UNDERGRADUATE STUDENT RESEARCH SYMPOSIUM

Ronald E. McNair Postbaccalaureate Achievement Program

“McNair - A program to increase the number of U.S. doctoral level scientists, engineers and mathematicians from underrepresented groups in the 21st century.”

University Research Experience (URE)

“URE - A pathway to graduate and professional degrees for students in the Math, Science and Engineering fields.”

APRIL 20, 2001
SCHOOL OF ARCHITECTURE GALLERY
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AGENDA

at
New Jersey Institute of Technology
School of Architecture Gallery

April 20, 2001

9:30 a.m.-10:00 a.m.  Judges meet

10:00 a.m. - 10:05 a.m.  Greetings

10:05 a.m.-11:45 a.m.  Judging

10:05 a.m. -12:00 p.m.  Student Presentations

11:45 am. - 12:10 p.m.  Judges Convene

12:05 p.m.-2:00 p.m.  Lunch and Awards Ceremony, SOA Loft
                  By invitation only
                  Wrap up
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<td>Dr. Judy Valyo</td>
<td>Dean</td>
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<td>Dr. Dana Knox</td>
<td>Associate Professor</td>
<td>Chemical Engineering &amp; Environmental Science</td>
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<td>Dr. James Grow</td>
<td>Professor</td>
<td>Chemical Engineering &amp; Environmental Science</td>
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<td>Dr. Joseph Strano</td>
<td>Professor</td>
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<td>Dr. Janice Daniel</td>
<td>Assistant Professor</td>
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OVERVIEW OF THE MCNAIR ACHIEVEMENT PROGRAM

The Ronald E. McNair Postbaccalaureate Achievement Program at New Jersey Institute of Technology (NJIT) prepares low-income, first-generation and underrepresented students who are enrolled full-time in the Newark College of Engineering, the College of Science and Liberal Arts and the Albert Dorman Honors College for doctoral study.

McNair Scholars are engaged in research and other scholarly activities with Faculty Mentors from their academic departments. Results of their research projects will be presented at professional meetings and conferences and published in peer review and other professional journals. Additionally, McNair Scholars will have the opportunity to participate in a wide array of workshops and activities to prepare them for doctoral study. The primary goal of the McNair Program is to increase the number of United States scientists, engineers and mathematicians who come from underrepresented groups and will enter the educational field.

McNair Scholars will have the opportunity to participate in summer research (either at NJIT or elsewhere) in their junior year of study. Senior McNair Scholars will have the opportunity to apply to national undergraduate research programs. All Scholars will receive assistance for applying to and enrolling in graduate school after obtaining a bachelors degree from NJIT. McNair Scholars may pursue their postbaccalaureate study at any higher education institution in the United States. The McNair Achievement Program is responsible for tracking the academic and career accomplishments of all Scholars after they graduate from NJIT.
OVERVIEW OF THE UNIVERSITY RESEARCH EXPERIENCE (URE)

Established in the 1990-91 academic year the University Research Experience (URE) program at New Jersey Institute of Technology provides technical assistance to EOP and students who have been historically underrepresented in graduate and doctoral degree programs in science, engineering and mathematics. Its undergraduate research component engages students, as early as their freshman year, in research projects with faculty mentors from their academic departments. Early in their academic years, URE undergraduate scholars are able to participate in teaching internships and workshops, and attend professional and disciplinary conferences with their faculty mentors and present their research efforts. In addition, URE provides advisement and assistance with the graduate school application process by helping students identify and apply for research, graduate and teaching assistantships as well as fellowships, grants and other types of federal, state and university financial aid. Additionally, URE provides support services such as counseling, career guidance and mentorship to its undergraduate and graduate students.

Since its inception, the URE program has helped to graduate close to 95 underrepresented and/or financially disadvantaged students with master’s degrees in engineering, mathematics, computer science and management. One of the students, graduated with a Ph.D. in Civil Engineering, and is currently a tenure track professor in the Department of Engineering Technology at NJIT. Another three students are enrolled in medical school at UMDNJ; one is in the Ph.D. program in Mathematics at Stevens Institute of Technology and another in The Education Administration program at Seton Hall University.

URE continues to provide underrepresented students with the research opportunities and mentorship they need to successfully enroll in and graduate from masters and doctoral degree programs. New Jersey Institute of Technology is committed to continuing this program trend well into the 21st century.
BENEFITS OF UNDERGRADUATE RESEARCH

- Supervised research by a Faculty Advisor/Mentor
- Academic guidance and personal mentorship
- Opportunity to work closely with master’s and doctoral students in their field
- Exposure to renowned researchers in academia and in industry
- Opportunity to assist in teaching at the collegiate level
- Opportunity to attend and present at professional meetings and conferences
- Opportunity to co-publish in peer review journals
- Assistance with the graduate school application process
- Assistance with the GRE preparation process
- Strong personal letters of recommendation from faculty members
- Help in developing public speaking and presentation skills
- Financial support during the academic year
- Workshops on report writing and oral presentations techniques
MCNAIR SCHOLARS & FACULTY MENTORS

Bradford Cangro
Senior
Electrical Engineering

Biographical Sketch
I was a member of the Student Senate in '98. I have been on the Judicial Board since '99, was chair for one semester. I was a part of Miniversity (freshman orientation) in summer of '98 and '00. I am a member of the Amateur Radio club since '98, and have served as Vice President and President. I have worked on campus for the Telecommunications and Networks department since '99. I did a co-op in spring 2000 with the U.S. Navy. During that co-op they sent me to England to work on a project. I have done volunteer emergency communications support for the New York City Marathon for 3 years. My current goals are to obtain my Ph.D., work in industry to do cutting edge R&D for a few years. After I am done in industry I would like to come back to teach at the university level, sharing my experiences in industry.

Research
Topic: Amateur Radio Simplex Phone Patch
Mentor: Dr. Joseph Strano

The purpose of this project is to create an Autopatch. This is a device that allows wireless communication between someone using CB-like equipment and another person using a regular telephone set. The device will be constructed using Ham radio equipment and standard telephone equipment. The benefits of using Ham radio equipment lie chiefly in the low cost of the equipment and being able to use the frequencies available to Ham radio users.

