UNIVERSITY of ST. THOMAS

BUSH FOUNDATION PROGRAM GRANT:
COLLABORATIVE INQUIRY

Inquiry at UST: A Poster Session with the Results of Faculty/Student Collaboration at the University of St. Thomas

Abstracts

Vol. 3
May 13, 2004

Introduction

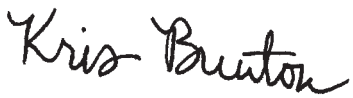
The abstracts published in this volume reflect the value we at the University of St. Thomas place on faculty/student collaboration.

Students who have recently done collaborative work with a faculty member present that work in these abstracts and at this poster session for purposes of dissemination and scrutiny by their peers, their professors, and the academic public.

The University of St. Thomas expresses its deep gratitude to the Bush Foundation, who funded this event through a three-year Program Grant. The grant seeks to increase the use of inquiry-based teaching methods, so that students experience the real work of the professions, working on real problems often taken from outside the university, in the ways they will be called upon to employ their disciplines after they leave the university.

A second theme of the Bush Program Grant is to increase faculty/student collaboration. We believe that one of the very best ways to teach is to have professors work with students collaboratively. Students see how work is really accomplished in their chosen professions, and professors have the chance to share their work as it is being created.

We hope this event and this volume gives visibility and credibility to the ideas represented in our Bush grant.



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May 2004

As president of the University of St. Thomas, I am both pleased and proud to introduce the Spring poster session devoted to faculty/student collaboration projects developed as part of our three-year grant from the Bush Foundation, *Focus on Inquiry: Faculty/Student Collaboration at the University of St. Thomas*.

I believe that one of the most effective ways for students to learn is through collaborative inquiry: students and faculty working together on research that can have real-world consequences. This is completely in keeping with our mission as a Catholic university grounded in the liberal arts tradition. We strive to provide a high degree of personal attention in a challenging campus environment that is engaged with the complexities of our urban community and the world beyond.

Collaborative inquiry gives our students the opportunity to experience first-hand how their professors approach research questions in a given discipline. It also gives our faculty a better opportunity to understand how our students think, and helps them develop new ways of looking at research problems. Collaborative inquiry enables our students and faculty to experience their disciplines in action, deepening students' academic experience while simultaneously increasing career competency.

I heartily endorse this effort, and I hope this presentation of work accomplished to date will illustrate the importance of collaborative inquiry at St. Thomas.

Sincerely,

Dennis Dease

Reverend Dennis Dease
President

St. Paul, Minnesota
Minneapolis, Minnesota
Owatonna, Minnesota
Rome, Italy

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Sarah Arnquist

INVESTIGATING DAILY NEWSPAPERS COVERAGE OF LATINO POPULATIONS IN MINNESOTA

Faculty Collaborator: Dr. Kris Bunton

The United States is becoming more racially and ethnically diverse, yet news coverage often fails to reflect that diversity or treats it stereotypically. Critics have argued these failures stem from the fact that most U.S. news content is produced by overwhelmingly white newsrooms, where the employment of non-white journalists lags well behind the overall increase in non-white populations nationally. Specifically, Latinos are the nation's and Minnesota's largest minority group, yet their newsroom representation and newspaper coverage, in comparison to their population, is lower than for any other major ethnic group in the country.

This project has looked closely at daily newspaper staffs and the news coverage produced in six southern Minnesota communities with growing Latino populations. The research included a three-week content analysis of the newspapers and interviews with their editors. The analysis of newspaper stories shows that the Latino communities have been insufficiently covered, and the coverage that has been done perpetuates the stereotype that Latinos are illegal and criminals. The interviews tell that the newspapers do not have Latinos or Spanish-speaking staff members. Most of the editors have a desire to improve their coverage, but have not made it a priority. The interviews also tell that editors of small dailies face distinct challenges in covering minority communities because they have small staffs and budgets, especially compared to large metropolitan dailies. I am currently comparing these findings to national research, which has focused largely on metropolitan newspapers, rather than on local communities, to see if there are similarities and what recommendation I can make for improvement.

