



**INNOVATING THE FUTURE:
THE CAMPAIGN FOR UW CSE**

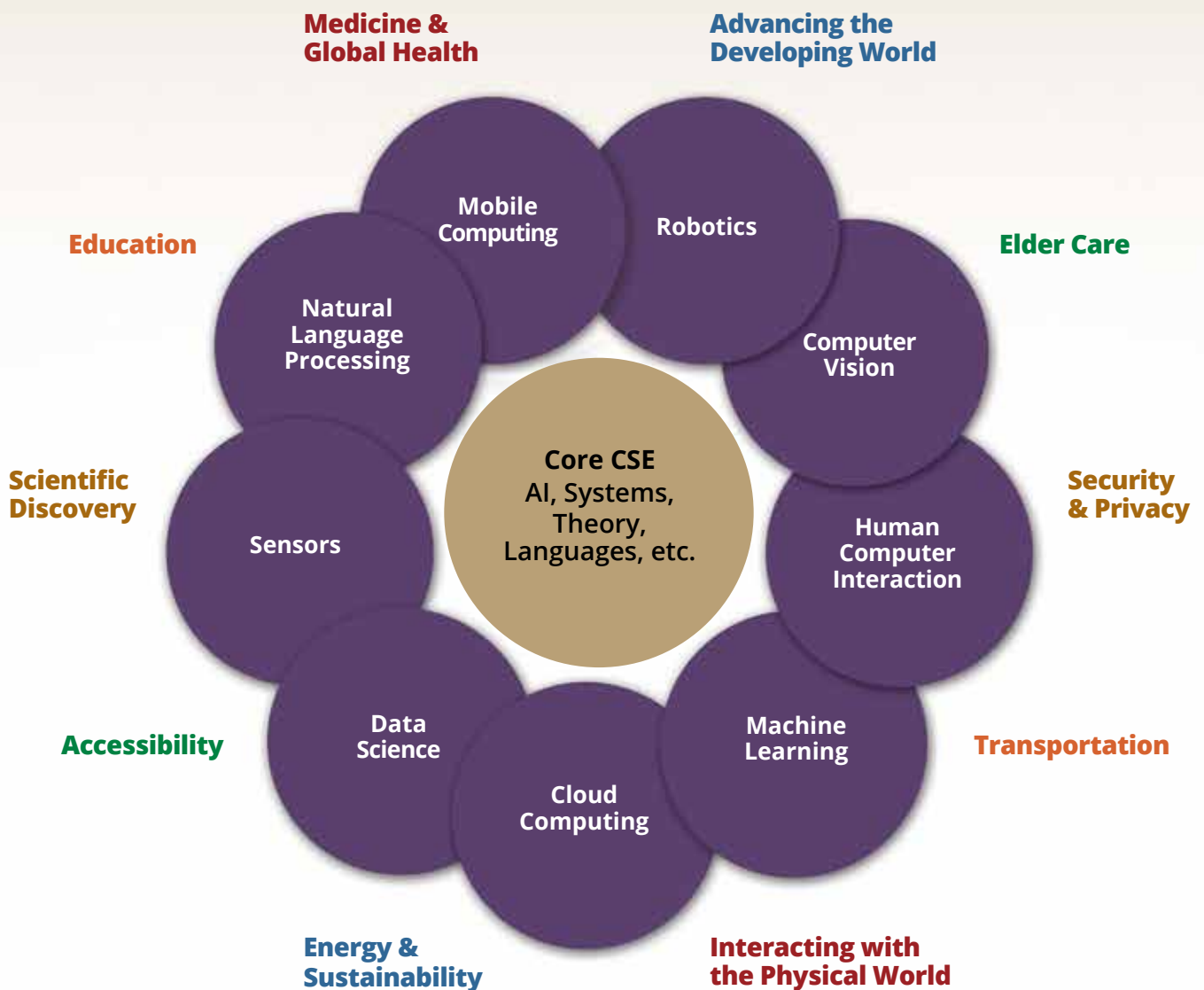
UNIVERSITY *of* WASHINGTON



Computer science and computer engineering will be the driving forces behind solutions to the most important challenges of the 21st century. From education to energy, from global health to scientific discovery, UW CSE is harnessing the power of computing to transform entire industries and improve quality of life for people everywhere.

UW CSE's 21st Century Vision of Computer Science: A Field Unique in Its Societal Impact

UW CSE is a leader in positioning computer science to tackle critical national and global challenges. We have invested our resources strategically to help propel UW to the forefront of the field—we compete only with Stanford, MIT, UC Berkeley and Carnegie Mellon as a leader in computer science teaching, research and entrepreneurship. A new phase of investment and expansion will enable us to leverage this success and position ourselves for the future.



