The University of California, Santa Cruz, a public research university and one of the ten campuses of the University of California System, invites applications and nominations for the position of Dean of the Jack Baskin School of Engineering. In concert with the campus community, the Dean will be an innovative and experienced scholar and organizational leader who will further elevate the visibility, national prominence, and academic excellence of the School. Reporting to the Campus Provost and Executive Vice Chancellor, the successful candidate will be tasked with growing academic programs, supporting the ongoing success of the School’s faculty, staff, and students, and building partnerships of distinction locally, regionally, and abroad.

UC Santa Cruz (UCSC) is a public university like no other in California, combining the intimacy of a small liberal arts college with the depth and rigor of a major research university. One of five divisions within UCSC, the Baskin School of Engineering (BSOE) is similarly unique. Unlike more traditional engineering schools across the country, the BSOE is focused on the future of the high technology sector, with seven departments offering a variety of bachelor’s, master’s, and PhDs in areas ranging from Applied Mathematics and Statistics to Games and Playable Media. The School also boasts enviable strength in Bioengineering and Robotics Engineering. It is home to nearly 200 faculty and staff, 1,840 undergraduate majors, and 492 graduate majors, 72 percent of whom are working towards a PhD.

UC Santa Cruz has earned national and international distinction as a university with high-impact research and an uncommon commitment to teaching and public service. In their 2015 rankings, the Times Higher Education review ranked UCSC first in the world—tied with MIT—for research impact and U.S. News & World Report ranked UCSC as 35th overall among national public universities. Nestled among hillside redwoods overlooking the coastal city of Santa Cruz, California, UCSC’s 2013-2014 enrollment was 15,088 undergraduates and 1,455 graduate students.

The new Dean will provide thoughtful leadership for the Baskin School as it continues to identify future areas of growth and continues to build strong interdisciplinary connections across its departments, the university, and externally with industry partners. In particular, s/he will address the following set of key opportunities and challenges:

- Build consensus around a compelling future vision and strategic direction
- Further strengthen and build top-tier academic programs
- Empower and support faculty to reach their utmost potential
- Grow the financial resources of the Baskin School of Engineering
- Be the external ambassador for the School

A more complete description of the desired qualifications and characteristics of the Dean of the Jack Baskin School of Engineering can be found at the conclusion of this document, which was prepared by the Search Committee with the assistance of Isaacson, Miller, a national executive search firm, to provide background information and detail the key opportunities and challenges related to the position. All confidential applications, inquiries, and nominations should be directed to the parties listed at the conclusion of this profile.

Isaacson, Miller
About the University of California, Santa Cruz

Since its inception, UCSC has been dedicated to excellence in undergraduate education, graduate studies, and research. Although UCSC has grown continually since its founding in 1965, it remains the second smallest of the ten universities in the University of California System. UCSC is known as a particularly friendly, intimate campus that emphasizes a balance between high-quality instruction and research. Also known for its world-class facilities and one of the most visually spectacular settings in higher education, UCSC provides unparalleled opportunities for students to learn through hands-on experience. Commitments to environmental stewardship and community engagement are also central to UCSC’s core values.

The UCSC main campus consists of approximately 2,000 acres of land overlooking Monterey Bay. Its 558 buildings (including residential and leased facilities) provide approximately 5.9 million gross square feet of space. UCSC leases over 164,000 square feet of space at nine different locations in Santa Cruz, and two locations in Silicon Valley. The campus has research facilities located on Monterey Bay (the 73-acre Marine Science Campus about two miles from the main campus and the 483-acre Monterey Bay Education Science and Technology Center near the City of Monterey, California); at Lick Observatory on a 3,600-acre site atop Mount Hamilton in San Jose, California; and at NASA Ames in Silicon Valley. UCSC oversees more than 5,000 acres of natural reserves, and provides instruction in the Silicon Valley via UC Santa Cruz Extension. UCSC also manages a performance-based task order research contract between NASA Ames and the University of California at the University Affiliated Research Center (UARC) in Mountain View.

UCSC has four academic divisions (Arts, Humanities, Physical and Biological Sciences, and Social Sciences) and one professional school (the Jack Baskin School of Engineering). It offers baccalaureate degrees in 60 majors in the arts, engineering, humanities, physical and biological sciences, and social sciences, and master's degrees, doctoral degrees, and graduate certificates in 41 academic fields. Beyond its academic programs, the university also encompasses more than two dozen research centers and institutes including the UC Observatories and Lick Observatory, Center for Agroecology and Sustainable Food Systems, Center for Global, International, and Regional Studies, Center for Cultural Studies, Dickens Project, Institute for Humanities Research, Center for Biomolecular Science and Engineering, Center for Adaptive Optics, Institute for Geophysics and Planetary Physics, Institute of Marine Sciences, the Santa Cruz Institute for Particle Physics, the Santa Cruz Center for International Economics, the California Institute for Quantitative Biomedical Research, the Center for Information Technology Research in the Interest of Society, and more. UCSC also administers a $300 million contract with the San Jose-based NASA Ames Research Center and is developing research and educational partnerships with several corporations and academic institutions. In 2014, UCSC placed 12th in the annual Leiden Ranking, which measures the scientific performance of 750 major universities worldwide.