Adam Berland

RECENT CHANGE IN WETLAND COVERAGE IN EDEN PRAIRIE, MN

Faculty Collaborator: Dr. David Kelley

As the Twin Cities continue to expand outward, the characteristics of the land are constantly evolving. One topic of particular interest in Minnesota is the changing distribution of wetlands, especially in the dynamic Twin Cities area. The most widely recognized spatial information regarding wetland coverage is known as the National Wetlands Inventory (NWI), which was compiled by the United States Fish and Wildlife Service. Aerial photographs were the principle resources used to make the NWI classifications. However, the photographs were taken between 1979 and 1988, and interpretations were compiled from 1991-1994. The land interpretations are over ten years old, and the source data for those interpretations are up to twenty-five years old. As the Twin Cities area has seen great change over the past two decades, the wetlands, too, have surely seen some degree of change in distribution. This study seeks to update wetland classifications in Eden Prairie, an area that has undergone considerable modification in recent years.

This analysis incorporated the use of Geographic Information Systems (GIS) software and methods. GIS was used to compare the old NWI classifications for Eden Prairie with new interpretations based on more recent satellite imagery. The analysis accounted for both additions and removals of wetlands areas.

Preliminary projections indicate that wetland coverage has decreased in Eden Prairie since the NWI aerial photographs were taken. While some wetland areas have likely been added, more have fallen prey to urban expansion.

Margaret Broeren

THE ROLE OF CHLOROPHYLL FLUORESCENCE METHODOLOGY IN FV/FM RECOVERY FROM LIGHT STRESS

Faculty Collaborator: Dr. Amy Verhoeven

In researching the affects of light stress on plants, chlorophyll fluorescence parameters reveal important information about the physiological state of the plant. The fluorescence parameter Fv/Fm is a measure of the maximum efficiency of PSII photochemistry and is often used to indicate whether a plant is under stress. In order to draw meaningful conclusions, Fv/Fm must be measured in dark-acclimated plants, which is optimally done predawn. Many studies have reported Fv/Fm values from plants after shorter dark acclimation times, or after using leaf clips to darken portions of a leaf in the light. The goal of this study was to compare techniques for assessing Fv/Fm, in order to determine which methods are most reliable (i.e. give results closest to predawn values). A Hansatech fluorometer was used to collect Fv/Fm and PSII data for four species located at the University of St. Thomas in St. Paul, Minnesota. Predawn data was collected for all four species, and three methods were applied to monitor the Fv/Fm recovery time after 10, 20, 30 and 60 minutes of darkening leaves collected in the light. Leaf clips were placed on the four species in the afternoon and darkened until measurements could be taken the next morning. The outdoor, indoor and cloudy methods were not sufficient to allow complete recovery in all species, but the clipped method was successful in reaching a predawn fluorescence equivalent.

Ann Glover

THE EXPERIENCE OF THE GUATEMALAN INDIGENOUS PEOPLES: OPPRESSION AND RESISTANCE, HISTORY AND TESTIMONY

Faculty Collaborator: Dr. Jane Tar

"For me, the horrors that I have suffered are sufficient. I have also felt in the deepest part of my being what discrimination is. That which is exploitation, has exactly narrated my life."
(I, Rigoberta Menchú 158).
- Rigoberta Menchú

In Guatemala, a tragic history of discrimination and corruption has resulted in a tremendous collective experience of suffering and oppression on the part of its indigenous peoples. Although its history is complex, above all, the effects of U.S. involvement (both economically and militarily) in shaping Guatemalan governmental policies, and the overarching colonial legacy of discrimination are fundamental to an understanding of the situation of the indigenous in present day Guatemala.

The history of Guatemala also has been affected and shaped by the efforts of certain Guatemalans that have tried to better the present political and social situation. Despite the fact that their efforts have brought them danger and threatened their lives and those of their family members, they have continued in their struggle for human rights. One of these indigenous advocates, Rigoberta Menchú, has been very active in organizing against the political corruption promulgated by the

government. Her autobiography, narrating not only her life but also the suffering experienced by "all poor Guatemalans," forms an incredible testament to the resilience and resistance of the indigenous of Guatemala. Menchú's inspiration will reach anyone desiring to know more about the history of Guatemala and social justice issues in general.

