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Special Programs

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Summer Experience in Bioinformatics

Summary: Six students participated in a special summer course under the mentorship of Computer Science Professor Jerzy W. Jaromczyk and Biology Professor Charles Staben. Numerous projects exposed the students to DNA and protein databases, medical images, supercomputing, statistical analysis, and mass spectrometry. At the same time, the group learned methodologies and tools for preparing and presenting research reports.

Discussion: If asked, “What is the most frequent digit that starts the numbers representing the population of Kentucky’s counties?” the odds are one’s answer would be, “All are equally likely.” This project looked at that very question by analyzing recent census data for Kentucky county populations, as well as county areas. Through data collection and analysis techniques, surprising observations were made about the data, and an interesting connection between the counties in Kentucky and Benford’s law was made. This project served as an exercise to collect, process, analyze, and visualize data, and to learn the process of preparing a technical report. The entire article prepared by the students in this program, including tables and charts of their results, is available at www.uky.edu/kaleidoscope/fall2003.

Participants: Brandon Barker, Matt Downs, Andrea Layne-Hunt, Jeremy Leachman, Jean-Hugues Niclair, Jamie Unseld, Professors Staben and Jaromczyk

B.I.G. B.L.U.E Balloon-Launched Experiment

Summary: A team of over 40 undergraduate students from mechanical, electrical, and computer engineering designed, fabricated, tested and flew a balloon-launched, high altitude, inflatable-wing glider. The first flight of the BIG BLUE occurred May 3, 2003 in Ft. Collins, CO, supported by Edge of Space Sciences (EOSS), an amateur group of ham radio and high-altitude ballooning enthusiasts. The B.I.G. B.L.U.E (Baseline Inflatable Glider Balloon-Launched Unmanned Experiment) is a flight experiment developed, designed, built, and flown by students in the College of Engineering at the University of Kentucky. BIG BLUE was conceived as a demonstration of unique technologies with potential for applications on Mars.

Team Members: Alan Bailey, Matt Branham, Michael Carter, Kelly Demaree, Sherlon Dieterich, Brent Dupree, Dustin Elliott, Matt Field, Marcus Polchi, Colin Gogglin, Dustin Hanna, Casey Harr, Mandy Hart, Ronald Humphrey, David Jackson, Stephen Justice, Viswanadh Kakarlapudi, Justin Kears, Sharmila Kesavalu, Brian King, Wei Lu, Alexander Maroudis, Andy Martin, Scott Massa, Kishore Mogadalakaka, Rajiv Nandivada, Joe Newkirk, Osamah Rawashdeh, David Sadler, Joy Schaible, Troy Schmidt, Alex Settles, Nathan Shewmaker, Shelby Shreve, Grant Stucker, Andrew Tan, Travis Thomas, Charlie Thomson, Michiko Usui, Aaron Welch, Key Kai Wong

Solar Car

Summary: The UK Solar Car Team constructed a solar car to race in the 2003 American Solar Challenge in July. The team began 3 years ago as a student run engineering project, with support from the College of Engineering. The team consists entirely of undergraduate and graduate students from electrical and mechanical disciplines who have designed the car from scratch starting only with race regulations. As the first UK team to attempt to build a solar car, students had to educate themselves on many of the practical design and manufacturing and electrical disciplines. For many students, the solar car is the most hands-on engineering experience they have had. In all, about 30 students have contributed to the completion of the vehicle. Most of the major parts of the car have been donated or purchased. The website is: www.engr.uky.edu/solarcar.

Team Members: Bianca McCarrt, Justin Brown, Chris Morgan, Chris Trinkle, Kirk Fallis, Bob Booth, Colin Goggin, Autumn Foushee, Robbie Bottoms, Danny Divin, Aydin Hatemi, BJ Hinkle, Jessie Morgan, Karen Robb, Marc Williams, Kirk Stechschulte, Matt Dieruf