The campus draws its undergraduates and graduate students from throughout the state, the nation, and the world, with nearly half hailing from the Monterey Bay Region, Santa Clara Valley, and the San Francisco Bay Area. Currently, about 91 percent of the students at UCSC are undergraduates enrolled in one or more of UCSC’s 60 undergraduate majors. More than 46 percent of classes at the university have fewer than 20 students. UCSC offers instruction in the traditional fall-winter-spring quarters, as well as during the summer and through off-campus programs such as Education Abroad and UCDC at the University of California Washington Center. The student-faculty ratio at the university is 18:1, and 36.4 percent of students in the graduating class of 2013 were first generation college students. More than one third of the 2014 freshman class are students from ethnic backgrounds that have been traditionally underrepresented within the UC system – African-American/Black, American Indian/Alaskan Native, and Hispanic ethnicities. UC Santa Cruz is now a Hispanic Serving Institution member of the Hispanic Association of
Colleges and Universities, with 30 percent of undergraduates identifying as Hispanic or Latino, well above the required 25 percent to qualify.

In its nearly 50 years of existence, UC Santa Cruz has earned national and international recognition for quality research and world-class teaching. Faculty include two of the University of California’s honored University Professors, 24 members of the American Academy of Arts and Sciences, 14 members of the National Academy of Sciences, and 33 members of the American Association for the Advancement of Science. In addition, faculty members have received honors including a Benjamin Franklin Medal in Electrical Engineering, the Urey Prize in Planetary Science, a Kavli Prize in Astrophysics, the Weldon Memorial Prize, and the Bower Award and Prize for Achievement in Science. UCSC researchers have achieved international acclaim with world-leading research ranging from the development of dark matter theory to the publication of the first working draft of the human genome. This year, UCSC ranked first in the world—tied with MIT—for research influence in the Times Higher Education rankings, as measured by citations per scholarly publication. UCSC has previously been ranked first nationally for per-paper research impact in physics and fifth for research impact in the space sciences according to Science Watch. The university was also ranked third in the nation for faculty productivity for doctoral programs in both music and environmental health engineering in the Chronicle of Higher Education.

In 2011-12, UCSC generated $1.3 billion in economic activity within the Monterey Bay Area. This supported over 15,750 jobs for area residents, and is by far the largest employer in Santa Cruz County. In addition, UCSC faculty, staff, and students contribute approximately one million hours of community service, which represents an economic value of more than $12 million to the local economy. Approximately 280 nonprofit organizations in Santa Cruz County rely on the Student Volunteer Center for student help, and 44 percent of all UCSC students participated in community service or volunteer activities in 2012.

The total operating budget for UCSC for 2013-2014 was $633.2 million, with $145.6 million coming from the State of California and $191.4 million coming from tuition and fees. More than half of total funding goes toward instruction, research, and library operations. UCSC researchers received $132 million in external contracts and grants in 2012-13. The University is also engaged in a comprehensive campaign that has a campaign goal of $300 million in private support by 2018.

UCSC is led by Chancellor George R. Blumenthal, a distinguished scholar and academic leader with a long tenure at UC Santa Cruz and within the University of California system. He has served as the 10th chancellor at UC Santa Cruz since July 2006. Chancellor Blumenthal joined UC Santa Cruz in 1972 as a professor of astronomy and astrophysics. Campus Provost and Executive Vice Chancellor (CP/EVC) Alison Galloway works closely with Chancellor Blumenthal and is the administration’s primary liaison with the Academic Senate. A professor of anthropology, CP/EVC Galloway is responsible for managing the daily operations of UCSC. She joined the UCSC faculty in 1990 and has held several administrative appointments, including most recently that of Vice Provost and Dean of Academic Affairs and University Extension. Previously she served as chair of the Anthropology Department, as well as chair and vice chair of the UCSC Academic Senate.

UCSC is expected to continue to grow in the coming years, and is projected to serve 19,500 students by 2020 through an expansion of graduate and professional programs and summer enrollments. To prepare for this growth, UCSC has been engaged in a campus-wide transformation aimed at consolidating operations and enhancing the quality of both academic and non-academic programs. The goal of this initiative is to balance “high-tech” and “high-touch” approaches to education while enhancing the stature of the campus as a leading public research institution. This undertaking has been accompanied by the development of several new major campus facilities, including a new addition to and renovation of the University Library facilities. To learn more about UCSC, please visit www.ucsc.edu.
About the Jack Baskin School of Engineering

Founded in 1997 to meet the increasing demand for highly educated engineering graduates, the Jack Baskin School of Engineering at UC Santa Cruz has grown beyond initial expectations and has won praise from industry and government leaders. The School strives to serve the needs of the greater Silicon Valley region and the State of California by creating and disseminating knowledge through research and teaching, and by offering curricula that nurture creative thinking and prepare its students for productive careers at industrial and academic settings in rapidly evolving areas of science and engineering.