Katie Halfmann & Chaillee Hogan

SIMILARITIES AND DIFFERENCES ACROSS RACE AND INTERVENTION IN HOW LOW-INCOME MOTHERS TALK ABOUT THEIR LIVES

Faculty Collaborator: Dr. Mary Anne Chalkley

The Head Start Family Impact Project was designed to examine the impact of Head Start on children and their families. This report focuses on oral interviews conducted with former Head Start mothers and comparisons mothers at least six years after their children were eligible for Head Start. It is supplemented with survey data collected from the mothers at the same time. Qualitative analyses revealed significant differences between the Head Start and comparison mothers. Head Start mothers spent a larger portion of their conversation focused on family strengths and a substantially smaller portion of their time discussing family needs than did the comparison mothers. Examination of the interviews in light of racial/ethnic category (white, black, American Indian, and mixed race) revealed few differences among these groups in how the mothers discussed their lives. Focusing on families which were at the extreme ends on support, life event stress, and child depression allowed us to describe patterns within families which were a function of their common circumstances rather than their ethnic group. For example, families who were experiencing high stress discussed health problems, child behavior problems, safety problems, and problems due to a negative move. Parents who were experiencing low stress had a more positive tone and focused on being proactive and assisting in their children's education. Patterns related to high and low levels of support and child depression are also described. These results are discussed in light of the probable pathways whereby intervention can yield positive outcomes in children's lives.

George M. Hart

DETERMINATION OF THE ACCURACY OF THE MINNESOTA HUMAN USE INDEX COMPARED TO A LAND CLASSIFICATION USING RECENT SATELLITE DATA

Faculty Collaborator: Dr. David Kelley

A Human Use Index (HUI) is designed to differentiate how much humans have altered landscapes, and is useful in determining past and potential land use. The HUI for the United States was released in 2002, however the primary source for this index came from the Multi-Resolution Land Characteristics Consortium and used 1991-1993 data from the vintage Landsat Thematic Mapper (Landsat 5). By comparing the HUI to a classified image of recent satellite (Landsat 7) data I have found that many agricultural and forested areas in outer ring suburbs near metropolitan areas have become developed and that sections of the HUI data are somewhat inaccurate. With the use of geographical information system (GIS) and an image analysis program, a comparison can be made to identify and quantify any areas of change. Some of the suburban Twin Cities counties have experienced rapid population growth in the last ten years, so by looking at one of the counties one can infer that similar areas of inaccuracy can be expected in the HUI of other counties.

Krina Hoy

TITLE OF RESEARCH PROJECT: MICROSPECTROPHOTOMETRY FOR FORENSIC PURPOSES

Faculty Collaborator: Dr. Gary Mabbott

The goal of this work is to obtain spectra of an entire image through a microscope with the aid of a digital camera and computer software in order to analyze the dye of fibers. Spectroscopy can be used to find wavelength maxima absorbed and/or reflected by a fiber along with a specific wavelength profile at a particular point and has then been used to match the unknown dye of a fiber with a known dye in forensic labs. However, a conventional spectrometer cannot work with a single fiber.

In experiments thus far, a Variable Interference Filter was mounted directly underneath the eyepiece of the microscope and any sample being viewed through the lens will first be viewed through the filter. This filter helps us to specify the wavelength that is viewed. Also, a waveguide (in the form of Plexiglas) was found to reduced glare and spread light more evenly along the fiber.

Future experiments will include reconstructing spectra from different wavelengths using computer software (Igor Pro®). We are in the process of characterizing wavelength dispersion (change in wavelength with respect to pixel number) for each position of our filter and are currently experimenting with different methods of internally calibrating the intensity of the light illuminating the fiber and investigating the use of internal wavelength calibration standards.

Nicole Lanie

THE 17 PLANAR SYMMETRY GROUPS

Faculty Collaborator: Dr. Lisa Rezac

Goal: To provide a non-group theoretical proof, that restricts the possible wallpaper (planar) patterns to 17 distinct classifications. This has been done for the restriction to seven frieze patterns in the 2002 Belcastro and Hull article “Classifying Frieze Patterns Without Using Groups” in the College Mathematics Journal. The inspiration for this research stems from course work done in January of 2004 in the course “Arabesque: Mathematical Symmetry in Southern Spain”. Arthur L. Loeb’s book “Color and Symmetry” is the main guide for this research. He synthetically classifies the 17 configurations by the coexisting generating elements of each pattern or symmetry, and we diagram those arguments below. Further, we illustrate basic symmetries by showing these 17 classifications as evidenced in Islamic design found in Spain. Other work for this project includes establishing a website displaying this research.

Gail LeVesque

LOSS OF GREEN SPACE IN EAGAN, MINNESOTA

Faculty Collaborator: Dr. David Kelley

Over the past thirty years there has been a quantifiable change in land use in the city of Eagan, Minnesota. I have witnessed the loss of farm fields, open fields, and even small wooded areas. Eagan has been listed as a Star City for many years now, but it seems to be at a price. The population in the Twin Cities Metro Area and surrounding suburbs has increased at a great rate and has impacted the amount of green space remaining. This analysis of remaining green space in Eagan was developed using

Geographic Information Systems (GIS) and historic and current aerial photos and satellite images to locate the spread of commercial and residential development. Specifically, a Vegetation Index, a process by which living vegetation is differentiated from non-living materials, was applied to see how much green space has been lost or changed. The analysis shows that not only has there been a great loss of green space to development, but that there is not much more space to be developed in Eagan.