Herminio Febres
Senior
Chemical Engineering

Biographical Sketch
I am currently a senior at NJIT. I have been a member of the Albert Dorman Honors College since my freshman year and have made the Dean's list every semester of my academic career. I have also been the recipient of the 1999 National Starch Foundation scholarship and the 1999 Fluor Daniel Construction and Engineering scholarship. Finally, I completed undergraduate research over the summer by working in the Chemical Engineering Unit Operations Laboratory.
Herminio Febres Continued

My short-term academic and professional goals are to graduate from NJIT with a Bachelor’s degree in Chemical Engineering and then to complete graduate school with a Master’s degree in the same field. I would also like to obtain an internship before entering the work place to gain experience in the chemical engineering field. In the long-term, I see myself employed as an engineer, but would consider teaching chemistry in high school if the job market for chemical engineer decreases. Research at the undergraduate level will provide great insight into the amount of work, time and effort it requires to be successful in graduate school.

Research

Topic: The Use of Sonic Energy and Pneumatic Fracturing in Soil Reclamation
Mentor: Dr. Deran Hanesian

Unfortunately, the soil in many places has been contaminated with countless materials throughout the industrial world due to the improper maintenance of facilities, the improper disposal of harmful materials and carelessness. The use of sonic energy along with pneumatic fracturing is being studied at NJIT to learn if it is an effective means of removing volatile organic compound (voc's) pollution from the soil. Preliminary studies conducted by NJIT professors and former graduate students have shown that this method is a viable option in the removal of voc's from contaminated soil.

The purpose of this research is to continue experimenting and collecting data that will enhance our knowledge on the efficiency and effectiveness of sonic energy and pneumatic fracturing. Some experimental procedures that will be done are:

1. Using a siren through two slabs of rock and recording the intensity and frequency of the energy obtained with a sound meter and then a microphone.
2. Using a siren through air and recording the intensity and frequency of the energy obtained with a sound meter and a microphone.
3. Determining the maximum intensity of several whistles through a set distance in air.
4. Measuring the drying rate of soil in a tank using a whistle, then a siren.
5. Conducting long-range removal rate studies of contaminants in the field.

These experimental procedures and more will be performed in a laboratory setting. Any pertinent findings will then be applied in the field at a site in Hillsborough, NJ. The primary purpose of these studies is to prove that sonic energy does enhance the remediation time of soil contaminated with voc's. Finally, we expect to find the most efficient method of applying this technology within the soil fractures to maximize the evaporation rate of volatile organic compounds. This research will add to our knowledge of soil decontamination and provide a better means of cleaning any polluted sites. It will also encourage others to continue developing more cost-effective, safe and environmentally sound methods to treat polluted soil.
Marta L Gonzalez  
Senior  
Mechanical Engineering  

Biographical Sketch  
I am currently a senior in the Mechanical Engineering department at New Jersey Institute of Technology (NJIT). During my experience in the university, I have developed a strong academic background and evolved to become a good engineering student. I have been a member of the Hispanic Organization for Students in Technology; in addition I was part of the advertisement committee for the Society of Hispanic Professional Engineers during 98’-99’ academic year. I have received honors such as the Dean’s List, Cynthia Pruett Scholar, Arthur D’ Espies Scholarship, Educational Opportunity Program academic performance award, and the McNair achievement program at NJIT. The McNair research program allowed me to work during the summer and complete research at the Gesture and Movement Dynamics Lab. I am currently working in a research project at the Flow Control Lavatory. My short-term goals are to graduate from NJIT with a Bachelor’s degree in Mechanical Engineering and obtain as much experience in the field to apply my skills in real life situations.  

Research  
Topic: Controlling Dust Flow With the Use of Small Jets  
Mentor: Dr. Nadine Aubry  
In the pharmaceutical industry different processes create great amount of dust. To control the powders that are harmful in the production of medicines. This experiment will include a set up of small jets, air ducts, and exhaust fan that will control the dust created by the powder. The dust will be created with cornstarch because it will not hannelful to our health. The first step in the project is to fabricate a mixing of powders, so that the levels of dust exposure could be measure. Various tests will be developed to determine how effective is the use of small jets in the system.  

Joseph Hinksmon  
Senior  
Chemical Engineering  

Biographical Sketch  
I am 22 years old and currently pursuing a BS in Chemical Engineering at the New Jersey Institute of Technology (NJIT), with a minor in Mathematics. I’m a member of American Institute of Chemical Engineers (AIChE), Tau Beta Pi, American Chemical Society, Sigma Nu Fraternity, and Arnold Air Society. I’ve held the offices of secretary and president for the AIChE student chapter at NJIT and I am currently the president of Omega Chi Epsilon. I have conducted research with Dr. Carol Venanzi on Computer-Aided Design of Molecules Potentially Useful in the Treatment of Cocaine Abuse. The research was presented at AIChE meetings at Columbia University and in Dallas, TX. My
most recent work has been supported by the Ronald McNair Achievement Program at NJIT working under the advisement of Dr. Robert Luo on Chiral Synthesis and Separation of Unnatural Amino Acids. The Chemical Engineering Department and the Newark College of Engineering have honored me with the Outstanding Senior Award. I will begin full-time work with Merck Research Laboratories this summer and enroll in a part-time graduate program the following January.

Research

Topic: Chiral Synthesis and Separation of Unnatural Amino Acids  
Mentor: Dr. Robert Luo

Amino Acids are crucial to most biological functions. Many of the amino acids used in pharmaceutical drugs are not found natural in our environment. It is important to develop efficient methods for the synthesis of the unnatural amino acids. The product of a successful synthesis will most likely contain enantiomers of the desired amino acid. Following the synthesis, the separation of the specific enantiomer is necessary. Production of highly pure amino acids is very profitable for pharmaceutical companies. The intent of this research is to synthesize and separate L-homophenylalanine. The preparation takes place through a three-step process. 2-bromoethyl benzene is reacted with diethyl acetamidomalonate in a sodium/anhydrous ethanol solution. The product is hydrolyzed and then a carboxyl group is removed. The final product is then easily converted to L-homophenylalanine by the removal of another carboxyl group from the protected amine.

Tracy John  
Junior  
Chemical Engineering

Biographical Sketch

I’m currently a junior majoring in chemical engineering. I was born and raised in New Jersey. I live with my two younger sisters and my parents in Piscataway. At NJIT, I’m involved with the Student Activities Council, Caribbean Student Organization, American Institute of Chemical Engineers, and Tau Beta Pi. Along with the participation of these clubs, I have received awards from the university. These include the Chemical Engineering Merit award, Dr. Otto H. York Scholarship, Marcalus Memorial Scholarship, NJIT Women’s Leadership Award, and the Undergraduate Research Experience Award. After graduating from NJIT, I want to pursue graduate school to have a career in research.
Tracy John Continued

Research

Topic: Recovery of Intracellular Materials By Electroporation
Mentor: Dr. Robert Luo

Electroporation is a technique used to introduce foreign molecules like DNA by delivering shocks and intense electric pulse. The electric pulse creates transient holes in the cell membrane. Once the holes are open, the materials are inserted into the cell and then the membrane is resealed.