With a combination of expertise and innovation, the Baskin School of Engineering seeks new approaches to some of the most critical challenges of the 21st century, thriving within the domains of data science, genomics, biotechnology, statistical modeling, high performance computing, sustainability engineering, human-centered design, networking and technology management. Given its youth and relatively small scale, the School is nimble, able to keep up with modern trends and methods, pivoting within existing programs as well as building new emphases. By leveraging the novel tools that often emerge from changing technologies, the School has pioneered new engineering approaches and disciplines, examples of which include biomolecular engineering, computational media, and technology and information management.

The mission of the BSOE is to develop and sustain first-rate education and research programs that integrate the fundamental principles and sound practice of science and engineering. Currently the School houses six departments: Applied Mathematics and Statistics, Biomolecular Engineering, Computer Engineering, Computer Science, Electrical Engineering, and Technology Management, and will soon include the currently forming department in Computational Media. The School is also home to five research institutes (including two multi-campus initiatives), 11 research centers, and 19 laboratories supporting interdisciplinary collaborations in bioinformatics, graphics and visualization, human-computer interfaces, remote sensing and environmental technology, robotics and controls, and signal and image processing, among many others.

The BSOE is the academic home for more than 2,000 students at UCSC, the majority undergraduates. It offers undergraduate degree programs in Bioengineering, Bioinformatics, Computer Engineering, Computer Science, Computer Science: Computer Game Design, Electrical Engineering, Network and Digital Technology, Robotics Engineering, and Technology and Information Management. The School has master’s and PhD degree programs in Bioinformatics and Biomolecular Engineering, Computer Engineering, Computer Science, Electrical Engineering, Network Engineering, Applied Mathematics and Statistics, and Technology and Information Management, as well as a professional MS degree in Games and Playable Media.

Faculty at the Baskin School of Engineering are renowned, hailing from top-tier engineering programs such as Stanford, Carnegie Mellon, and UC Berkeley. Along with the staff of the School they are dedicated to providing first-rate education that instills strong basic knowledge for sound practice in science and engineering for the well-being of society. The 90 faculty and nearly 50 teaching assistants and 36 staff work closely with students, supporting their course of study throughout their affiliation with the BSOE. The Corporate Sponsored Senior Projects Program provides real-world engagement for undergraduates working with industry leaders on projects that matter. At the graduate level, the BSOE engages with companies in collaborative research across all engineering disciplines.

In addition to the talents of faculty and staff, the BSOE is bolstered by an Advisory Council and the Alumni Advisory Council. With members hailing from as close by as Silicon Valley and as far away as Phoenix and Washington state, the primary role of the DAC is to assist the Baskin School in developing
strategic relationships with the engineering, technology, and business community within the greater Silicon Valley, nationally, and internationally to help garner the support necessary to ensure the Baskin School can reach its academic goals. The mission of the Alumni Advisory Council is to leverage the talent and experience of its members to provide guidance and leadership to the Dean, faculty, students, staff, and alumni of the UCSC Baskin School of Engineering.

The total 2013-2014 funding for the BSOE was $48.5 million, with $15.9 million coming from core funds, $16.9 million from the permanent budget, $28.9 million from contracts and grants funds, and $1 million from elsewhere. Within the School, state-of-the-art facilities include the 212-seat Baskin Engineering Auditorium, a 150,000 square foot Engineering 2 building, a new Physical Sciences building (which provides additional space for biomolecular engineering programs), and a recently completed Biomedical Sciences and Engineering building.

Details of the 2013 Academic Plan Update, building on the 2006-2011 Academic Plan, can be found here: http://www.soe.ucsc.edu/academic-plan. For further information about the Baskin School of Engineering please see www.soe.ucsc.edu.

Role of the Dean, Jack Baskin School of Engineering

The Dean of the Baskin School of Engineering, reporting to the Campus Provost and Executive Vice Chancellor, is the chief officer of the School and serves as its executive head, representative, and administrator. The Dean will provide intellectual and academic leadership in the instructional and research missions of the BSOE. S/he will engage the faculty and provide the strategic vision for the BSOE, in addition to managing the academic leadership of the School. As the leader of the School, the Dean will have responsibility for a full range of activities associated with the management and support of the excellence of the academic and research missions of the School. The Dean will oversee the hiring, promotion, and retention of faculty and staff, guide the development and oversight of undergraduate and graduate curriculum and degree programs, oversee all school resources, and work with campus administration and the Academic Senate on campus-wide decisions and policy development.

