

INFORMATICS
IS EVERYWHERE.
THIS IS YOUR MAP.

TECHNOLOGY + PEOPLE. DISCUSS.

Informatics. It's the field you've never heard of, and the one you know everything about. In a digital age, technology — how we design it, how we use it and how it affects us — touches all aspects of our lives. It shapes the way we live, the way we work and the way we build the foundations of a global society. Informatics is a window into this dynamic relationship, examining the interplay of people and technology and what it means for our collective future.

On the map as one of the planet's preeminent destinations for the study and practical application of informatics, the Department of Informatics at UC Irvine's Donald Bren School of Information and Computer Sciences represents an unrivaled collection of pioneers in the field. The department brings together scholars, students and practitioners to improve our understanding of technology's extraordinary impact and to create technological innovations that redefine how we experience the world.

How can I access my own health record from any place, at any time?

How does constant connectivity affect family life?

How do we realize the promise of e-government?

How does social media inspire social action?

How can we improve our intergenerational experiences?

How do we control our reputations online?

Do kids benefit from early exposure to technology?

How is online learning transforming the educational landscape?

How do apps enhance or restrict creativity and spontaneity?

Where does our personal data go once it gets collected by information technology?

Can mobile applications improve disaster response?

What are the effects of incessant multitasking?

How are new information infrastructures transforming cities around the globe?

How do we measure productivity when the workday never ends?

Why is e-mail becoming obsolete?

Why are computer games revolutionizing the medical industry?

How will mobile payment systems affect everyday commercial transactions?

What makes something go viral?

Do hackerspaces lead to collective creativity?

How can technology help us tap into collective wisdom?

What does big data mean for science?

How do we ensure the integrity of automotive software in a future where cars drive themselves?

How can we design technology that understands and adapts to our surroundings?

How can technology help us take care of loved ones from afar?

How can IT balance personalized service with privacy laws?

What can social technology do for my productivity?

How can my app distinguish itself in an infinite field of competitors?

Can people around the world shape IT to fit their own cultures?

How do the technologically savvy youth of today impact the technology we must design for tomorrow?

How can crowdsourcing lead to better software?

How can we use technology to build a sustainable natural environment?

What will the next Internet look like?

How can our businesses and organizations leverage newly emerging software ecosystems?

The background features a complex network of thin, colorful lines in shades of green, red, and blue. These lines crisscross the entire page, connecting the four main text elements in a web-like pattern that visually represents the concepts of connectivity and scale.