This method of electric shocks will now be used to do the opposite result. Instead of entering materials, it will be used in the recovery of intracellular materials. Once electroporation is an established procedure to recover materials, it will be a benefit to companies by reducing the steps required for purification of desired products.

A procedure was created to release intracellular proteins by electroporation. Two strains of Escherichia coli were used. The E. coli Pulser subjected the E coli cells in L. B. medium to high voltage electric pulses. The electric pulse created transient holes in the cell membrane, which allowed the release of intracellular materials. Based on the data collected, future work is needed to increase the percentage of intracellular materials recovered.

Mustafa Korkmaz
Senior
Computer Information Science

Biographical Sketch

Currently, I am a senior majoring in computer science and minoring in math at New Jersey Institute of Technology.

My short- term goal is getting my Ph.D. in 5 years, and my long- term goal is being one of the men who will land the surface of the Mars probably in 15-20 years. Therefore, I have set my goals and I plan to get an internship in Jet Propulsion Center in California this summer.

My accomplishments so far consist of me being a member of the Albert Dorman Honors College, a recipient of merit scholarships, a All American Scholar for the last two years, nominated to be on the All USA Academic Team and finally to become a McNair Research Fellow.

Research

Topic: Dynamic Database Management System

The purpose of this research project is to provide or mimic organizational structure and enforce the constraints according to organizational hierarchy. The current company design provides a flat structuring system. In this system every hierarchical object is appended under Facility ID. If a company is multi-layered, current system may not suit the needs of this company. This research produced the validation techniques and new database structure design techniques.
Biographical Sketch

I am a Senior Chemical Engineering student graduating this upcoming May. I am originally from Jordan and have been in New Jersey for 10 years. I was involved in many extracurricular activities in high school. I am also currently involved in many extracurricular activities in college such as the Student Senate, the Arab Student Association (ASA), the NJIT soccer team, and Kappa Xi Kappa Fraternity. I have held offices such as secretary, Vice President and currently the President of the ASA and Kappa Xi Kappa Fraternity. I am also a member of Phi Eta Sigma Honor Society and Order of Omega Greek Honor Society. I have also received honors such as the Exxon Merit Award, NJIT Scholar Athlete Award, and the Dean’s List. I took a course last year (Transport I) and the course included problems dealing with fluidized beds and fluid flow. I was never able to clearly understand what a fluidized particle was or what it was supposed to do until I walked in the lab and saw exactly what happens when a particle is fluidized. This research has already contributed to my academic work and I believe that the more research I do, the stronger I will become in my academics. Meeting different colleagues from different backgrounds at the professional meetings that I attended helped me have a better and broader understanding of my field. I am sure that this research will contribute greatly to my understanding of the basic fundamentals of chemical engineering and help me prepare for research at the graduate level. My long-term academic goal is to achieve a Ph.D. degree. After I accomplish the degree I would like to do some research and become a professor at the collegiate level.

Research

Topic: Dry Particle Coating
Mentor: Dr. Robert Pfeffer

At NJIT, in the Particle Technology Center laboratory, there are several devices used for dry particle coating. In dry particle coating, smaller fine or guest particles are directly attached onto the surface of larger host or core particles without the use of binders or solvents. In this research several dry coating devices will be studied. These devices are the Magnetically Assisted Impaction Coating device (MAIC), Mechanofusion, the Hybridizer and the Rotating Fluidized Bed Coater (RFBC). All these devices are similar in that they impart very high mechanical forces to the host and guest particles, allowing the impinging of the guest particles onto the surface of the larger host particles.

The main focus of this research will be the processing of several combinations of host and guest materials to examine and understand the mechanism of coating in each device. Also, several characterization techniques will be used to evaluate the coating performance of each device. Some of the techniques to be used are the Scanning Electron Microscope (SEM) to study the surface morphology and angle of repose (AOR) to measure the changes in the flowability of the powders, before and after coating.

This research has already affected my knowledge of the chemical engineering field. I took a course last semester (Transport I) and the course included problems dealing with fluidized beds and the flow of fluids. I was never able to clearly understand what a fluidized particle was or what it was supposed to do until I walked in
Saman Mazahreh Continued

the lab and saw exactly what happens when a particle is fluidized. This is only one of many examples of improvements in my academics and I look forward to many more.

Ulysses McCormick
Junior
Computer Engineering

Biographical Sketch

I am a junior at New Jersey Institute of Technology majoring in Computer Engineering, Information Technology and a minor in Management. During my freshman year I became an active member of National Society of Black Engineers, NSBE and contributed to the reactivation of the organizations newspaper. That same year I received the New Member of the Year award. As a new student I wanted to experience all that college life had to offer, so I continued to join other organizations such as the NJIT ambassadors club, the Honors College, volunteer groups and professional societies like IEEE, also I was president of the Greek Letter Council. Currently, I am the vice-president and Greek council representative for the Phi Beta Sigma fraternity and I work with the multi- lifecycle research department on campus as a program tester on a current engineering project. All of these activities have greatly helped me to improve my speaking skill’s I feel that doing research will improve my computing and academic skills.

My career goal is to graduate from NJIT with a degree in Computer Engineering and Information Technology. I plan to go to graduate school for my MBA. I feel that my greatest challenge and personal goal is to strengthen my public speaking skills and to advance my computer knowledge.

Research

Mentor: Dr. John Carpinelli

The purpose of this project is to aid students having difficulty visualizing how computer components work can interact with an online program that simplifies and demonstrates how a CPU functions. The simulations will focus on the following areas: Very Simple CPU design, Direct Memory Access Controller, Programmable Logic Devices, Computer Arithmetic Hardware, Cache Memory, and Virtual memory. My focus will be to program the Direct Memory Access Controller. DMA speeds up computing performance by creating a direct connection between I/O devices and the hard drive. My focus will be to program an applet that demonstrates how this works. The programs will be written as Java applets without proprietary extensions. This will allow the simulator to be run on any computing platform (Windows PC, Mac, UNIX/Linux) using a Java-enabled web browser. This standard will also make it easier to share code among the different simulators. Each simulator will also include an online users guide. The simulators and their source code will be made available without cost under the terms of the GNU Public License.
Marie Phillips
Senior
Electrical Engineering

Biographical Sketch

My name is Marie Phillips, and I was born on September 3, 1979, in St. Andrew, Jamaica. When I came to the America, I attended Park Avenue School from kindergarten to sixth grade, where I had violin lessons, and performed in school plays. From the seventh to eighth grade I attended Orange Middle School, I played in the school band and drama club. I attended Orange High School from the ninth to twelfth grade and during my years there I was on the honor roll and participated in various extracurricular activities such as: the softball team, debate team, honor society, tennis team, and the March of Dimes.