Mark Merda, James Hall, James Nelson, Pat Moberg

THE POWERSPHERE

Faculty Collaborator: Dr. Patrick Jarvis

Client-server applications form the foundation for much of information retrieval technology. Two-way, nearly real-time systems pose a number of interesting problems in both database design and network communications. High traffic systems - those with large numbers of clients and large numbers of request-response messages, are becoming more common in business applications. Our project was the design and implementation of an object-oriented, client-server system with a relational database backend that could achieve near real-time response in a high-traffic environment.

The resulting *PowerSphere* system is a three-tier system designed to function as an online lottery gaming enterprise simulating a typical state lottery game such as *Powerball.* Built using Java and Java Servlet Technologies with an Oracle database backend, the system is responsive, robust, and highly portable.

Drew Moore

DETECTING CHANGES IN IMPERVIOUS SURFACES, MAPLEWOOD, MN 1998 – 2001

Faculty Collaborator: Dr. David Kelley

The aim of this study was to identify the amount of increase in surfaces that are impervious to water and therefore increase potential runoff into surface water bodies. The amount of change was determined by classifying Landsat images of Maplewood from 1998 and 2001 and comparing the increase in areas classified as impervious surfaces. The impervious classification includes parking lots, rooftops, pavement, concrete, and any other surface that water cannot penetrate. As a result of land development, these surfaces have inevitably increased, as has the amount of runoff into local surface waters. The importance of this study lies in the potential for the degradation of water quality as a result of the increase in runoff. Any water applied to a surface, whether it is in the form of precipitation or irrigation, must be accounted for in some way. The water can evaporate into the atmosphere, be absorbed by vegetation, filter into the groundwater supply, or run off into surface water. With the decrease in vegetation and bare soil and increase in pavement that accompanies land development, more water is being carried into surface water bodies. As the runoff makes its way to the surface water, it can pick up and carry with it any number of agents, from pesticides and fertilizer to gasoline and motor oil, which degrade the quality of the water. In this study, the city of Maplewood was examined for the increase in impervious surfaces from September 1998 to 2001, years of accelerated growth for the area.

James Nelson

DYNAMIC 3D COMPUTER GRAPHICS AND ANIMATION

Faculty Collaborator: Dr. Patrick Jarvis

Two-dimensional (2D) and three-dimensional (3D) graphics are used in a variety of computer applications including computer aided design, simulation, and games. The purpose of this independent study is to explore and research the components of 3D computer graphics including the theory and application as applied to commercial products. The entire process of 3D computer graphics, including modeling, rendering, and animation, was explored. Some topics include splines and patches, rendering algorithms, 2D and 3D texture mapping, and interpolations.

Brian Petschel

REAL-TIME POLARIZATION DIFFERENCE IMAGING

Faculty Collaborator: Dr. Adam Green

There are many ways in which light carries information about its origin and the manner in which it reaches an observer. Variations in intensity and wavelength are the only methods that the human eye has to analyze photon flux. However, every photon carries with it polarization information that our human photo detectors are insensitive to.

Our project for the Physics Department at the University of St. Thomas was to devise a way to produce a real-time video image that displayed the difference between the horizontal and vertical polarization states while rejecting the common mode signal. This would provide us with information about the polarization state of light reflected from or transmitted through a medium. Information like this is extremely valuable for a variety of biomedical and machine vision applications.

Kristin Pins

ISLAMIC FEMINISM AND THE ISSUE OF THE VEIL

Faculty Collaborator: Dr. Pamela Nice

My research on Islamic feminism aims to refocus the lens with which Americans often view Muslim women and feminism as oppositional forces. Though this distinctly "Islamic" feminism is often misunderstood by Americans, some Muslim women see it as a way for them to procure their rights under Islam to better their economic position within their societies, while simultaneously liberating themselves from Western cultural domination. This separation from Western feminism is important to many Muslim women who want their feminist movement to come from among themselves. These women have been effectively working to shape a type of feminism that addresses their own needs within the context of culture and religion. Since the topic Islamic Feminism in itself encompasses a multitude of issues, I chose to concentrate on the issue of veiling or hijab, as it often arouses the attention of the American media and the public.

