

UROP Projects for the 2008-2009 Academic Year

Student: Alex Findlater

Sponsor: Dr. Jie Song, Chemistry

Title of UROP Project: The Theoretical Investigations of Low-lying Excited States of C₂O₄

Project summary: In this study, the low-lying excited states will be investigated using the multi-reference methods in order to supply the theoretical predictions for the future experimental work.

Students: Linda Jackson, Tobias Lerke

Sponsor: Dr. Rie Suzuki, Health Sciences

Title of UROP Project: Promoting Access to Health Services in Michigan (PATHS-M)

Project summary: This study examined the Promoting Access to Health Services in Michigan (PATHS-M) services, designed to address the disparity in receipt of clinical preventative services by working with women with physical disabilities.

Students: Trisiani Affandi, Hyeonjin Cho

Sponsor: Dr. Jie Song, Chemistry

Title of UROP Project: The Theoretical Study of Protein Nucleic acid

Project summary: In this study, the research focuses on the theoretical prediction of PNA structures and the effect of the solvent on them.

Students: Stephen Bennett, Celeste Thornburg, Joshua Harvey

Sponsor: Dr. Ricardo Alfaro, Mathematics

Title of UROP Project: Constacyclic Codes and Optimal Distance over \mathbb{F}_q

Project summary: The purpose of this study was to produce several classes of examples of constacyclic codes, develop and use programs to compute distances and dimensions of images of codes, and make conjecture about relation of type of matrices to the minimal distance of the image codes.

Students: Melissa Babcock, Nathan Marzonie, Jesse Park

Sponsor: Dr. Gerard Paez, Biology

Title of UROP Project: Biology Development in Drosophila: RAS/MAPKase pathway

Project summary: The purpose of this study was to develop a deeper understanding of the regulation of the Ras/MAPK signal transduction pathway, alterations in which are associated with approximately 25% of human tumors as well as neurodegeneration.

Student: Ruirui Jiang

Sponsor: Dr. Terrance Horgan, Psychology

Title of UROP Project: Gender, Memory, and Appearance Accuracy

Project summary: The purpose of this project was to investigate whether women also recall changes in the appearance of others better than males do.

Student: Paul Knific

Sponsor: Dr. Michael Farmer, Engineering

Title of UROP Project: Shape-based Image Retrieval

Project summary: This project was directed at developing means for having computers automatically search for images based on the shapes in those images. Currently systems such as Google Image require all the images to be analyzed by a human and annotated. In our system, the computer actually searches inside the image for the desired shapes.

Students: Tuan Mai, Suyash Joshi, Vanessa Smith

Sponsor: Dr. Michael Witt, School of Management

Title of UROP Project: Entrepreneurship Program Development and Research

Project summary: The School of Management is developing coursework and curricula in entrepreneurship. Research assistance in developing best practice standards and a nationwide review of similar programs is needed. Also, community support for this program is essential. Identifying and working with community leaders to develop a rational local program is paramount. The student will meet with community participants to fashion the details of any community components of the program.

Student: Marcus Wolverton

Sponsor: Dr. Edwin Chow, Earth and Resource Science

Title of UROP Project: Hydrologic Enforcement of Digital Elevation Model

Project summary: The purpose of this research was to assess the elevation accuracy of hydrologic-enforced Digital Elevation Model (DEM) adjacent to hydrographic features, including the river banks, dams, bridges, ponds etc. This research will utilize the 3-m lidar hydrologically enforced by the data vendor and compared several interpolation algorithms to generate DEMs in raster format. Survey-grade elevation points were collected by direct field surveying and used as reference data to validate the accuracy of DEM derived by different algorithms. The results will provide an empirical assessment as well as an error pattern that are instrumental for the development of enhanced lidar filters for the hydrologic enforcement of DEM.

Students: Preshit Tambey, Michael Lengyel

Sponsor: Dr. Quamrul Mazumder, Engineering

Title of UROP Project: Prediction of Fluid Flow and Particle Velocities Using Computational Fluid Dynamics Analysis

Project summary: The purpose of this research was to perform analysis of multiphase flow to predict the erosion behavior in a bend using a commercially available CFD code Fluent. The result of the analysis showed a trend with close agreement with previous experimental and computational results. Using CFD in undergraduate research significantly improved the understanding of complex flow phenomenon as students are able to visualize the flow simulation for different input variables.

Student: Rebecca Lemay

Sponsor: Dr. Denise Dedman, Social Work

Title of UROP Project: Vicarious Trauma

Project summary: The purpose of this research is to explore studies of how "helpers" working with traumatized individuals may become traumatized themselves.

Students: Ruirui Jiang, Daric Thorne, Samantha Honea

Sponsor: Dr. Roy Barnes, Sociology

Title of UROP Project: Tracking Campaign Contributions

Project summary: The project involves extracting campaign contribution data from the Federal Election Commission. The goal is to construct a database of political donations for a set of corporate executives to see if interlocking directorates are associated with campaign contributions.

Student: Ashley Persails

Sponsor: Dr. Rie Suzuki, Health Sciences

Title of UROP Project: Promoting Access to Health Services in Michigan (PATHS-M) Needs Assessment

Project summary: This study examined the Promoting Access to Health Services in Michigan (PATHS-M) services, designed to address the disparity in receipt of clinical preventative services by working with women with physical disabilities.

Student: David Morrison

Sponsor: Dr. Mehrdad Simkani, Mathematics

Title of UROP Project: Numerical Analysis Text

Project summary: This project led to the creation of text material for a Numerical analysis course using mathematical language suitable for students.

Students: Andrea Garber, Samantha Honea, David Jackson

Sponsor: Dr. Kenneth Litwin, Criminal Justice

Title of UROP Project: Enhancing Police Response to Victims

Project summary: This project primarily involves entry of survey data into SPSS data files. Any interested student may participate in this project.

Students: Garrett Farmer, Miyoko Jones

Sponsor: Dr. Joan Mars, Criminal Justice

Title of UROP Project: UNICEF-GUYANA Child Protection Project

Project summary: UNICEF-GUYANA provides financial and technical support to several non-governmental, charitable organizations for the protection of orphans and vulnerable children and to prevent physical and sexual violence against women and children. Under this project, the Linden Legal Aid Centre provides legal aid to women and children who are the victims of domestic violence and sexual assault.

Students: Stephen Green, Meghan Stewart, Nkemdilim Nwodo

Sponsor: Dr. Dana Dyson, Political Science

Title of UROP Project: Comparative Analysis of Michigan School District Performance in the No Child Left Behind (NCLB) Era

Project summary: Using factor and regression analyses, this study measured the relationship between school, financial, social and political resources and student performance outcomes, empirically.

Students: Darcey Roach, Aaron Kelsey, Michael Pauldine, Richard Taljonick

Sponsor: Dr. Hillary Heinze, Psychology

Title of UROP Project: Best Practices in Youth Development: Enhancing Services, Building Strengths, and Solving Homelessness

Project summary: This project examined relationship building with area providers to improve existing services and promote healthy development in homeless youth.

Student: Andrea Garber

Sponsor: Brady West, Ph.D. student, Center for Statistical Consultation and Research (CSCAR): University of Michigan - Ann Arbor

Title of UROP Project: Researching Predictors of Success in the NCAA Basketball Tournament

Project summary: This project furthers original research into statistical models of success in the NCAA basketball tournament. Research to date has been limited by the absence of free online resources containing historical team-level statistics collected *prior* to the onset of the NCAA tournament in early March. New resources have recently been identified, and students working on this project would be downloading and entering data from these resources, and then helping to analyze the data and identify the best sets of team-level predictors.