Currently I attend New Jersey Institute of Technology as a senior majoring in Electrical Engineering. While maintaining the Dean’s list I have actively participated in the women’s soccer team, University Research Experience, tutoring elementary children, Caribbean Student Organization, Haitian Student Association, and the African Student Association. I look forward to gaining some practical experience that will assist me in building confident in myself, enhancing my research skills and career goals.

Research

Topic: Device Analysis and Characterization
Mentor: Dr. Dugra Misra

Characterization of submicron CMOS transistor parameters such as threshold voltage, channel mobility (transconductance) and sub-threshold current will be carried out as a part of the activities in the Device Laboratory. Silicon-silicon dioxide interface defects in a MOS transistor will also be studied in this work. A common approach to investigate the interfacial defects is the detection of the filling/emptying of its localized quantum states by measuring the capacitance of the MOS device as a function of applied bias, which gives the capacitance versus voltage (C-V) characteristics. The majority of the electrically active intrinsic defect at the as grown Si/SiO2 interface is so-called Pb-center modeled as dangling silicon bond on a silicon atom. Defects at the Si/SiO2 interface can trap charge and contribute to C-V characteristics. If the response time of such traps is fast enough the capacitance will increase when interface states are present. Current-voltage (I-V), high frequency and quasi-static capacitance-voltage measurements will also provide distribution of interface state density the energy gap.
Cheryl M. Reid  
Senior  
Electrical Engineering

Biographical Sketch

As a senior at New Jersey Institute of Technology I have decided to major in the field of Electrical Engineering. I have chosen this field as a career choice because technology is increasingly becoming one of the major aspects of society. Each individual living in the 21st century greatly depends on technology; from the video games we play for leisure, to the x-ray machines we use in our medical facilities. Technology has had great impacts throughout the global world; therefore, I have a strong desire to contribute to new innovations in the technological world.

I am excited and challenged at the thought of creating and designing equipment that can help each individual to live a more sophisticated and fulfilling life. As an Electrical Engineer I would have the knowledge to develop equipment that can help police officers fight crime to creating technology that allows someone to feel the material of an image being displayed on the computer monitor.

I am currently a member of Albert Dorman Honors College and participate in various clubs on campus. I have also received various awards for my academic achievements and involvement in the NJIT community. These awards include the Educational Opportunity Program (EOP) Highest GPA Award, NACME Corporate Scholars Award, Merck Scholar, and a National Society of Black Engineer (NSBE) Torchbearer Award. I believe that I have demonstrated my leadership abilities through participation in various school organizations such as Intervarsity Christian Fellowship and National Society of Black Engineers. My desire to serve my community prompted me to become a member of Alpha Kappa Alpha Sorority, Inc. As a former Vice President of my chapter I was responsible for developing community service programs that benefited the Newark community and surrounding areas.

In the Fall of 2001, I will be attending Georgia Institute of Technology. I will be pursuing a Ph.D. in the field of Electrical Engineering with a specialization in Optics. My long-term goal is to eventually become a professor. I believe that teachers have a significant impact on America’s future; becoming a professor is one of the ways I plan to positively contribute to society. A professor that truly cares can have a tremendous impact on a student’s life. An excellent teacher can motivate the most timid and insecure student to become the best student in the class, and I plan to do just that.

Research

Topic: Measurement of Photoconductor Materials with Short Lifetimes  
Mentor: Dr. Roy Cornely

The main objective of this project is to design an experimental apparatus that is capable of accurately measuring the lifetime of optically generated carriers in photoconductor...
Cheryl Reid Continued

materials. The materials that will be tested are GaAs grown at low temperatures. The crystal structure of GaAs grown at low temperatures has a high amount of crystal defects. These defects result in the material having recombination centers at the grain boundary surfaces that causes lifetimes to be significantly less than single crystal GaAs which is approximately a nanosecond. The short lifetimes in poly GaAs will be difficult to measure and required a sophisticated experimental setup. It is very important that the lifetime of these materials be accurately measured so that their potential as ultra-high-speed opto-electronic switches can be assess.

Conrad C Reynolds Jr.
Senior
Information Science

Biographical Sketch

I am a senior at the New Jersey Institute of Technology. My major is Information Systems with an interest in e-commerce management. I am 21 years old and presently employed part-time at Public Service Electric and Gas (PSEG) as a desktop technician. I am apart of the Ronald E. McNair Program where I am currently engage in research. My research is in the area of Web Mining. I am currently working on a demographic analyzer that will allow the automated collection of demographic information like name and email from homepage available on most of today’s most popular search engines. I hope to see the time where business and individuals can use this to help them gain a better understanding of their clients and their needs. I think that this system will help that a possibility in the future.

Research

Topic: Web Mining: Demographic Analyzer
Mentor: Dr. Richard Scherl

Many businesses in this day see the Internet as a medium for obtaining information about potential customers. More people than ever before have homepage where they would put information like their name, email and areas of interests. While these homepages are available today, companies are interested on how they can obtain customer information from these sources. Businesses want to obtain this valuable information to increase their marketing reach in an inexpensive and legal manner. Responding to this, my project is the design of a demographic analyzer that will obtain demographic information from these homepages. The demographic analyzer is one part of the overall Web Mining system. The demographic analyzer goes through individual homepages often found in major web search engines like Yahoo. Using the analyzer, information from individual homepages will go into a database where it is matched with websites and companies according to their stated demographic and interests content. The analyzer presents a way to go through a homepage and obtain information based on set parameters and conditions that will automatically not consider extraneous or inappropriate information. The goal of the demographic analyzer is to obtain useful and accurate information that can help businesses and individuals to reach more customers than they could otherwise.
Rohan Ricketts  
Senior  
Chemical Engineering  

Biographical Sketch

In 1996, I was accepted at New Jersey Institute of Technology, where I am currently pursuing a Bachelors degree in Chemical Engineering. I chose this field based on my interest in chemistry and love of technological development and the ways in which it enhances human life though the methods of producing common products. My work experience includes two summer internships at Hoffmann-La Roche, Roche Pharmaceuticals in Nutley, New Jersey in the departments of Sterile and Liquid Productions Technical Operations and Quality Management Microbiology Validation. These companies gave me the opportunity to develop and sharpen my leadership skills as a project leader and assistant supervisor on large projects.