As a member of the Campus Provost’s Deans Advisory Council, the Dean will work directly with campus administration and the Academic Senate. As the highest authority within the School of Engineering, s/he will work closely with the department chairs and associate deans to help steer the future of the School. A description of the essential functions and duties of this position can be found at http://cpevc.ucsc.edu/organization/leadership-searches/dean-bsoe/index.html.

Key Opportunities and Challenges for the Dean

The Dean of the Jack Baskin School of Engineering at UC Santa Cruz will be a key player in the continued success and evolution of the BSOE and the university. S/he will bring experience developing vision and building around it, a strong understanding of faculty governance, and appreciation for interdisciplinary research and education, as well as demonstrated academic leadership and strong scholarship. In order to support the School’s future, the Dean will address several key opportunities and challenges, which are detailed below.

Build consensus around a compelling future vision and strategic direction

The next Dean of the BSOE will be a critical player in setting the tone for the School over the next 5-10 years. S/he will work with faculty, engaging with people at the level of ideas, to consider the aspirations for the School and to not only create, but also execute, a vision for its future. Working with stakeholders, the Dean will seek to understand the nature of the School, what it does well, and what can be improved.
This learning and thinking will lead to the creation of a strategy to drive the development and improvement of the BSOE. As a university, UCSC wants to invest in engineering – what that can, and should, look like will be determined in the coming years. Current strengths of the School will likely play a part in determining the focus of the future of the School, but will not rule out expansion into new areas or providing opportunities for growth in other arenas of engineering. The Dean will enhance the academic program of the BSOE by making strategic choices, investing in the future of the School in thoughtful ways and for impact. As a strong institutional colleague and partner, the Dean will work to encourage interdisciplinary connections, supporting cross-campus collaborations. S/he will also foster connections with other universities. Throughout this will be an overlay of diversity, as well as striving to get faculty as well as administration engaged with and excited about the vision for the BSOE.

**Further strengthen and build top-tier academic programs**

As part of understanding the BSOE in order to create a vision and strategy for it, the Dean will endeavor to assess the current program portfolio and structure with a primary goal of identifying opportunities for future growth. Programmatically, s/he will work with faculty to reflect upon the current and future offerings, with specific consideration to the existing strengths of the School and its identity. In addition, the Dean will lead the School in actively growing graduate education. This includes high-quality master’s programs, but more pressingly involves increasing the enrollment of PhD students. Currently at eight percent, a 50 percent increase is targeted. Considering the potential benefits to programming inherent in its location, the geographic proximity of UCSC to Silicon Valley provides the BSOE an excellent opportunity to increase and enhance its ties to the industry of the region. The Dean will work to build an initiative with Silicon Valley, seeking to further connect research of the area with the School and to engage with partners in the business world. The Dean will also consider structural changes to the BSOE. The Computational Media department was recently created from a subset of the existing Computer Science department; the Dean will work within the School over the coming years to evaluate what other changes, on the scale of departments or programs, ought to be developed and/or enhanced. Through his/her leadership on both programmatic and structural improvements, the Dean will help to raise the level of excellence of the School.

**Empower and support faculty to reach their utmost potential**

The Dean will work with faculty to increase connections among and within departments with a shared sense of vision and purpose. S/he will unify the School, creating greater departmental cohesion and seeking to get faculty on board with the strategy and goals of the BSOE as a whole. This will include fostering a culture of inclusion, transparency, and shared decision making, in addition to bridging divides between new and traditional fields within the School. By creating an environment that is engaging, exciting, and appealing, the Dean will help attract increasingly distinguished and diverse faculty to the BSOE. As part of supporting and acting to retain in addition to recruiting strong faculty, the Dean will foster mentoring and training, particularly for junior faculty, and provide professional development opportunities for faculty as well as for staff. S/he will recognize the need for and help engender a focus on interdisciplinary work, will help faculty find funding for research in all areas of study, and will help faculty to be excellent teachers and supporters of the BSOE students. The Dean will bring management experience and talent to the position, and the ability to work well within a structure of shared governance. Part of this includes navigating the processes of UCSC and creating structures and as necessary to more effectively support and manage the School. Above all, the Dean will pursue a culture of professionalism, serving as a strong and dependable leader of people.
Grow the financial resources of the Baskin School of Engineering

As part of contributing to the future success of the BSOE, the Dean will need to be thoughtful and tactical about financial resources. S/he must be budget savvy, and skilled at management and allocation decisions. S/he will develop new programs strategically and successfully, and will increase student enrollment. Currently the School offers seven master’s programs, two of which are fee-based professional programs, and the Dean will have leeway and responsibility to manage this and the potential to create more similar programs. Furthermore, s/he will cultivate philanthropic donations to the School, promoting engagement from alumni, donors, corporations, and foundations, seeking patronage for scholarships and endowed positions along with support for research via contracts and grants. The Dean will work to make increased resources an opportunity not just for the BSOE, enabling further support of faculty and students, and even for improved facilities, but also for UCSC as a whole—through her/his leadership, strengthening engineering will lead to growth across the campus through collaboration and university-wide teamwork.

