

January 1, 2012

Dear High School Educator,

**I have an exciting opportunity to share with you and your students.**

As part of our effort to familiarize students in the community with the growing field of imaging science, the Chester F. Carlson Center for Imaging Science at RIT is providing an opportunity for a limited number of qualified students to participate in our Summer Internship program.

This program is open to students who will complete their junior year of high school by June 2012 and are interested in pursuing a career in math, science, computers, or engineering. Students selected as interns will earn a stipend while working on research in areas such as remote sensing, space weather, medical imaging, visual perception, ancient document restoration, or astronomy, under the guidance of professional RIT imaging scientists. The experience will also provide an opportunity for interaction with other students from surrounding school districts who have similar interests and ambitions.

Please distribute copies of the enclosed application packet to interested junior-year students for return to the address shown above no later than **4:00 p.m., February 24, 2012**. In addition, please stress to your students that any applications which are not complete and at RIT by that deadline will not be considered by the selection committee.

Interviews of those applicants chosen as finalists will take place at RIT during the week of April 16th. Students selected as interns for summer 2012 will be notified by April 30th. The internship will begin July 9th and run through August 24th. Student work schedules will be flexible, and planned family vacations will be accommodated.

If you or your students would like more information about the program, please feel free to contact me by e-mail at [choate@cis.rit.edu](mailto:choate@cis.rit.edu), or by phone at 475-5665. You can also visit our internship web site at <http://www.cis.rit.edu/interns>.

As an educator you're in a unique position to encourage students to take advantage of opportunities which will help them prepare for college and careers. As a past intern myself, I believe this program is a great way for interested students to experience the exciting exploration and technological developments that are occurring in the field of imaging science. Thank you for your assistance in encouraging your students to apply to this innovative program. I look forward to hearing from them.

Sincerely,

Bethany Choate  
Senior Associate for Outreach and Communications

# Application for Summer Internship

Chester F. Carlson Center for Imaging Science

College of Science  
Rochester Institute of Technology

Return all items on the application checklist to the following address:

Intern Selection Committee  
Chester F. Carlson Center for Imaging Science  
Rochester Institute of Technology  
54 Lomb Memorial Dr.  
Rochester, NY 14623-5604

**ALL MATERIAL MUST BE AT RIT NO LATER THAN 4:00 P.M., FEBRUARY 24, 2012.**

Applications submitted after this date will not be considered.

## APPLICATION CHECKLIST

\_\_\_\_\_ Applicant Information Sheet

\_\_\_\_\_ Short Answer Questions

\_\_\_\_\_ Essay

\_\_\_\_\_ Copy of a lab report from any of your science classes

\_\_\_\_\_ Official transcript for all high school classes, **including first semester of junior year\***

\_\_\_\_\_ Two letters of recommendation\*

\* May be sent directly to the selection committee by the counseling office or person writing recommendation – does not need to be included in package submitted by applicant. Must still meet the submission deadline of 4:00 p.m., February 24, 2012.

Questions regarding this application may be directed to Bethany Choate at her office phone number, 475-5665. She can also be reached by e-mail at choate@cis.rit.edu.

**APPLICANT INFORMATION**

Applicant's name:

Street Address:

City, State, Zip:

Phone number:

Birth Date (Month, Day, Year):

E-mail address (please print or type CLEARLY):

**(NOTE – ALL APPLICANTS MUST HAVE AND USE AN E-MAIL ADDRESS IN ORDER TO BE CONSIDERED FOR THIS PROGRAM. ALL COMMUNICATION WITH APPLICANTS WILL BE VIA E-MAIL.)**

School:

Science teacher's name:

Where/how did you hear about this internship?



**ESSAY**

Please provide a one page (typed) essay describing your academic and career goals. In this essay, please elaborate on your reasons for choosing these goals and why you feel this internship will help you achieve them.