I am currently a member of the Albert Dorman Honors College and member of various organizations which include: Inroads, National Society of Black Engineers, Caribbean Students Organization, and American Institute of Chemical Engineers. I have received various awards for my academic achievement including the Dean's List, Edward J. Bloustein Distinguished Scholar, a National Society of Black Engineers Torchbearer, and Hess Foundation award nominee.

After obtaining my Bachelor's degree in Chemical Engineering, I plan to work in the pharmaceutical industry for a few years before returning to pursue a Master's and a Doctorate degree in the same field. With my Doctorate degree the stage will be set for me to pursue my long-term goals in research, development and academia. As a member of the McNair program, my long-term goal will be realized.

Research

Topic: The Use of Sonic Energy and Pneumatic Fracturing in Soil Reclamation
Mentor: Dr. Deran Hanesian

Unfortunately, the soil in many places has been contaminated with countless materials throughout the industrial world due to the improper maintenance of facilities, the improper disposal of harmful materials and carelessness. The use of sonic energy along with pneumatic fracturing is being studied at NJIT to learn if it is an effective means of removing volatile organic compound (voc's) pollution from the soil. Preliminary studies conducted by NJIT professors and former graduate students have shown that this method is a viable option in the removal of voc's from contaminated soil.
Rohan Ricketts Continued

The purpose of this research is to continue experimenting and collecting data that will enhance our knowledge on the efficiency and effectiveness of sonic energy and pneumatic fracturing. Some experimental procedures that will be done are:

1. Using a siren through two slabs of rock and recording the intensity and frequency of the energy obtained with a sound meter and then a microphone.
2. Using a siren through air and recording the intensity and frequency of the energy obtained with a sound meter and a microphone.
3. Determining the maximum intensity of several whistles through a set distance in air.
4. Measuring the drying rate of soil in a tank using a whistle, then a siren.
5. Conducting long-range removal rate studies of contaminants in the field.

These experimental procedures and more will be performed in a laboratory setting. Any pertinent findings will then be applied in the field at a site in Hillsborough, NJ. The primary purpose of these studies is to prove that sonic energy does enhance the remediation time of soil contaminated with voc's. Finally, we expect to find the most efficient method of applying this technology within the soil fractures to maximize the evaporation rate of volatile organic compounds. This research will add to our knowledge of soil decontamination and provide a better means of cleaning any polluted sites. It will also encourage others to continue developing more cost-effective, safe and environmentally sound methods to treat polluted soil.

Shreyas Shah
Senior
Computer Information Science

Biographical Sketch

I am a senior at New Jersey Institute of Technology, majoring in Computer Science and minoring in Applied Mathematics. I am a member of the Phi Theta Kappa International Honor Society. I have also received honor of being America's outstanding College Students, the National Dean’s List 1998-99. I have been on the Dean’s List for the last three semesters and maintained a Cumulative Grade Point Average of 3.67 and 3.80 in the major Computer Science courses. I am also in the BS/MS program at NJIT.

My short-term academic and professional goals are to graduate with a bachelor's degree in Computer Science and to move on to a Masters degree in the same major. My long-term academic objective is to strive to become a great professional with a PhD degree.

In conducting research in the field of Software Engineering with faculty mentors at the undergraduate level, I will gain a wealth of experience and intelligence from them as they provide me with advice and guidance through the research process.
Shreyas Shah Continued

Research

Topic: The Benefits of the Use Case and Business Process Reengineering Methodologies
Mentor: Mr. Osama Eljabiri

The main objective of this project is to utilize USE CASE methodology in the Business Process Reengineering (BPR). A good Use Case based model requires a BPR attempt that brings major internal and external quality increases, as a result increasing value for both for the employee and the customer.

My research in this area will focus on explaining what Use Cases and BPRs are and detailing how to use them and when they are useful. My research will highlight the usefulness of these topics to larger organizations and in general detail their benefits.

Pinhai Shen
Senior
Computer Information Science

Biographical Sketch

I am a senior and currently enrolling in Computer Science BSIMS program. I worked as a teaching assistant and tutor for NJIT University Learning Center. I have tutored incoming freshmen in computer science and upper division student’s assembly language in C++ during the academic year. I also have worked with the Dean of Engineering at NJIT, and I am working on creating spreadsheet, layout design, graphics, and performing clerical duties.

I believe in myself more than the average person would believe in themselves, this attitude has allowed me to be more independent in accomplishing various tasks. I was a Vice-President of United Mom’s Charity Youth Group and a Vice-President/Secretary of Chinese Students Association. I am also a founder of Dynasty Motorsports Club and vice-president of NJIT Hip-Hop Society.

My short-term goals are to get certified in C++ and obtain my BS Computer Science degree. My long-term academic goal is to strive to become a great professional with a PhD. Degree. I want to get a PhD. degree because I enjoy doing research and independent study. I think knowing the process of research can help me to perform better in my academic courses. I believe that I want research to be a part of my future profession, and I will take advantage of any opportunities that can help me reach my goals. I believe my involvement in research at the undergraduate level will help me to develop my skills for post baccalaureate study.
Pinhai Shen Continued

Research

Topic: Digital Libraries  
Mentor: Dr. Golgen Bengu

All information retrieving on the Internet is by entering meaningful text into search engines. However, this type of searching technique will only return full text documents. But if you are searching for graphics or images then articulate to a search engine will not do any good. In this case objects recognition is the only way to solve the problem in image searching. Digital Library is a concept of grouping a collection of images by objects and retrieve wanted images from large image database. To implement this concept, the core knowledge of image processing and vision perception fundamentals is a must. For example, some of the concepts are edge detection, image filtering, and interpreting pictures in artificial intelligent. I will be implementing test programs to perform object recognition and image retrieval from an existing image database. To date, the literature has been surveyed with the objective of image content grouping and image filtering.

Jose Sousa Jr.  
Junior  
Chemical Engineering

Biographical Sketch

I am a Junior Chemical Engineering student, with an interest in obtaining a minor in Chemistry or Mathematics. I was born in Portugal and came to the US in 1990. I speak Portuguese and Spanish and I can understand a bit of Italian.