Be the external ambassador for the School

As noted, the Dean will need to fundraise, consistent with the practice of nearly all deans in the 21st century. But beyond this, the Dean will need to be an external advocate of the BSOE. As a representative of the School, s/he will be a leading voice in high-tech engineering nationally and internationally. The Dean will be a public figure who seeks to gain exposure for the School in myriad ways, across associations, scholarly conferences, and affinity groups. An ambassador for the value and the success of the BSOE, the Dean will grow external relations with industry, nonprofits, and other institutions. This will begin with—but develop beyond—partnerships in Silicon Valley, gaining visibility and prominence for the School in California and the Nation.

Qualifications and Characteristics

The Dean will possess many, if not all, of the following qualifications and characteristics.

- An earned doctorate in an engineering or related field;
- A distinguished record in teaching, scholarship, and service consistent with the expectations of the rank of a full professor with tenure in the Baskin School of Engineering;
- Demonstrated academic leadership, vision, and management skills;
- Experience fostering interdisciplinary research and education;
- Proven experience as a builder;
- Demonstrated ability to be a good listener who can communicate effectively with administrators, faculty, students, and staff;
- Understanding of academic checks and balances and an environment of shared governance;
- Potential for success in fundraising and securing external support from a variety of sources;
- Appreciation for the mission and responsibilities of a university serving a multi-ethnic state and a demonstrated personal commitment to diversity; and
- Excitement around high technology innovations and modern engineering solutions.

Compensation and Location

This is a full-time, fiscal year appointment. Salary will be commensurate with qualifications and experience. This position is subject to the financial disclosure requirement of the California Reform Act of 1974 and requires a successful background check. The University of California, Santa Cruz is located on a 2,000-acre campus of redwood forest and meadows, overlooking the city of Santa Cruz and the Monterey Bay Marine Sanctuary. Santa Cruz is located 75 miles south of San Francisco, 30 miles south
of Silicon Valley, and 50 miles north of Monterey and Carmel. The town of Santa Cruz boasts a moderate climate year-round and is a recreational paradise, with mountains, beaches, and redwood forests within a short distance. Santa Cruz has long been home to a diverse community of writers and artists and the region offers myriad cultural opportunities.

**Applications, Inquiries, and Nominations**

Screening of complete applications will begin immediately. To be considered at the initial screening, application materials must be received by November 10, 2014. Applications will be received until the position is filled. Inquiries, nominations, referrals, and CVs with cover letters and a list of six references should be sent via the Isaacson, Miller website for the search: [www.imsearch.com/5167](http://www.imsearch.com/5167). Electronic submission of materials is required.

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*UCSC is an EEO/AA/Vet/Disability/Minority Employer*
Appendix: Research Institutes, Centers, and Laboratories at the Baskin School of Engineering

Research Institutes

California Institute for Quantitative Biosciences (QB3)
QB3 is a multi-disciplinary research institute at the University of California armed with world-class researchers, state-of-the-art facilities, and a set of entrepreneurial resources designed to accelerate discovery and innovation that benefit society. One of four California Institutes for Science and Innovation, QB3 unites quantitative, biological, and structural scientists at three UC campuses—Berkeley, San Francisco, and Santa Cruz—with private industry collaborators to address problems concerning human health and the environment. QB3 harnesses the quantitative sciences to integrate our understanding of biological systems at all levels of complexity—from atoms and protein molecules to cells, tissues, organs, and the entire organism. At UC Santa Cruz, QB3 is a part of the Center for Biomolecular Science & Engineering.

Information Technologies Institute (ITI)
The Information Technologies Institute (ITI) is a Focused Research Activity (FRA) and is operationally within the Baskin School of Engineering (SOE). ITI's mission is to provide the infrastructure through which its collective members can seek out and attract large scale research dollars, and to advance technology committed to solving grand-challenge national, social, and commercial problems. The Institute promoted the creation of a collaborative effort among four University of California campuses (Berkeley, Davis, Santa Cruz, and Merced) known as CITRIS - Center for Information Technology Research in the Interest of Society. Like ITI, CITRIS works to find solutions to many of the concerns that face all of us today, from monitoring the environment and finding viable, sustainable energy alternatives to simplifying healthcare delivery and developing secure systems for electronic medical records and remote diagnosis, all of which will ultimately boost economic productivity.