In order to address the primary issues and critiques surrounding Islamic feminism, I analyzed and compared the writings of four academically-recognized scholars in the field. With their issues in mind, I conducted a series of interviews involving ethnically diverse Muslim women from a variety of backgrounds. The interviews focused on questions regarding Islam in general, feminism, and the veil.

My project culminates in an analysis of points of agreement and contention between the current scholars on Islamic Feminism and the women I interviewed. My goal was to find patterns that may have emerged from my interviews, as well as to find areas where no general pattern was present at all, and compare my findings with the scholarly work.

Adam Rennaker, Matthew Toso, Catherine Micek, Eric Fazendin and Benjamin Werner

PREFIX MATCHING

Faculty Collaborator: Dr. Patrick Jarvis

Prefix matching has applications ranging from cryptography to network routing. The input set consists of a set of letters L and a set of valid prefixes W. Each letter L_i is associated with a subset of L from which the subsequent letter of the prefix formed by using L_i can be selected. The problem is to generate all valid prefixes from L.

Our design uses nearest neighbor selection, backtracking, and a *trie* data structure to generate the minimum number of test prefixes. The length of any generated test prefix is never more than one character longer than a valid prefix. The algorithm was implemented in both a sequential and parallel form.

Anagrams, crossword puzzles, Scrabble™, and Boggle™, are examples of word games to which our algorithm can be applied. As proof of concept, we implemented the word search done in Boggle™. Typical run times needed to generate all words in a Boggle™ grid using a standard Dell desktop computer ranged from 100 to 150 milliseconds when using a dictionary containing 170 thousand words.

Krista Sandford

CLASSIFICATION OF LAND USE CHANGES IN WASHINGTON COUNTY

Faculty Collaborator: Dr. David Kelley

This project is a classification of the change in land use in Washington County, MN, as a result of increased development. To find the percent of change in the land use, I used Landsat satellite images from 1998 and 2001 in Arc View, a Geographic Information System (GIS) computer application that helps analyze and map spatial data. My first step was to over lay the two images and to make sure that they are properly aligned. Next I classified both the 1998 and 2001 images independently using a standard Land Use/Land Cover classification system as a reference. After classifying both images, then I applied a change detection algorithm to find where the areas were that had the most change in land use. After finding where the changes occurred, I then quantified the areas and determined what they had changed from and then what they had become. I found that areas that were previously used for agriculture or had been rural had become urban residential areas.

Jonathan M. Smieja

APPROACHES TO SOLID CARBOHYDRATE DERIVATIVES WITH POTENTIAL NONLINEAR OPTICAL APPLICATIONS

Faculty Collaborator: Dr. William H. Ojala

Chemical research in the field of nonlinear optics is of active current interest because of its potential to produce new and useful electronic materials and devices. Nonlinear optical materials are those that, after absorbing light, then emit light of twice the original frequency. The compounds we have been examining have the potential to exhibit nonlinear optical activity because their molecules meet the requirements for this effect; they possess large dipole moments and they assume noncentrosymmetric packing arrangements in the crystalline state. In this project we are currently synthesizing and characterizing carbohydrate-based compounds such as monosaccharide formazans, sugar-substituted nitroanilines, and monosaccharide hydrazones. Formazans are prepared by treating a monosaccharide phenylhydrazone with a diazotized aniline; the use of a diazotized nitroaniline instead would produce a molecule having the large dipole moment required for nonlinear optical activity. The sugar-substituted nitroaniline derivatives we are attempting to crystallize are inherently polar due to nitroaniline's own dipole moment. The presence of the chiral (handed) sugar moiety requires the molecules to assume a packing arrangement in the solid state that is noncentrosymmetric. The monosaccharide hydrazones may not have large dipole moments themselves, but they bear a potentially reactive amino group that could be used to form a link to a polar molecule. We are continuing to prepare samples of each of these three types of compound with the goal of obtaining crystals of suitable quality for characterization by X-ray crystal structure analysis and evaluation of any nonlinear optical properties these compounds may possess.