As far as my experiences as a student at NJIT, I can certainly say that my time has been well spent with such professional organizations as ACS and AIChE (American Institute of Chemical Engineers). I currently serve as Vice-President of NJIT's student chapter of AIChE and have also held the office of Secretary. I certainly hope to rise to the rank of President and lead the Chapter to yet another Outstanding Chapter Award and, thus, continuing the chapter's legacy. I have received honors such as the NJIT Faculty Scholarship, the ABB Lummus Global Scholar Award, the National Starch & Chemical Co. Scholar Award, the Chemical Engineering Merit Award, the Hess Foundation Special Scholarship, the Ottoman York AIChE Distinguished Award, the Edward J. Bloustein Distinguished Scholar Award, the ACS Project SEED College Scholarship, the Urban Scholar Award, the Luis M. Pinto Memorial Scholarship, and the Independent Student Research Award.

I plan to enroll in the BS/MS program and obtain my MS in Chemical Engineering and obtain my Ph.D. in Chemical Engineering. Future career goals and plans include consequential research (hopefully leading to patents and useful applications) in one of the following industries: environmental, petrochemical, pharmaceutical, or proprietary chemical technologies.
Dry particle coating is a process by which small guest particles are impacted on the surface of the larger host particle. The result is a product whose properties have been selectively modified by the coating. In this study, dry particle coating is used to examine the feasibility of increasing the sintering temperature and the attrition resistance of alumina (host) by the application of a monolayer (discrete or continuous) of SiC (guest). Other host-guest combinations might also be attempted.

The host particles are coated with the guest particles using the Magnetically Assisted Impaction Coating (MAIC) device. In this device, the impaction of magnetic particles with the host and guest particles results in dry particle coating. Samples are processed to different system and operating conditions to achieve the required degree of particle coating.

The coated products are examined using several characterization techniques. An analysis of the changes in sintering temperatures is conducted for uncoated and coated particles using the dilatometer. To examine the attrition resistance of the coated particles, these products are fluidized in a conventional vertical fluidized bed for varying processing times. Changes in the particle-size distribution are then measured by means of particle size analysis subsequent to being run in the fluidized bed. Further investigation might require the analysis of the surface viscosities of the coated particles using the dilatometer. The catalytic support (alumina) must exhibit high attrition resistance and sintering temperature (deactivated sintering) for increased efficiency of the catalyst.
Cheryl Williams Continued

Phi Theta Kappa Committee and the Albert Dorman's Honors College. These previous honors have blessed me with an exciting opportunity, The McNair Program. I am looking forward to participating in this program, as an undergraduate, to obtain research experience, presentation skills, but most importantly, to find the area of interest that I would like to pursue at the post-baccalaureate level.

My short-term goals are to graduate by May of 2004, to study for my GREs and to apply to graduate programs. My long-term goals are to attend a graduate program at Stanford or Cal Tech. Professionally, I want to make a difference in the world and a difference in people's lives.

Research

Topic: Evolution Of Artificial Life Through Cellular Automata
Mentor: Dr. Dennis Blackmore

Many researchers have investigated Conway's Game of Life. This is not a game for a person to play. Instead, it is computer program that simulates life and death of artificial life. The simulation is dependent upon rules and stages that are defined by the researcher. I will be developing my own model of the Game of Life. The purpose is to study cellular automata by using a computer simulation and the dynamical systems theory to characterize evolutionary trends, such as, periodic behavior, bifurcations and chaotic theory. The objective is to analyze the trends between mutating entities and transforming environments.
McNair Faculty Mentors

Dr. Denis Blackmore
Mathematical Science

Denis Blackmore is a Professor of Mathematical Sciences at the New Jersey Institute of Technology (NJIT), and was a Visiting Member of the Courant Institute of Mathematical Sciences during 1989-90 and 1997-98. He is a co-founder of the Center for Applied Mathematics and Statistics at NJIT. While conducting his own research in dynamical systems and differential topology, he has also devoted considerable time to collaborative research with scholars in various science and engineering disciplines. His research in fluid mechanics, computer-aided design, manufacturing science, mathematical physics, biology, and control theory reflects his interests in applications of mathematics. He has published over 100 scientific papers, co-authored/co-edited two books, is co-writing a Springer-Verlag monograph on infinite-dimensional dynamical systems, and has received substantial support from the NSF and ONR for his research.

Professor Blackmore received his Ph.D. in Mathematics in 1971 from the Polytechnic University of New York. He also earned an M.S. in Mathematics and a B.S. in Aerospace Engineering from the same institution. His research as a student was in the areas of boundary layer theory and the qualitative theory of differential equations.

He is a member of Sigma Gamma Tau, Tau Beta Pi and Pi Mu Epsilon, and of the AAAS, ACS, AMS, GAMM, MAA, NYAS and SIAM. Dr. Blackmore was named a Man of the Year for 1997 and 1999 by the ABI, is listed in numerous Who’s Whos and in 2000 Outstanding Scholars of the 20th Century, and was nominated as an International Man of the Millennium by the IBC. In addition to his research, for which he received the Harlan Perlis Award in 1993, he is devoted to instruction and has won awards for his teaching. He has created more than a dozen graduate and undergraduate courses and was instrumental in developing the M.S. and Ph.D. programs in mathematical sciences at NJIT.

Dr. John Carpinelli
Electrical & Computer Engineering

John D. Carpinelli received the B.E. in Electrical Engineering from Stevens Institute of Technology in 1983, and the M.E. in Electrical Engineering and Ph.D. in Computer and Systems Engineering from Rensselaer Polytechnic Institute in 1984 and 1987, respectively. Since 1986 he as been with the Department of Electrical and Computer Engineering at the New Jersey Institute of Technology. He has served as the Associate Director and Director of Computer Engineering, and as Acting Associate Chairperson of the ECE Department, and is currently a member of the Gateway Engineering Education Coalition’s Governing Board. Dr. Carpinelli is the author of the textbook “Computer Systems Organization and Architecture”, published in 2001 by Addison Wesley Longman. His research interests include interconnection networks, computer architecture, parallel processing, distance learning and computer simulation. He has developed several simulation packages for use in undergraduate and graduate courses, both for distance learning delivery and face-to-face instruction.
Dr. Roy Cornely  
Electrical Engineering

Dr. Roy Cornely joined the New Jersey Institute of Technology in 1971 as an Assistant Professor and was promoted to Associate Professor in 1980 and Full Professor in 1984. He directed the activities of the Drexler Thin Microelectronics Laboratory from 1974 until 1996. Beginning in June 1989, he worked for fifteen months as a visiting research scientist at Bellcore’s Solid State Science and Technology Research Laboratory on the fabrication of micron-sized three-dimensional structures in silicon using advanced integrated circuit processing technologies. His other interests are presently low-power high-speed electronics, and thermal and optical semiconductor-based systems for detecting low level radiation and temperature. Dr. Cornely has 37 technical publications, 17 technical presentations and 4 patents.