Institute for the Biology of Stem Cells (IBSC)
Stem cell research at UCSC focuses on the basic biological systems operating in the processes of self-renewal and differentiation of stem cells. The Institute for the Biology of Stem Cells (IBSC) at UC Santa Cruz encompasses research, training, and facilities to support this work. The institute was made possible by the high quality of biological and engineering research on the UCSC campus and by the California Institute for Regenerative Medicine (CIRM), which in September 2005 approved funding for UCSC to establish a training program in stem cell research. Funding from CIRM also made possible the UCSC Shared Stem Cell Facility, and other major projects that have supported stem cell research on this campus, such as a major facility award that funded the IBSC space in the new Biomedical Sciences Building. The institute is administered through the Center for Biomolecular Science & Engineering.

The Institute for Scalable Scientific Data Management (ISSDM)
The Institute for Scalable Scientific Data Management (ISSDM) is a $1,000,000/year collaboration between the UCSC Jack Baskin School of Engineering (BSOE) and Los Alamos National Laboratory (LANL) focused on computing, computation, storage, and data management at scale. The ISSDM supports UCSC/LANL collaborative research projects in petascale storage, cosmology, machine learning, databases, information trust and retrieval, and scientific visualization, and telecasts BSOE graduate classes and seminars to LANL.

UC Santa Cruz Genomics Institute
The UC Santa Cruz Genomics Institute provides the framework for the next great leap in the science of genomics. Building on three decades of pioneering genomics research at UC Santa Cruz, the institute unites the university’s efforts that empower the global scientific community to develop breakthroughs in health and evolutionary biology. The institute is building an open-source genomics platform for
unlocking the most challenging medical and scientific issues of our time, from decoding cancer to species preservation. This builds on our success with the UCSC Genome Browser, a resource used by more than 130,000 researchers worldwide. The UCSC Genome Browser currently receives more than 1.2 million web page requests a day and is cited in 14,000 scientific publications each year. The institute leads the national and international effort to break down institutional silos where genomic information is now isolated, enables the secure sharing and analysis of genomic data on a global open-source platform, and addresses the bioethical and privacy issues that advances in genomics create for patients, families, physicians, counselors, business, and government.

**Engineering Research Centers**

**Center for Biomolecular Science and Engineering (CBSE)**
The Center for Biomolecular Science & Engineering (CBSE) promotes and supports genomic and stem cell research, technology innovation, and education. An umbrella organization of the Jack Baskin School of Engineering and the Division of Physical & Biological Sciences at the University of California, Santa Cruz, the center supports a vast array of biological and engineering research that is fueling biomedical advances and the biotechnology explosion. CBSE started in 2000, when UCSC scientists helped the Human Genome Project reach a stunning milestone by providing the computational solution that produced the first assembly of the human genome, the map of our genetic make-up - work that evolved into the widely used UCSC Genome Browser. Much of the research combines cutting-edge computational approaches with laboratory experimentation. In addition, through collaboration with affiliates in sociology, the center supports the exploration of the ethical, legal, and social implications of genome research.

**Center for Games and Playable Media**
At UC Santa Cruz, researchers and students have been developing the future of games since 2006, when the Jack Baskin School of Engineering started the first undergraduate game major in the University of California system. A leader in game research, UC Santa Cruz also hosts two graduate programs with an emphasis on games - the Digital Arts and New Media MFA and a PhD in Computer Science with a games focus. The Center for Games and Playable Media was formally established in 2010, building on work done since the founding of the game degree. The center houses the school's five games-related research labs including the Expressive intelligence Studio - one of the largest technical game research groups in the world.

**Center for Information Technology Research in the Interest of Society (CITRIS)**
CITRIS was created to "shorten the pipeline" between world-class laboratory research and the creation of start-ups, larger companies, and whole industries. CITRIS Santa Cruz facilitates partnerships and collaborations among more than 58 faculty members and dozens of students from numerous departments with industrial researchers from over 60 corporations. Together, the groups are thinking about information technology in ways it's never been thought of before.

**Center for Maximizing Abilities Through Technology, Education and Research (MATTER)**
The MATTER Center (Maximizing Abilities Through Technology, Education and Research) is formed by an eclectic combination of faculty members in Engineering, Psychology, Nursing, and Rehabilitation from UC Santa Cruz, UC San Francisco, and UC Davis. The Center covers a broad spectrum of research areas, under the common denominator of technologies to help persons with special needs in their activities of daily living.

**Center for Research in Intelligent Storage (CRIS)**
The Center for Research in Intelligent Storage (CRIS) is a partnership between universities and industry, featuring high-quality, industrially relevant fundamental research, strong industrial support of
collaboration in research and education, and direct transfer of university developed ideas, research results, and technology to U.S. industry to improve its competitive posture in world markets. Through innovative education of talented graduate and undergraduate students, CRIS is providing the next generation of scientists and engineers with a broad, industrially oriented perspective on engineering research and practice.