## Center for Imaging Science Research Groups

The following are the research groups within the Center for Imaging Science that will **most likely** be hiring interns for this summer. In each case, a short description of the tasks you may perform is included. This is not an all-inclusive list – other tasks may be added from time to time. Training will be provided for these tasks as required. Please feel free to contact the individual(s) listed for more information about these groups and the nature of the interns' responsibilities. **Note that other research groups, not listed here, may additionally decide to hire interns for the summer of 2012.**

### 1. REMOTE SENSING

Known as the Digital Imaging and Remote Sensing (DIRS) group, these scientists are involved in collecting and analyzing images of the earth taken by specialized airborne or spaceborne cameras, usually for various environmental purposes. Students working in this area may be involved in “field collects” (ground-based measurements as sensors are flying overhead), cataloging or analysis of data, computer-based scene simulation, or other related tasks. Point of contact is Mrs. Nina Raqueno (475-7676, [nina@cis.rit.edu](mailto:nina@cis.rit.edu)).

### 2. ULTRASOUND IMAGING

Ultrasound imaging research centers on the development of technologies (both hardware and software) that could potentially improve the ability of ultrasonic imaging devices to provide useful clinical information to physicians. Research in this area has included investigation of “non-contact” ultrasound systems, techniques for analytically extracting meaningful data from ultrasonic “speckles,” use of ultrasound to characterize the structural properties of building materials, assessment of ultrasound as a clinical tool to characterize skin abnormalities, and the development of computer routines to merge ultrasound images with those of other imaging modalities. Students working in this area may be involved in preparation of various samples for measurement, or the collection and processing of data from these samples. Point of contact is Dr. Maria Helguera (475-7053, [helguera@cis.rit.edu](mailto:helguera@cis.rit.edu)).

### 3. VISUAL PERCEPTION

Scientists in the Visual Perception Laboratory make use of eye-tracking devices to understand the subconscious visual “strategies” people use when performing various tasks. Research in this area includes an investigation of how people go about finding hidden objects in a cluttered scene, and experiments which provide insight on the specific elements of an image which are most important when a person assesses image quality. Students working in this area may be involved in collecting and preparing images for use in experiments, assisting with experiments involving human subjects, and cataloging data arising from such experiments. Point of contact is Dr. Jeff Pelz (475-2783, [pelz@cis.rit.edu](mailto:pelz@cis.rit.edu)).

#### 4. MAGNETIC RESONANCE IMAGING (MRI)

Magnetic resonance imaging is a method of creating images based on the fact that different materials respond differently at the atomic level to the presence of very strong magnetic fields. While MRI is often used to create images of the interior of the human body for the purpose of diagnosing and treating medical problems, it also has non-clinical applications. Students working in this area may be involved in preparing samples of various materials for imaging, scanning the samples under prescribed conditions to produce images, and organizing collected data. Point of contact is Dr. Joe Hornak (475-2904, hornak@cis.rit.edu).

#### 5. ASTRONOMICAL IMAGING

RIT scientists are involved in capturing, processing, and analyzing images of astronomical objects at various wavelengths to better understand stellar and galactic evolution. Specific research includes analysis of images of planetary nebulae (or dying stars) from satellites such as the Chandra X-ray Telescope and the Hubble Space Telescope. Students working in this area will help process and catalog these images for use in published research. Point of contact is Dr. Jake Noel-Storr (475-2521, jake@cis.rit.edu).

#### 6. SPACE WEATHER

RIT scientists are working to develop a strategy for an “all clear” sensor for use on Mars after the completion of a “space storm.” Since space weather storms are invisible and silent, it will be critical to a base of people on Mars to know when a space weather storm has subsided and it is safe to return outdoors. The student would work with NASA and colleagues at Rochester General Hospital to collect data on different types of detectors and match their properties to the characteristics of space weather storms. It is possible that a detector based on this work will be flown on the International Space Station. Point of contact is Dr. Roger Dube (475-5836, dube@cis.rit.edu).

#### 7. HISTORIC DOCUMENT RESTORATION

RIT imaging scientists have been involved in imaging a number of documents with cultural and historic significance. These documents include the oldest known transcription of the works of Archimedes, 750 year-old palm leaves with sacred Sanskrit prayers, rare maps of the new world, and the oldest complete copy of the New Testament. Students working in this area will help develop a web-based system to organize and catalog the images of these documents. Point of contact is Dr. Roger Easton (475-5969, easton@cis.rit.edu).