Dr. Cornely received the esteemed Robert W. Van Houten Award for Excellence in Teaching. He has been an active member of the Affirmative Action/Human Relations Awareness program and his innovations in teaching, he received NJIT’s Cullimore Service Award at the May 1995 Commencement exercise. Dr. Roy Cornely has served as a mentor to undergraduate students in research laboratory for the past four years. He has been an advocate for tutoring services for ethnic/racial minority students in danger of failing his courses.

Mr. Osama Eljabiri  
Computer & Information Science

Mr. Osama Eljabiri received his Masters degree in Information Systems in 1999 from the Arab Academy for Banking and Financial sciences in Jordan. He ranked first with distinction, achieving the highest GPA since the beginning of the information systems program in his school. His Masters thesis in the area of software engineering was nominated for the best research award. Mr. Eljabiri received his BS degree in chemical engineering from Kuwait University in 1986.

Mr. Eljabiri was employed as executive manager at a multinational industrial company (United Industrial Group Corp. – Jordan) 1993 -1997 where he led information systems projects including software development, industrial automation, ISO quality assurance project, and internet-related projects. He is certified as an ISO 9000 internal auditor. His managerial experience includes training staff, supervising administrative and technical departments. This experience exposed him to a variety of real world business problems as well as computer-based problem solving approaches.

Mr. Eljabiri also has teaching experience in business skills, business process reengineering, research methods and software engineering as he conducted series of training programs for his employees and several workshops at the graduate school level.

Mr. Eljabiri is an instructor of software engineering and software engineering related courses at NJIT since 1999. His teaching experience includes teaching CIS490 (Guided Design in Software Engineering), CIS491 (senior project), CIS390 (system analysis and design), and CIS485 (independent research).

Mr. Eljabiri has developed new approaches in teaching software engineering, which integrate aspects of interdisciplinary thinking, business data mining, fourth generation techniques, web engineering, and innovation with modern teaching methods. He believes that understanding specific student’ requirements, well-thought course design
Mr. Osama Eljabiri Continued

and careful implementation, continuous motivation and enjoyment, and personalization are the most vital aspects in the learning process. Consequently, he developed a number of educational methods and tools to create an atmosphere of excitement and interactivity in class.

Mr. Eljabiri research interests include software engineering, requirements engineering, business process reengineering, project management, web engineering, object-oriented methodologies, and CASE tools technologies. His current research work is focused on developing a “software reengineering” method to make a considerable change in the business value of software systems in organizations.

Dr. Deran Hanesian
Chemical Engineering

Deran Hanesian has taught Chemical Engineering and Chemistry at New Jersey Institute of Technology since 1963. He served as the Department Chairman from 1975 to 1988. Deran received his Bachelors Degree in Chemical Engineering in 1952 and his Doctoral degree in Chemical Engineering in 1961 both from Cornell University.

Dr. Hanesian worked for the DuPont Company from 1952-1957 as a production development engineer and from 1960 to 1963 as a research engineer in market development. He taught at the Algerian Petroleum Institute, Algeria in 1978, the Yerevan Polytechnic Institute (currently the State Engineering University of Armenia), Republic of Armenia, and 1982 to 1983 at the University of Edinburgh, Scotland, U.K., 1981.

In 1988, he became associated with the Center of Plastics Recycling Research at Rutgers, The State University of New Jersey as a consultant. Dr. Hanesian spent a sabbatical leave there during the 1989-90 academic year where he served as the Acting Deputy Director of the Center. Simultaneously, he was engaged as the Collections Project Manager. He served there until 1993 when funding was reduced and the Center was about to close. He spent several summers as a consultant to numerous other firms. Dr. Hanesian has been active in research and has published and presented the results of his effort at national and international meetings. Recently, he was a part of a team engaged in using sonic energy coupled with soil fracturing and vapor extraction for the remediation of contaminated soil. The results of this effort have led to a patent issued on November 16, 1999.

Dr. Robert Luo
Chemical Engineering

Dr. Robert Luo was an Assistant Professor in the Department of Chemical Engineering, Chemistry and Environmental Science. He holds a PhD. Degree in chemical engineering from Lehigh University. His research interests are in the area of bioprocesses. He has published numerous papers in journals and conference proceedings, and holds one patent. Dr. Luo served as the Preprint Volume Coordinator for the 1997 American Institute of Chemical Engineering (AIChE) Topical Conference on Separation Science and Technologies. He has also chaired bioseparation technical sessions at AIChE annual meetings.
Dr. Robert Luo Continued

While at NJIT, Dr. Luo worked on developing processes and technologies for biochemical separations and purification's, including recombinant DNA products, natural products, food processing processes and pollution prevention. Past projects included: scale-up, modeling, computer simulations and optimization of liquid chromatographic separation processes; biopharmaceutical downstream process design, innovation and integration; and pyroxene removal from biological solutions by means of filtration and absorption.

Dr. Durga Misra
Electrical and Computer Engineering

Dr. Durga Misra is an Associate Professor in the Department of Electrical and Computer Engineering. He received his Ph.D. in Electrical Engineering from the University of Waterloo in 1988 in the field of silicon devices and circuits. He joined NJIT in 1988, and since that time has become a PI on more than 20 industry and federal grants in CMOS/BICMOS circuits and devices totaling over $1 million. He has successfully directed a number of projects including one in low power memory circuits sponsored by NSF in NJIT’s cleanroom. In his research program, he has supervised many graduate and undergraduate research fellows.

Dr. Robert Pfeffer
Chemical Engineering

Dr. Robert Pfeffer is currently a distinguished Professor of Chemical Engineering who holds BS, MS and PhD degree from New York University. Dr. Pfeffer joined the NJIT faculty as Vice President for Research and Graduate studies in 1992 after a distinguished academic and administrative career at the City College of CUNY. He has been a prolific researcher and has received numerous honors in addition to being an active member of AIChE. Dr. Pfeffer has been principal or co-principal investigator of thirty-eight research grants from various governmental research agencies. In addition, Dr. Pfeffer has been an author or co-author of over 100 technical papers as well as having mocked numerous presentations in the area of particle technology. Currently he directs several graduate and undergraduate students in research in particle size modeling.

Dr. Richard Scherl
Computer & Information Science

Richard Scherl is currently an Assistant Professor in the Department of Computer and Information Science at the New Jersey Institute of Technology. His main area of specialization is artificial intelligence (in particular automated deduction, and knowledge representation). His other interests include cognitive science, computational linguistics, knowledge-based systems and decision support systems.

