Although most Americans know little about it, this scientific field deals with everything from technology to medical emergencies.

Putting geography on the map

Sam Ying, whose parents were both geographers, is following in their footsteps as an undergraduate student at UCSB.

By LEAH ETLING-STENZEL
NEWS-PRESS STAFF WRITER

Sam Ying’s parents were geographers, so she knew the science was about more than just maps almost as soon as she could walk. Their research into disease and emergency response in various cities made the multidisciplinary field part of her life.

“When my classmates heard that my parents were geographers when I was in fifth grade, their first response would be: ‘They know what’s the capital of Oslo?’” the 21-year-old recalled.

Ms. Ying is an undergraduate at one of the top geography departments in the nation—UCSB, ranked fourth in the nation by the National Academy of Sciences. The reputation is attributed to an emphasis on technology, a broad-based interdisciplinary approach and some of the best faculty in the country.

The credentials are impressive, but the work is as big a mystery to most Americans as the federal budget.

Last week, a National Geographic study found that just 13 percent of people between 18 and 24 could identify Iran on a map, and test scores show younger Americans may grow up to be even more topographically challenged — in a 2001 test administered by the U.S. Department of Education, one in three fourth-graders couldn’t find their own state. Ms. Ying knows that mainstream America has little interest in the intricacies of the science, but she is also aware that geography plays an integral role in our everyday lives. For example, her parents’ work as “medical geographers” could help solve the problem of how often ambulances transport children to the hospital after medical emergencies.

The emphasis at UCSB is on high-tech geography rather than traditional overviews of regions and resources. Graduates get jobs in government, environmental management, and tech industries. While

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UCSB graduate uses research to help blind

By LEAH ETLING-STENZEL
NEWS-PRESS STAFF WRITER

When Jen-Fin Marston’s life took a very unexpected turn at age 41, he decided to go back to college.

Diagnosed with macular degeneration, a disease that erodes vision at sometimes rapid rates, Mr. Marston could no longer work for the Chicago-based surveying company he once ran. He needed something new to do with his life.

Eight years later, he has just received his doctorate from UCSB’s geography department, where a colleague of his adviser shared a bit of wisdom: “You don’t have to have sight to have vision.”

Although he can still see peripheral objects fairly well, things in the center of Mr. Marston’s view disappear. He decided to use his doctoral research to help people with even more severe visual impairments, using geography.

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Putting geography on the map

Although most Americans know little about it, this scientific field deals with everything from technology to medical emergencies

11/29/02

By LEAH ETLING-STENTZEL

Santa Barbara News Press STAFF WRITER

Sam Ying's parents were geographers, so she knew the science was about more than just maps almost as soon as she could walk. Their research into disease and emergency rates in various cities made the multidisciplinary field part of her life.

"When my classmates heard that my parents were geographers when I was in fifth grade, their first response would be: 'They know what's the capital of Ohio?' the 21-year-old recalled.

Ms. Ying is an undergraduate at one of the top geography departments in the nation -- UCSB, ranked fourth in the nation by the National Academy of Sciences. The reputation is attributed to an emphasis on technology, a broad-based interdisciplinary approach and some of the best faculty in the country. The credentials are impressive, but the work is as big a mystery to most Americans as the federal budget.

Last week, a National Geographic study found that just 13 percent of people between 18 and 24 could identify Iraq on a map, and test scores show younger Americans may grow up to be even more topographically challenged -- in a 2001 test administered by the U.S. Department of Education, one in three fourth-graders couldn't find their own state.

Ms. Ying knows that mainstream America has little interest in the intricacies of the science, but she is also aware that geography plays an integral role in our everyday lives. For example, her parents' work as "medical geographers" could help save lives because it examines how often ambulances transport children to the hospital after medical emergencies. The emphasis at UCSB is on high-tech geography rather than traditional overviews of regions and resources. Graduates get jobs in government, environmental management, and tech industries. While students rarely pick geography as their major right out of high school, they often choose the science after learning about the job opportunities.

University researchers are working on a U. N. Web site to analyze rainfall data from Africa for the last 30 years, a navigational backpack for the blind that gives directions audibly as the person
walks and a wearable computer that would allow scientists to easily collect data while doing field work. That's just a small sample. The geography department collects up to $10 million in funding for research each year, a huge haul for spatial science. Project Battuta, the wearable computer, is named for a 14th-century Arab explorer who chronicled his travels throughout the Muslim world of Africa, Europe and Asia. "If you had to imagine somebody making and wearing a computer, Ibn Battuta was a great role model," said geography department Chair Keith Clarke.