UW CSE: At the Forefront of Computing Innovation

University of Washington Computer Science & Engineering attracts top students from across our state, the nation and the world. Our faculty—committed to mentorship, cross-disciplinary collaboration and strong partnerships with leading technology companies—make UW CSE one of the best places to become a computer scientist or computer engineer and to make lasting contributions to society.

As every field increasingly becomes an information-driven field, computer science has emerged as a cornerstone of the modern university and of the modern world. Our faculty and students continually push the boundaries of our discipline, placing UW CSE at the forefront of computing innovation. UW CSE is poised to dramatically expand our impact...but only with your partnership.





UW CSE and the Allen Center: A Legacy of Transformational Investment

The opening of the Paul G. Allen Center for Computer Science & Engineering in 2003 transformed the trajectory of UW CSE. The new facility changed both the scale and the nature of our program: not only did we expand in size, we expanded in scope, moving into new areas of innovation at the forefront of computer science. Thanks to the generosity of our donors and strategic investments by the state, we have been able to grow UW CSE's leadership in a multitude of ways:

Educating more students for high-impact careers. Since 2003, enrollment in UW CSE's undergraduate and graduate programs has grown by more than 50%. More than three-fourths of our students are Washington residents, and the vast majority remain here after obtaining their degrees. Interest in computer science from students across the campus is on the rise: enrollment in UW CSE's introductory courses now exceeds 5,000 students per year.

Fueling the growth of our region's technology industry. UW CSE is one of the nation's leading suppliers of graduates to Microsoft, Amazon and Google—roughly one-third of our students head for one of these three companies. We are the predominant supplier of graduates to local startups and to growing, young companies, and a key reason that more than 70 major companies headquartered outside of the region have established engineering offices here. The Allen Center has helped to make Seattle the innovation hub that it is today.

Recruiting exceptional faculty. Our people have made us a long-standing leader in core areas of the field such as programming languages, software engineering, systems and computer architecture. UW CSE also leads in cutting-edge areas such as computer vision, machine learning, natural language processing, data science, privacy and security, and game science. Since 2012, we have added more than 25 faculty members—established experts and rising stars—reflecting the fact that UW CSE is a preferred destination for some of the top minds in our field.

Cementing entrepreneurship as a core aspect of our culture. UW CSE faculty and students have created more than 25 startup companies that have raised nearly \$400 million in venture funding to support jobs and business activity in our region, and our alumni have gone on to build countless more. A stellar exemplar of this commitment is Professor Shwetak Patel, who develops novel sensor systems and interaction technologies. Patel founded Zensi, a residential energy-monitoring company based in part on technology developed at the UW, which was acquired by Belkin. Patel then worked with UW CSE alum Jeremy Jaech on another startup, SNUPI Technologies, to commercialize a new, low-power home sensing platform; the technology was later acquired by Sears. Both Belkin and Sears opened new engineering offices in Seattle as a result.

Committed to education as well as entrepreneurship, Patel has united the two in his role as lead developer of curriculum for the Global Innovation Exchange (GIX), a partnership between the UW, China's Tsinghua University and Microsoft to educate students in a context that is global, project-based, and integrates technology, design and entrepreneurship.



Becoming a research powerhouse.

The quantity and quality of laboratory space in the Allen Center enabled UW CSE to diversify our research portfolio and triple our annual research grants. This ushered in a new era of partnerships—across campus and with companies and organizations of all sizes—and helped put Washington state on the map as a center for computing innovation.

We spearheaded creation of the eScience Institute to leverage advances in data science to support research in fields from astronomy to urban planning. We helped establish the Center for Sensorimotor Neural Engineering to focus on novel brain-computer interfaces. And we launched a joint effort with Microsoft to develop the next generation of digital data storage using DNA.

UW CSE has been a leader in developing solutions for underserved communities, advancing the state of the art in computer vision, and addressing emerging security and privacy issues—just a few of the ways our research is having a real-world impact. *(Learn more on pages 12-14.)*

Leading the way in diversity.

UW CSE has earned national recognition for our work to promote diversity and close the gender gap in computing. We grant nearly one-third of our computer science bachelor's degrees to women—roughly twice the national average.