**The Center for Stock Assessment Research (CSTAR)**
CSTAR is a collaboration between the Fisheries Ecology Division, NOAA Fisheries (FED), Santa Cruz and UCSC to provide training in for undergraduate and graduate students and post-doctoral colleagues in the quantitative population biology needed to improve the sustainability of fisheries. CSTAR members work closely with FED staff, and participate in stock assessments, cruises, data workshops, and other management-oriented activities. Members of CSTAR have gone on to positions at NOAA Fisheries across the country, to academia, and to other kinds of non-academic positions including the Malaria Atlas and high-tech companies. A CSTAR alumna founded FishWise which trains point of sale individuals about sustainability of fisheries and includes Safeway and Target as customers.

**Center for Sustainable Energy and Power Systems (CenSEPS)**
The Center for Sustainable Energy and Power Systems (CenSEPS) is poised to become a major hub for innovation in emerging clean energy technologies and tackling the challenges of energy sustainability. The Center explores the societal implications of new renewable energy technologies as well as prepares a new generation of 21st century engineers and scientists to address the problem of more efficient energy use with minimal carbon footprint. We promote and integrate the use of renewable energy technology to create sustainable communities and renewable energy districts. The Center partners with other energy research institutes, both within the United States and abroad so as to develop an international approach to solve the critical problems delaying the deployment of renewable energy resources.

**W. M. Keck Center for Adaptive Optical Microscopy**
This interdisciplinary center's objectives are to develop enabling adaptive optical technologies and critical procedures to overcome longstanding barriers and vastly improve in vivo deep tissue biological imaging. The approach is inspired by the highly successful use of adaptive optics in the W. M. Keck Telescopes, which allows astronomers to see much more clearly and deeply into space. This center was made possible through the generous support of the W.M. Keck Foundation.

**W. M. Keck Center For Nanoscale Optofluidics**
The W.M. Keck Center for Nanoscale Optofluidics brings together an interdisciplinary mix of six research groups from five departments at UC Santa Cruz to focus on the development of optofluidic devices and their application to single particle studies in molecular biology and biomedical diagnostics. Optofluidics is the combination of both integrated optical and fluidic components in the same miniaturized system, and the functionalities of optofluidic systems can be improved and expanded by addition of nanoscale features. The W.M. Keck Nanofabrication facility provides unique capabilities for creating this new type of integrated devices, including a state-of-the-art dual electron/ion beam microscope for nanoscale characterization and fabrication. Members of the UCSC community may contact the center for more information regarding use of the facilities, including staff assistance and user training on the dual beam microscope.

**Storage Systems Research Center (SSRC)**
Research at the Storage Systems Research Center (SSRC) focuses on many aspects of file and storage systems. We have active projects in archival storage, large-scale distributed storage systems, file systems for next-generation storage devices, and scalable metadata management and indexing. Our projects often have particular focus in cross-cutting issues such as security and reliability in file and storage systems.
SSRC research projects involve graduate students and faculty, and often include collaboration with local industry; opportunities for undergraduate research are also available.

**UCSC Genome Sequencing Center**

UCSC Genome Sequencing Center intends to provide state-of-the-art genomic technology to all research groups who wish to use it. The center currently houses Illumina's HiSeq 2000, Roche's 454 titanium-sequencing instrument, Life Technology's SOLiD4 sequencer and NanoString’s nCounter instrument. The research of the center focuses on generating both high-quality data for the scientific community and improving next generation platform technology.

**Research Labs**

**Applied and Nano-Optics**

The research interests of the Applied and Nano-optics group cover a wide range with an emphasis on experimental nanoscale optics. We are developing new methods and devices for optical studies of single particles such as molecules, photons, or nanomagnets. To this end we are using a wide variety of optical and nanoscale characterization techniques such as time-correlated single photon counting, ultrafast laser spectroscopy, or scanning probe microscopy. Applications of our research include integrated biomedical sensors, high-density magnetic memory, or single-photon light sources and detectors.

**Autonomous Systems Lab**

The Autonomous Systems Lab (ASL) is one of the labs at UCSC that tackles problems of robotics and control, typically within the context of autonomous systems. This includes Guidance, Navigation and Control (GNC), GPS research, Path Planning for unmanned vehicles, Sensor Fusion, Attitude Estimation, System Identification, and Robust Software Design for Real-Time Reactive Systems. The overarching theme of ASL research has been to radically reduce cost (and hence increase the ubiquity) of Robotics and Autonomous Systems by adding increased sophistication and processing power (cheap) and reducing the quality and quantity of sensors (expensive). The ASL is directed by Professor Gabriel Hugh Elkaim of the Computer Engineering Department at UCSC.