Xong Thao

PREPARATION AND CRYSTALLIZATION OF "BRIDGE-FLIPPED" ISOMERIC MOLECULES

Faculty Collaborator: Dr. William H. Ojala

We have been trying to prepare pairs of isomeric compounds that are related by a "bridge flip," which is a reversal of the major parts of a molecule on the atoms that connect them. We have been preparing compounds called benzylideneanilines, which have a -CH=N- group that connects two rings. By in effect flipping this bridge over, we can prepare isomeric compounds that are related through the flipped bridge. After obtaining these bridge-flipped isomers, we want to find out if we can co-crystallize these compounds. Although different molecules would generally crystallize independently instead of as mixed crystals, the -CH= group may be similar enough in size and shape to =N- to allow the molecules of one compound to replace those of the other in the solid state. If we can co-crystallize these bridge-flipped isomers, we would have a new way of making solid-state materials. We might be able to adjust the properties of these mixed crystals by adjusting the amounts of the two bridge-flipped isomers in the mixture. So far we have been focusing on preparing and purifying the individual benzylideneanilines for co-crystallization experiments. In future work, we will also explore methods for determining the relative amounts of the isomers present in any co-crystals we obtain. We also hope to obtain crystals of suitable quality for analysis by single-crystal X-ray diffraction.

James Thielen

ULTRA-LOW LEVEL SIGNAL CONDITIONING UNIT

Faculty Collaborator: Dr. Adam Green

In our optics lab here at the University of St. Thomas, we frequently have to work with AC signals on the order of nanovolts with associated DC signals on the order of milivolts. This 10^6 asymmetry in signals is crucial to optical experiments that utilize reflected light. It is from this need that the Signal Conditioning Unit (SCU) was born.

The SCU uses two separate branches to handle the AC and DC components of the input separately.† Both branches have an independent gain selector. The DC branch also possesses a DC time constant stage. This stage introduces a delay into to the DC branch to match the delay of a lock-in amplifier, which is external but in series to the AC branch. The DC branch also utilizes a summing amplifier to null out undesired offsets.

The SCU will be a low cost solution to problems that before required much more expensive equipment such as optical choppers to solve. Its cost efficiency and versatility will make the SCU one of our most valuable pieces of lab instrumentation.

Matthew Toso

INFORMATION HIDING AND ZERO KNOWLEDGE PROOFS

Faculty Collaborator: Dr. Sun Chung

The goal of this project was to combine the concepts of steganography and zero knowledge proofs to implement a scheme that allows proofs of ownership of digital images without revealing any information.

Steganography is a field of research involving hiding information in "a seemingly innocuous cover message". For example, a private text message could be carried inside a digital image. A successful use of steganography involves transmitting information with no one but the receiver knowing that a hidden message exists.

Zero knowledge proofs are a novel method for proving identity or ownership. Under this scheme, possession of some information can be proved without revealing that information. Zero knowledge proofs eliminate the need for revealing private information to prove identity (such as a social security number or a credit card number).

I have been studying these concepts in depth and putting them in practice using some of today's technologies. I successfully implemented a Java program that proves isomorphism between two graphs without revealing this isomorphism to the verifier. Another application of these concepts includes developing a form of steganography to work with a JPEG image, a format common to the Internet. The study of steganography and zero knowledge proofs complement each other. For example, two graphs could be embedded in the JPEG image to which only the true owner could prove ownership by knowing their isomorphism.

Dao Yang

THROUGH THE EYES OF A MINORITY ENTREPRENEUR

Faculty Collaborator: Cathy Folker

In this project I have conducted interviews with four different minority entrepreneurs throughout the St Paul/Mpls area. Two of my clients are immigrants who fled during the Vietnam War. It is interesting to see the struggles that they had to face in a new country, from learning English to starting a new life. I had a set of specific questions that I needed to ask for each interview. For example, "What resources did you use to start your business?" or "Describe the challenges your business currently faces." The main object of these interviews is to determine the issues that minorities, women, and inner-city entrepreneurs currently have to deal with. Intriguing to find that some these entrepreneurs used their own source of capital to start their business. Some of them could not attain financial loans, so they depended on themselves and others to start their businesses. For the confidentiality of my clients I have made up names. Client A indicated that she did not know how to obtain a loan. The loan process for client A was complicated. She needed help in finishing the paper work, because she did not know how to complete it. Client B could not get a loan at all, because he had no credit history. These are some of the responses that I got back from the interviews.

The process of the project:
1. Given a list of clients
2. Contact them and setup interviews
3. Bring back the findings and reflect on what I learned

Conclusion: Overall the findings from my clients have concluded that minority entrepreneur women or men struggle with three main areas. 1. Low marketing and advertising for the business. 2. Some lacked higher education. 3. Some were incapable of obtaining loans. I saw from their own eyes the problems that they all faced. It showed me that minorities have a harder time starting their own businesses. Whether it is city zoning, language barrier, or lack of knowledge, some minorities have to learn by using the trial-and-error method.

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