UW CSE has achieved this by cultivating a welcoming and supportive community, actively recruiting talented women as students and faculty, and engaging in outreach to K-12 students and educators. For our efforts, we were honored in 2015 with the National Center for Women & Information Technology's inaugural Award for Excellence in Promoting Women in Undergraduate Computing.



Our Next Challenge: Meeting the Growing Demand

The excitement and impact generated by computer science has led to ever-increasing numbers of students clamoring for education in our field. The present limits on our capacity represent an opportunity lost, both for talented students and for our community: while Washington’s information technology sector is one of the most vibrant and innovative in the nation, it also has to contend with the largest gap between employer demand and degrees produced of any sector in our state.

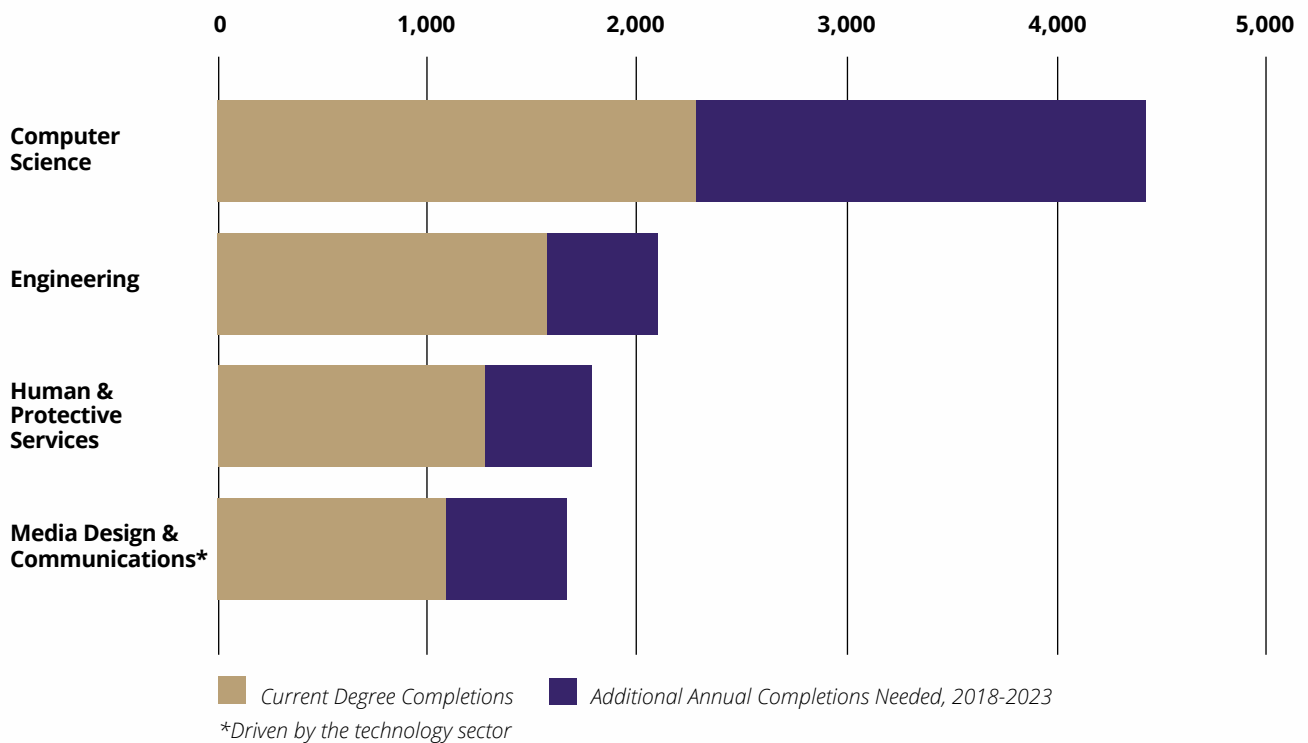
Expanding Economic Opportunity

We continue to see explosive growth in student interest and employer demand for computer science graduates, and all signs point to this as the “new normal.” The opportunity for our citizens is great: the Bureau of Labor Statistics projects that 73% of all newly created jobs in the U.S. this decade in science, technology, engineering and mathematics will be in computing, as will 55% of all available STEM jobs, whether newly created or due to retirements.

In Washington, the projected workforce gap in computer science exceeds the next three most in-demand fields combined at the baccalaureate level, with more than 2,100 *additional* degrees needed each year to meet demand. When graduate degrees are factored in, the workforce gap in computer science rises to 3,800 per year—nearly 3x as great as the second most in-demand field.