CONSTANT CONNECTIVITY

SOCIAL MEDIA

COLLECTIVE INTELLIGENCE

MASSIVE SCALE



LIVE

WORK

BUILD



How we live

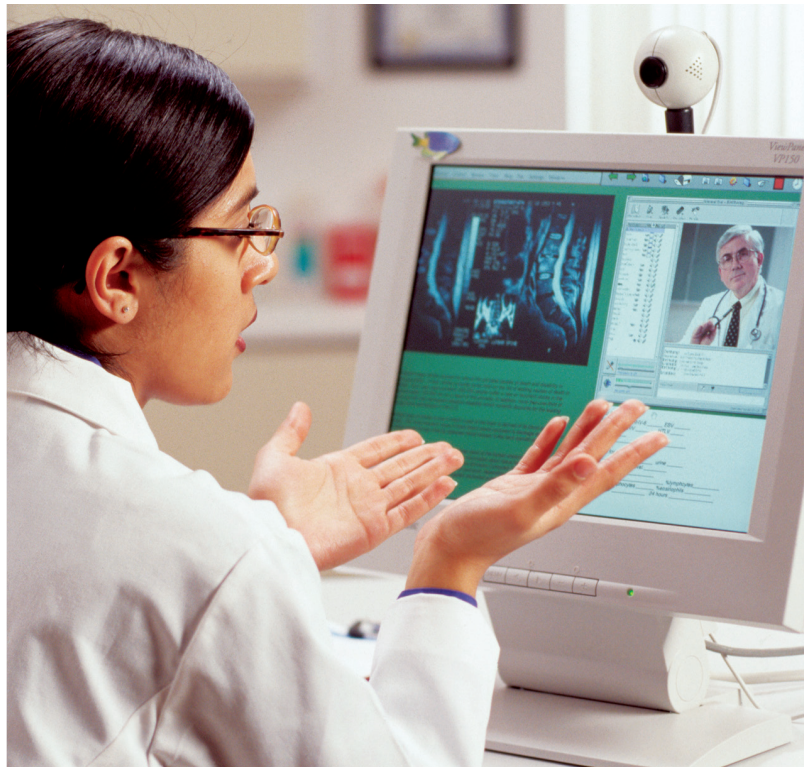
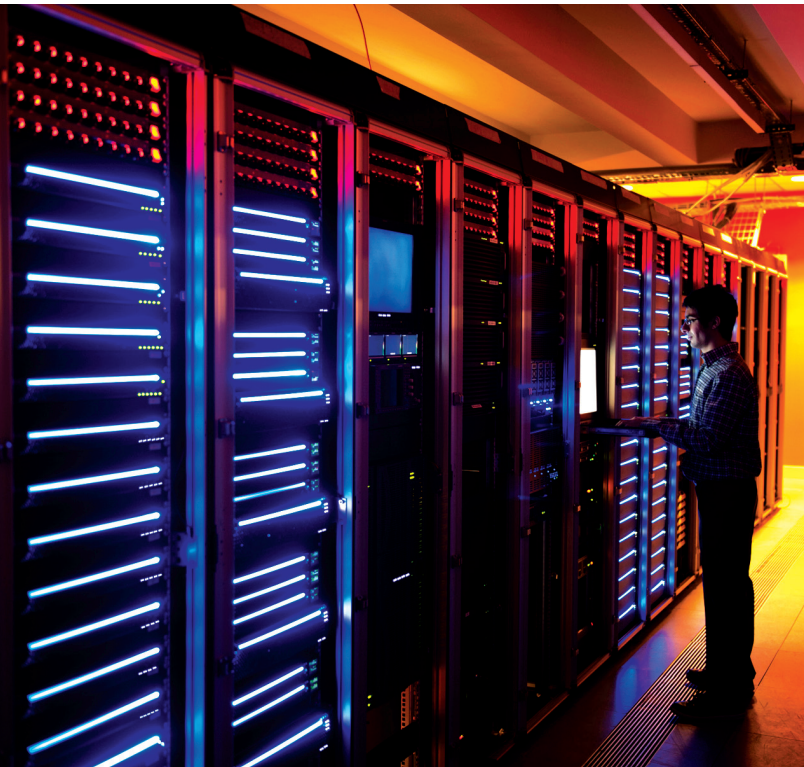
Nearly all our everyday experiences are mediated by, and filtered through, diverse technologies that aim to help us navigate the world. We make purchases by mobile phone, bring educational software into classrooms and connect with family and friends through social media. Yet, we are also continuously challenged by the technologies around us in terms of their usage, impact and ethical considerations. Informatics studies these phenomena to help us make informed decisions and design better technological interventions as we explore the many opportunities of living in the digital age.

ENGAGING OUR YOUTH

Today, our social lives play out across a highly intertwined web of real- and virtual-world interactions. The implications are enormous, compelling us to reimagine our understanding of interpersonal relationships and redefine our expectations of how they unfold. Technology now occupies a prominent place in everything from crisis response to commerce, public policy to scientific discovery – and a new generation is emerging within this landscape. The Department of Informatics is keeping its finger on this pulse, offering key insights into evolving practices. Our Connected Learning Lab, for instance, explores nontraditional approaches to educating and engaging K-12 students. With support from the Samueli Foundation and the UCI Esports Arena, it has launched a high-school Esports League that leverages student interest in gaming to introduce associated curriculum in STEM domains, writing, and tech leadership. The league is but one way in which the department engages with the world around us to ensure that the next generation has the skills needed to become effective citizens in the 21st century.

NAVIGATING SMART CITIES

Digital technologies are providing new ways for us to not only connect with each other but also with the institutions that shape our lives, including local government. Many municipalities are excited about the possibilities offered by “smart cities.” Sensors can provide a real-time picture of life in urban space, data analytics can identify emerging trends and patterns, and social media can provide a new conduit for citizens to talk to government. But what does it take to make this work in practice? The Department of Informatics is studying how cities in Southern California deal with the pragmatics of data-driven governance. We are working in close collaboration with these cities to design technologies that increase civic engagement while simultaneously exploring how data-focused approaches can enroll or disenfranchise certain groups of citizens. Through this work, we are identifying steps that cities can take to ensure equity in opportunities as they promote positive, user-centered living experiences.



How we work

Technology can make completing tasks in the modern workplace both easier and more complicated. Automation boosts productivity but at the potential cost of dividing attention and increasing stress. Real-time mobile communications collapse vast distances yet may undermine employee accountability and trust. Through the lens of informatics, these effects become clear, giving rise to remarkable technologies that put work in a whole new light.