The department is working on their second version of the prototype, with a GPS receiver sewn into the wearer's clothing that allows the computer to bring up detailed maps as well as online databases of information about the area. The "screen" is attached to eyeglasses, and a map appears as though it were floating in the user's field of vision. Now the scientists are determining what people prefer when using the system, such as whether they want the map to rotate as they turn, or if they prefer hand signals or voice recognition for typing.

UCSB's National Center for Geographic Information and Analysis is one of three centers in the nation on the forefront of geographic computing work. The future of geography may lie in such programs, because they can churn out tons of detailed information about places, people and patterns. It's already proven to be a valuable tool for Santa Barbara County and other governments. Local databases developed by Mr. Clarke and others show forecasts of various Santa Barbara scenarios given policies of high growth or no growth. They can hypothesize housing prices, employment availability, and quality of life indexes for decades.

Geographic information systems also play a role in the development of location-based services, which allow the user to get fast information about the immediate area. The technology is expected to boom in the next few decades. Originally, GIS meant mostly maps, especially those belonging to the U.S. Forest Service, which sought to incorporate their information on other resources. As technology improves, more maps and information are brought into the fold. One computer simulation relevant to Santa Barbara imagines what would happen if a fire started in the congested Mission Canyon area. On the screen, tiny dots representing homeowners' cars start to trickle out on the roads, quickly flooding the available exits. After creating the system, UCSB graduate students worked with homeowners in the community to come up with better escape plans.

"(Geography) is a lot deeper and wider than most people would give credit for," said professor Dan Montello, vice chair of the department. "It's not memorizing capitals."

That's what many undergraduates who come to UCSB may think, especially if their high school didn't take a progressive look at the subject. Mr. Clarke said introductory classes have to start at almost a remedial level. "It's disappointing from our point of view because it's a missed opportunity," said Mr. Clarke. The "four weeks in fourth grade" that American students spend on geography is insignificant, he said, and results in college students "who have never encountered that latitude and longitude is a pair of numbers." When students enroll in a geography class, it's usually to satisfy a general education requirement and fit a hole in their schedule. Sometimes, they find a fascination for it. There are 210 undergraduate and 88 graduate students in the department, and the university hopes to swell the graduate ranks to 100 for more assistance with teaching and research. The professors believe the lack of even a basic grasp of geography should be a cause for concern in America, and they've worked hard to sell the field to incoming students. "It has kind of gotten lost in this country," said Mr. Montello. "So there's been an attempt to show how much more interesting and engaging and relevant the field really is."
UCSB graduate uses research to help blind

11/29/02

By LEAH ETLING-STENTZEL

NEWS-PRESS STAFF WRITER

When Jim Marston's life took a very unexpected turn at age 41, he decided to go back to college. Diagnosed with macular degeneration, a disease that erodes vision at sometimes rapid rates, Mr. Marston could no longer work for the Chicago land surveying company he once ran. He needed something new to do with his life.

Eight years later, he has just received his doctorate from UCSB's geography department, where a colleague of his adviser shared a bit of wisdom: "You don't have to have sight to have vision." Although he can still see peripheral objects fairly well, things in the center of Mr. Marston's view disappear. He decided to use his doctoral research to help people with even more severe visual impairments, using geography.

His adviser was Reginald Golledge, who is legally blind and has developed a talking navigation system contained in a backpack. Mr. Marston's dissertation took blind and sighted people to San Francisco to test a device called Talking Signs, which uses infrared signals to tell those who can't see where an approaching bus or train might be going. A small hand-held device about the size of a cell phone picks up signals emitted from transmitters in the bus or other vehicle.

Sitting outside a State Street coffeehouse, Mr. Marston pointed to the waterfront trolley. If it had a transmitter, he would hear: "Shuttle to Stearns Wharf." Extra programming could include the price and schedule. Mr. Marston decided to attend the UCSB geography department because of its high ranking and broad range of projects, but said he never realized just how much geography can aid the visually impaired.

"If you're sighted, you can just give a map and some good directions, but that doesn't work for a blind person," he said. Now that his dissertation project is complete, he has received post-doctoral money to test Global Positioning Satellite systems, which can help the blind by reading their location and giving directions. Though the technology wouldn't replace guide dogs or canes, Mr. Marston believes it can be invaluable for increasing mobility, and could help inform peoples' "mental maps" when new businesses open or construction changes a neighborhood street.

"People with disabilities often have a different usable space that's part of the geography but no one else sees," Mr. Marston said.