High Demand Fields in WA State, Baccalaureate Level

Washington Student Achievement Council, State Board for Community & Technical Colleges, Workforce Training & Education Coordinating Board, 2016

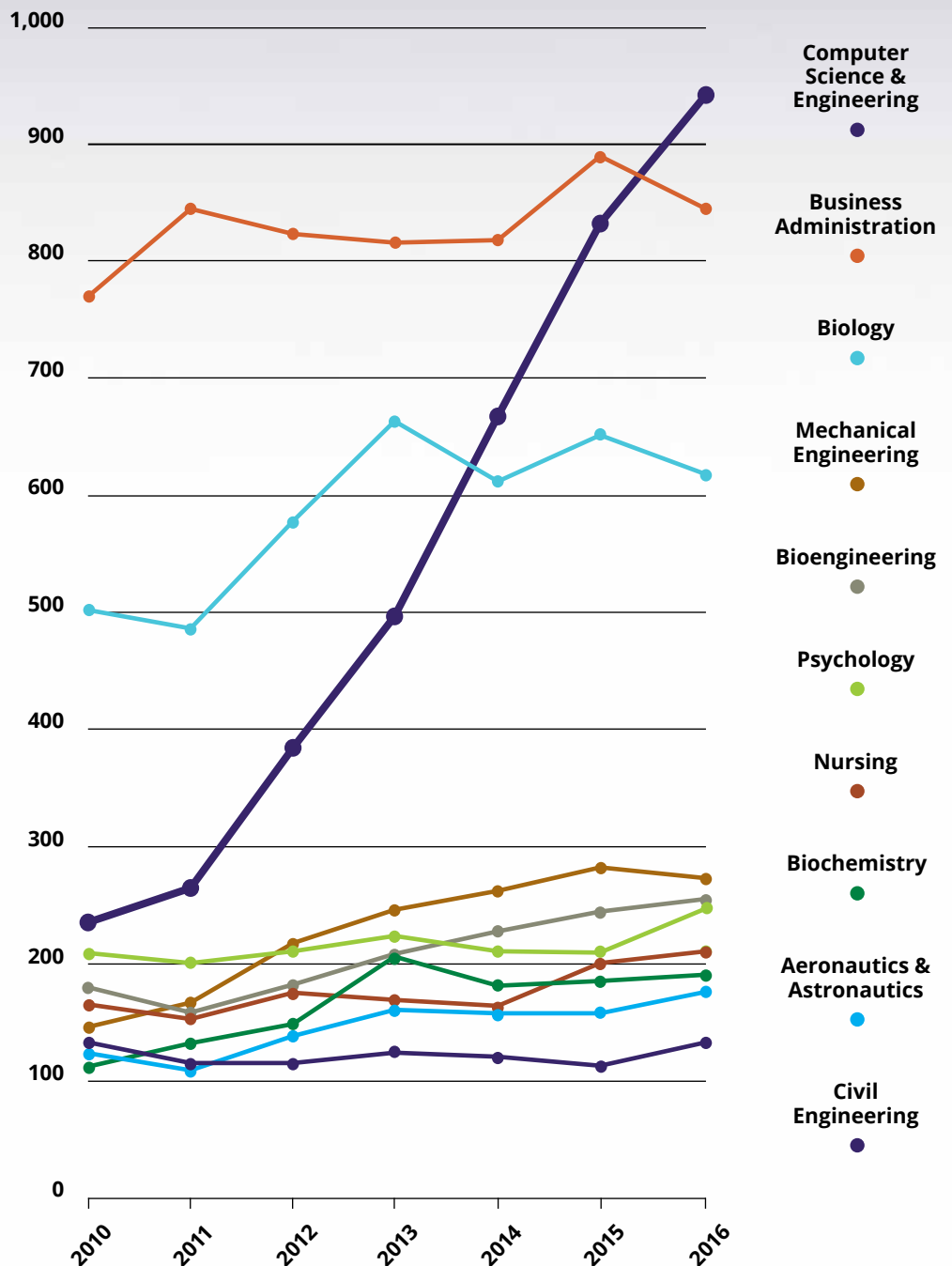


UW CSE has an ambitious vision for our next phase of growth—a vision that will enable us to expand our educational offerings, intensify our impact through research and entrepreneurship, and address the needs of Washington’s students, employers and economy while developing solutions to some of humanity’s most pressing challenges.

Skyrocketing Student Interest

Student interest in computer science has grown dramatically: more incoming UW freshmen select CSE as their first-choice major than any other field. Because of capacity constraints (both physical and financial), UW CSE is able to accommodate only one-third of the qualified students who apply to the major each year. Growth is essential.