**Computer Communication Research Group (CCRG)**

The Computer Communication Research Group (CCRG) is dedicated to basic and applied research in computer communication. CCRG research focuses on new algorithms, protocols, and architectures for wireless networks based on packet switching (i.e., packet-radio networks), internetworking, multipoint communication, and the control of resources by multiple administrative authorities.

**Database Group**

Database research, projects and seminars at the Baskin School of Engineering.

**Design and Verification Lab**

Research in software and system design methods, embedded software design, software and system verification, game theory, formal methods.

**Geo-spatial Visualization**

We are creating a consistent 4-dimensional space-time visualization of geospatial data and intelligence associated with the environment. This task requires intelligent collection of data using various sensors including a variety of cameras, LIDAR data, and multispectral imagery in all kinds of frequency bands. The spatio-temporal GIS (Geographic Information System) visualization system will bring together several layers of information including terrain data, street maps, buildings, environment data, aerial images, and mobile objects data.
Group Researching Advances in Software Engineering (GRASE)
The GRASE laboratory performs research in the areas of software evolution and reengineering, and software configuration management. Current areas of research include identifying unstable areas of evolving software, automatic generation of software configuration management repositories, and development of Web-based versioning and configuration management infrastructure.

Information Retrieval and Knowledge Management (IKRM)
The IRKM Lab is dedicated to basic and applied research in information retrieval and data mining. Current research projects include developing a proactive information retrieval, adaptive information filtering, and collaborative personalized search, recommendation and advertising.

Inter-Networking Research Group
The Internetwork Research Group (i-NRG) at UC Santa Cruz conducts research in the design, experimental evaluation, and implementation of network protocols for internetworks consisting of wired as well as wireless networks. Our research activities span a number of areas in computer networks and distributed systems.

Micro Architecture at Santa Cruz
Research on computer architecture with special focus on are energy/performance trade-offs, thread level speculation, simulation tools, FPGAs, and design complexity.

Multi-Dimensional Signal Processing
The Multidimensional Signal Processing (MDSP) Research Group interests are in the area of inverse problems in imaging, statistical detection and estimation, and associated numerical methods. Current projects include image resolution enhancement and super-resolution, computationally efficient image motion estimation, shape reconstruction from local and global geometric data, multiscale modeling and analysis of signals and images, radon transform-based algorithms for deformation analysis and dynamic imaging, image processing and inverse problems in remote sensing, and automatic target detection and recognition. The MDSP group is directed by Professor Peyman Milanfar of the Electrical Engineering Department at UCSC.

Network Management and Operations Laboratory
The Network Management and Operations Laboratory (NMO Lab) is focused on addressing real-world problems in complex networks, in a variety of topics that include quality of service, customer support, and intelligent and automated management of network devices. Industry funding for the NMO Lab comes via a partnership with Cisco. Through Cisco support, students (undergraduate and graduate students) and faculty advisors in SOE are engaged with Cisco engineers to work on problems in operational networks.

Advanced Visualization and Interactive Systems Lab
Recent research at the Advanced Visualization and Interactive Systems Lab includes animal modeling and animation, environmental visualization, isosurfaces, d.v.r., hierarchies, irregular grids, massively parallel volume rendering through the net, uncertainty visualization, virtual reality in scientific visualization, nomadic collaborative visualization, tensor visualization, and flow visualization.

Systems Research Lab
The Systems Research Lab (SRL) is part of the Jack Baskin School of Engineering at the University of California, Santa Cruz. The SRL is interested in a broad range of topics including real-time systems, performance management, and large-scale storage systems. We are particularly interested in the intersection of these topics, and in their application to problems requiring inter-disciplinary collaboration.
The SRL is composed of a broad range of students and collaborators from industry, government research labs, and other universities.

**UCSC Broadband Communications Research Group (UCBC)**
Broadband communications research at the Baskin School of Engineering.

**UCSC Computer Vision Lab**
The UCSC Computer Vision Lab explores several aspects of computer vision, image processing, and sensor signal processing, including mobile vision, assistive technology for persons with visual impairment, visual tracking, 3-D vision, computational photography, and surveillance.

**UCSC Scientific Visualization Laboratory**
The UCSC Scientific Visualization Laboratory provides the means for creating visualizations from scientific data. Projects include a simulation of an "extensive air shower" striking the Milagro detector at Los Alamos National Lab, representing a subsonic flow over a delta wing aircraft, a demonstration of direct volume rendering on a multiply-gridded space shuttle launch vehicle, an N-body simulation of large-scale structure in the universe, and a representation of a diving whale based on location data from a Monterey Bay tagging experiment.

**VLSI Design Automation**
The VLSI Design Automation (VLSI-DA) group researches Integrated Circuit (IC) design and Computer-Aided Design of ICs. A specific emphasis is on the physical implementation and timing closure considering variability and reliability.