IMPROVING HEALTH OUTCOMES

Business grows more data driven – and information dependent – every day. Amazon profiles its users to provide personalized service. Facebook sits atop a trove of information worth billions of dollars in advertising. The provision of healthcare relies entirely on the ability of databases to organize electronic medical records. In addition, the concept of “work” is no longer tied to a specific geographic location. Today, software development teams are spread around the world, and doctors diagnose and operate on patients from afar. The Department of Informatics provides a unique perspective on the entire spectrum of issues and opportunities that arise from data-driven, dispersed work teams. For example, department researchers are collaborating with state



officials, pain specialists, primary care physicians and ER doctors to improve the design of the national Prescription Drug Monitoring Program database to help address the opioid crisis. Integrating PDMP information into electronic health records and personalizing the data will help physicians better understand the risks associated with prescribing certain medications to individual patients, simplifying their work and improving overall health outcomes.

TACKLING WORKPLACE STRESS

Long-distance arrangements present numerous hurdles to efficient and effective collaboration, and they require the development of novel technologies and new ways of getting a job done. Yet while new technologies can increase collaboration and efficiency, they can also invade our privacy and overwhelm us with constant connectivity. Aiming to strike the right balance, researchers in the Department of Informatics are exploring ways to detect and reduce workplace stress. Combining data science techniques with wearable fitness devices and other environmental sensors to determine workplace stress, the researchers are prototyping mobile apps that use biofeedback with gamification to discretely intervene and promote relaxation in the workplace. And it is not all about personal wellbeing either: employers benefit from a healthier and more productive workforce.

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What we build

Technology is powered by people. From engineers to end users, individuals propel forward the innovations that support and sustain our civilization. Informatics delves into the strategy behind these innovations, exposes their inner workings and blazes a trail to stunning advances in technological capability. Through incisive analysis and inspired creativity, informatics is the building block of a successful modern society.

DESIGNING FOR INCLUSIVENESS

Traditionally, the “one size fits all” model of many classrooms has made it difficult to meet the needs of certain students. The Department of Informatics is expanding the horizons of childhood education by creating comfortable, customized experiences that adapt to children’s learning styles and individual situations. The emergence of innovative virtual and augmented reality platforms presents opportunities to truly personalize learning experiences, especially for children with chronic health conditions or disabilities. As one example, we are developing learning environments for children and adults with autism that aim to increase their quality of life by supporting social and communication skills. As another, we are researching the use of telepresence robots to allow homebound children to attend class. And more is to come, with the relatively low cost of micro-electronics, 3D printing, and VR headsets setting the stage for a dramatic change in not only how we teach kids but also how we treat patients and help families. Informatics is at the forefront of exploring how best to exploit technology to reach the disenfranchised and better address the needs of all citizens.

SECURING OUR CYBERINFRASTRUCTURE

Whether it is built by an individual at home, a small business or a corporate behemoth like Google, technology starts as an idea. Fleshing out that idea through design and development involves a multi-faceted process shaped by programming challenges, market competition and the ever-increasing scale of the systems we create. The Department of Informatics is a leader in addressing all aspects of technology production, including security aspects, which are essential to mitigating ever-increasing risks and privacy concerns. For example, our faculty members are working on tools such as RevealDroid, which applies a machine-learning-based approach to malware detection to better secure mobile apps. Another example is COVERT, a tool that aims to identify and address vulnerabilities created by the interaction of multiple apps. With these and other cutting-edge tools and approaches, in security and beyond, Informatics continuously seeks to push toward a safer, tech-enabled society.

Get Involved

Our research is strongly tied to the real world – addressing pressing challenges that people face every day. Firmly rooted in a philosophy that sustainable innovation demands creative collaboration, the Department of Informatics fosters partnerships that bridge the academic and business realms. From hosting projects for our students, to strengthening our corporate partners program, to launching new strategic initiatives, we seek to forge deep mutual commitments that advance technological discovery.

OPPORTUNITIES FOR ENGAGEMENT

- Champion research that has vital societal impact.
- Support our talented students through much-needed scholarships and fellowships.
- Provide real-world projects for our undergraduate courses.
- Become a mentor to our students.
- Share your talent through panel discussions and tech talks.
- Collaborate on research that is relevant to your organization.
- Help set the agenda that drives the future of technology.

JOIN US

Working together, we can harness the power of informatics to improve how we live, to transform how we work and to guide what we build toward new heights of accomplishment.

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