Top 10 First-Choice Majors of UW Confirmed Incoming Freshmen





The Campaign for UW CSE: Expanding Our Capacity for Innovation

The Allen Center has been truly transformational, enabling us to grow and to change dramatically... but it has already been stretched far beyond its intended capacity. To prepare more students for the opportunities created in our rapidly expanding field and to provide the additional resources that will keep our research and education powering forward, we have launched the Campaign for UW CSE.

Building for Our Future

UW CSE has the vision, the demand, the momentum and the support for growth. Additional space is the missing ingredient. Thus, a critical component of the Campaign for UW CSE is a private-public partnership to raise \$110 million—of which Washington state has committed \$32.5 million and Microsoft has committed \$10 million—to construct a second CSE building on the UW Seattle campus. The CSE2 facility will enable us to double our annual degree production, significantly expand educational offerings to non-majors, and accelerate the high-impact research, entrepreneurship and collaboration that are hallmarks of UW CSE.

Seattle-based LMN Architects—designers of the Paul G. Allen Center for Computer Science & Engineering and recipients of the 2016 American Institute of Architects Architecture Firm Award—are designing the 130,000 square-foot building to complement the Allen Center. Located just across the street, the new building will provide types of space that the Allen Center lacks. In particular, CSE2 is designed to enhance the undergraduate student experience by providing the following:

- A tiered 250-person lecture hall for large classes and colloquia.
- Classrooms, educational labs and a sophisticated maker space.
- An undergraduate commons where students can study and collaborate.
- Project rooms for interdisciplinary capstone courses such as computer animation.
- An advising suite and teaching assistant offices for one-on-one consultations with students.
- Interview rooms where industry representatives can meet with students.

CSE2 also will enable us to expand our research enterprise and remain at the forefront of our field through:

- Research labs to support Ph.D. students, postdocs and research support staff.
- A 3,000-square-foot robotics lab.
- Graduate student offices.
- A wide range of collaboration spaces and seminar rooms.
- A design that encourages the chance encounters where sparks fly.

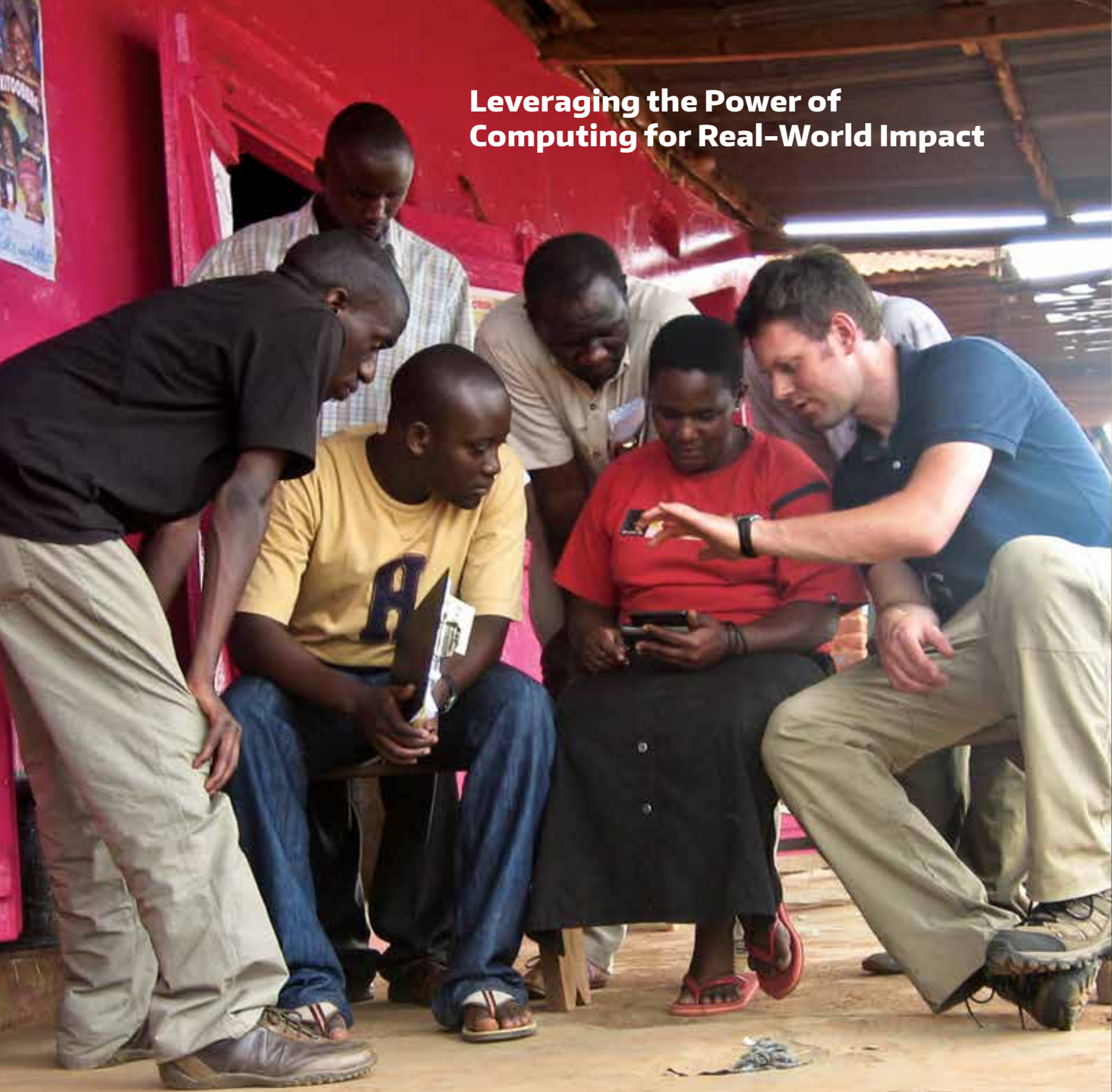
Finally, as we have now outgrown the Allen Center's Bill & Melinda Gates Commons for many important functions, CSE2 will include a 3,000 square-foot events center. It will be used for faculty meetings, industry recruiting events, seminars, department gatherings, workshops and conferences, and meetings of our increasingly large and interdisciplinary cross-campus research efforts, which are a critical strength of UW CSE and of UW as a whole.

