before this school becomes a reality, the team needs to raise \$10,000. Help them make a difference by bringing a \$5 donation this Thursday as you enjoy listening to the IIT A Capella groups and select student musicians!

... And if you don't like music? You

can still help—if you're up for the challenge!

Second question: how would you survive if you could only spend \$2 USD per day?

You could find out! From April 9 to 13, Global Construct Collaborative is hosting the Two Dollar Challenge and is inviting you to spend up to five days and four nights living on \$2/day or less. Nearly half the world lives every day on less than \$2 USD. This challenge is designed to increase student empathy and awareness of what it's like to eat, sleep, and bathe within such a limited budget.

Participants in the challenge will enter in teams similar to a marathon and collect sponsors to donate a dollar amount per day that they complete the challenge. All of the raised funds will support Global Construct Collaborative and the school we're currently designing in Mexico. The team that raises the most money before the last day of the challenge will win free admission to a pasta dinner at the end of the week!

If you're interested in learning more about Global Construct Collaborative, the Two Dollar Challenge, or if you'd like to join, or lead a team, please e-mail collaborate@globalconstruct.info. You can also check out our website for more information: globalconstruct.info.



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