Professor Scherl received his Ph.D. from the Department of Computer Science at the University of Illinois in 1992. His thesis was on a method of automated deduction for Modal Logic. Prior to joining NJIT in the Fall of 1994, he spent two years working as a Postdoctoral Fellow in the Department of Computer Science at the University of Toronto,
Dr. Richard Scherl  Continued

where he worked with the Cognitive Robotics Group. The primary focus of this research group is the logical foundations for representing and reasoning about actions and their effects.

Currently, Professor Scherl is continuing his work on both automated deduction and knowledge representation and reasoning. He is also involved in an NSF funded research project on applying a logic of causality to problems in auditing. Additionally, he is involved in a project on the development of intelligent web-based recommender systems. This latter project is funded by the New Jersey Commission on Science and Technology.
MENTORING UNDERGRADUATE STUDENTS

When advising undergraduates, you might be asked to help select courses, to suggest work experiences, and to provide guidance as to the many science or engineering careers that are available. Many young students lack sufficient experience to imagine what kind of work they might do as professionals. Don't assume that students know something just because it is obvious to you. One of your goals for students is to provide a “map” to the terrain that they might some day encounter.

Early concerns. Some students, especially if they are the first in their families to attend college, fear that they lack the ability or preparation to become scientists or engineers. Gently probe the student’s level of interest and most-satisfying activities. Introduce a student with low self-confidence to another student or a colleague who faced similar challenges. Pay special attention to motivation, which might be more important than background in deciding a student’s success or failure. In addition, beware of letting your own assumptions or biases distort your opinion of a student’s potential.

An undergraduate might enjoy science and mathematics without knowing how to choose a major. You can help by posing fundamental questions: What have you most enjoyed in life? What are you good at? Do you like abstract problems or hands-on activities? Suggest early exposure to a range of courses, summer jobs or internship, and work-study experiences. Encourage them to explore many options by talking to other students at all levels and to professionals about their careers.

Course work. Encourage students to take courses that they enjoy or that can lead to new fields of study. The undergraduate years offer the opportunity for experimentation with fields of knowledge. As their career unfolds, they might work outside their field, outside research, or outside their native country; courses in business, psychology, public policy or foreign language might open new doors; courses in arts and humanities will provide breadth and perspective. On the other hand, students also should learn the importance of focus and depth in some field.

Urge the student to seek practical experience. Eventual hiring decisions are often influenced more by students’ accumulated laboratory experiences, computer skills, or industrial training than by the courses they have taken. A reference from someone who has worked with the student in a practical context carries additional weight. A volunteer summer position with a good teacher or laboratory might be worth more than a summer job that pays well but teaches little, even if this involves short-term financial sacrifice.

Undergraduate research. Encourage undergraduate students to perform a research project, whether with you or a colleague; so that they better understand the practice of science. This experience is valuable regardless of the career path chosen. If you are the research advisor, help the student find a well-planned project that interests both of you and that can be completed in a defined period.
Work with the student to set up a clear timeline for completion of research. Set high but realistic goals; it is very important to select a project that has a good chance of success. Define your own responsibilities, including regular feedback and evaluation. Make connections between coursework and the literature.

For the committed student, such a project can have lasting influence, whether the student goes on to graduate school or directly into the workforce. Do not, however, place undergraduates in research posts without evaluating their fitness and desire to perform the work. And do not assign undergraduates to a pilot program or an untested method. Research that is poorly conceptualized or executed might be worse than no research experience at all. If a student does have a poor research experience, try to explain the reasons; a student who understands the causes of failure is less likely to suffer permanent career damage.

Your broader challenge is to interpret a research experience in the context of the student's total education. The primary purposes of student research are to master techniques, to learn to think critically, to acquire strategies for problem solving, and to learn the importance of patience and perseverance in the unpredictable context of research.

**Contemplating graduate school.** How can you tell whether a student has what it takes for graduate school? The usual indicators are references, course records, test scores, and success in undergraduate research. But don't be afraid to use your intuition: Do you detect the energy of curiosity and motivation? The truly motivated student will probably find a way to succeed.

On the other hand, the rigorous environment of graduate school is not the place for hesitant students to avoid the "real world" or to pass time while deciding what to do with their lives. Graduate study requires high levels of commitment and ability.

*Excerpts from, Advisor, Teacher, Role Model, Friend.* National Academy Press, 1997
ADVICE FOR MENTORS

For most people, good mentoring, like good teaching, is a skill that is developed over time. Here are a few tips for beginners and experienced mentors:

- **Listen patiently.** Give the student time to get to issues they find sensitive or embarrassing.

- **Build a relationship.** Simple joint activities - walks across campus, attending a lecture together - will help to develop rapport. Take cues from the student as to how close they wish this relationship to be.

- **Don’t abuse your authority.** Don’t ask students to do personal work such as typing or mowing lawns.

- **Nurture self-sufficiency.** Your goal is not to “clone” yourself but to encourage confidence and independent thinking.

- **Establish “protected time” together.** Try to minimize interruptions by telephone calls or visitors.

- **Share yourself.** Invite students to see what you do, both on and off the job. Tell of your own successes and failures. Let the student see your human side and encourage the student to reciprocate.

- **Provide introductions.** Help the student develop a professional network and build a community of mentors.

- **Be constructive.** Critical feedback is essential to spur improvement, but do it kindly and temper criticism with praise when deserved.

- **Don’t be overbearing.** Avoid dictating choices or controlling a student’s behavior.

- **Find your own mentors.** New advisors, like new students, benefit from guidance by those with more experience.

*Adapted from, Advisor, Teacher, Role Model, Friend. National Academy Press, 1997.*
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The McNair and the University Research Experience (URE) programs offer special thanks to all those individuals contributed to the success of today's symposium. We especially want to thank the Scholars who worked diligently to prepare for today's presentations; the Faculty Mentors who give so generously of their time and expertise to work with these students; the Deans and Department Chairs of the schools who took part: Dr. S.T. Mau, Dean, Newark College of Engineering and the College of Science and Liberal Arts; Dr. Joel Bloom, Vice President, Academic and Student Services and Dean of the Albert Dorman Honors College; the Minority Academic Careers (MAC) Undergraduate Research Fellowship Program; the Alliance for Minority Participation (AMP) of the Philadelphia Consortium; the Transfer Grant Program; the Educational Opportunity Program (EOP); the Student Support Services Program; and the other administrators and funding sources without whom these research opportunities would not exist for such bright and deserving students.

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