Investing in Our Future

In addition to growing our physical footprint, we aim to grow our endowment to \$150 million (an increase of \$100 million over the current level). The \$6 million annually that will be generated by this endowment will enable us to recruit and retain the best faculty, attract the most promising graduate students and post-doctoral researchers, and keep a UW CSE education accessible to Washington students regardless of their means.



Leveraging the Power of Computing for Real-World Impact



Changing the World, One Data Set at a Time

The Open Data Kit (ODK) is a suite of open-source, customizable tools developed by UW CSE, in collaboration with Google, to aid mobile data collection and analysis in low-resource settings. ODK has been used to monitor elections in Afghanistan, track deforestation of the Amazon, fight AIDS and infant mortality in Africa, measure crop yields in Haiti, and respond to natural disasters in Pakistan. To date, ODK has been deployed in more than 40 countries and on the International Space Station—and UW CSE continues to build upon ODK to improve the quality of life for people around the globe.



**Picture This:
Advancing the
State of the Art in
Computer Vision**

UW CSE professor and computer vision expert Ira Kemelmacher-Shlizerman specializes in developing computational tools for modeling people, using the vast amounts of visual data available on the Internet. With her age progression software, Kemelmacher-Shlizerman has devised a way to accurately depict what a young child will look like at different ages from just a single photograph. Beyond satisfying people's curiosity about their future selves, the technology could change the face of missing child cases: by providing a more accurate representation of a child's current appearance even years later, UW CSE's age progression software could help law enforcement reunite more families.

Power to the People: Security and Privacy in a Connected World

UW CSE professor and Ph.D. alumna Franziska Roesner is on a mission to empower people with the knowledge and tools to take charge of their privacy and security in our increasingly connected, always-on world. As co-director of UW CSE's Security & Privacy Research Laboratory, Roesner has led the development of new tools that counteract unwanted third-party tracking on the Internet and improve user control over what information is shared with smartphone applications. A thought leader on a variety of issues related to privacy and security, Roesner is also a member of the UW's Tech Policy Lab, a collaboration between UW CSE, the School of Law, and the Information School that aims to inform and improve policies governing emerging technologies.





Join Us: Impact on Our Students, Impact on Our Region

Computer science and computer engineering are changing the world. UW CSE and Washington state are at the center of this revolution.

The Campaign for UW CSE will enable us to dramatically expand our research to address society's greatest challenges while preparing more of Washington's students for leading-edge jobs in a broadening array of fields. With your investment, we can leverage our momentum to create a CSE program that is the envy of all others, right here in Seattle.

Thank you for your interest in the Campaign for UW CSE.

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