During my five years as dean, I’ve become increasingly aware of the Hajim School’s remarkable spirit.

This past August, for example, cars full of incoming students and their parents lined up in the Park Lot on a sweltering Move-In Day. And who was there to hand out ice cream? Per Adamson, director and co-ordinator of the teaching labs; Daniel Smith, undergraduate program coordinator; and graduate student Hillary Maben, all from optics, drumming up support for the Institute of Optics, which is working hard to grow its undergraduate enrollment. We’ll probably never know to what extent that ice cream contributed to the increased number of incoming students who signed up for optics. But I sure appreciated the effort!

That’s the Hajim School spirit—when our faculty, staff, and students and our alumni and friends go the extra mile to tackle a challenge—and to create a welcoming atmosphere. It helps put into perspective many of the impressive things we’ve accomplished during the last five years.

• Our undergraduate enrollment has nearly doubled, from 738 to 1,337—far beyond anything our peer institutions have experienced. This fall 447 freshmen entering AS&E have expressed a primary interest in engineering. We have increased our master’s degree enrollment as well, from 135 to 250. In both cases, the quality of our students has improved simultaneously.

• Exciting new interdisciplinary programs have been launched—the audio and music engineering major in partnership with the School of Arts & Sciences and the Eastman School, the medical technology innovation program with the School of Medicine and Dentistry, and an innovative TEAM master’s program with the Simon School. We have collaborated with the School of Arts & Sciences on the design and programs for our new Ronald Rettner Hall for Media Arts and Innovation. Engineering is now integrated with programs all across the University. Truly, engineering is everywhere on campus.

• Our STEM-Gems program retained an unprecedented 95 percent of our underrepresented freshmen last school year compared with 53 percent in 2007.
• Participation by Hajim students in study abroad has steadily increased to 18 percent, while the national average for engineers is 3.9 percent.

• A new class in professional networking, which will become mandatory for all new engineering majors, will give our students an “unfair” advantage when they apply for internships and search for jobs.

• Senior Design Day has become a showcase for all our departments—and a signature event on the Hajim calendar.

• One hundred thirty-eight employees all across the campus have received a total of 239 Hajim School Bravo Chips to applaud their efforts on our behalf.

• Our now annual presence at the Memorial Art Gallery’s Clothesline Festival has enhanced our visibility in the community.

• Our school and department web pages now have a consistent look, with beefed up content, so we can put our “best foot forward” to a broad online audience.

• And, last but certainly not least, we have seen a gratifying increase in involvement, leadership, and gift giving by our alumni and friends, which is essential to our success.

These are collective successes. They never would have been achieved without a lot of contributions, large and small, from a lot of people. And for that, I am truly grateful.

LOOKING AHEAD
There’s every indication that the next five years will be just as remarkable.
The University recently announced it will invest an additional $50 million to create an Institute for Data Science, construct a state-of-the-art building behind the Hopeman Hall to house it, and hire up to 20 new faculty across the University to support the program.

This will set in motion exciting changes for the Hajim School.

**Computer science** will vacate the Computer Studies Building for a new home in the Institute for Data Science, which will allow . . .

. . . **electrical and chemical engineering**, now split between Hopeman and the Computer Studies Building, to be united in CSB.

Earth and environmental sciences, which will play a big role in the University’s data science initiative and energy and environment initiative, will vacate Hutchison Hall for new quarters in Hopeman and the adjoining data science building. That will allow . . .

. . . **chemical engineering** to vacate aging Gavett Hall for a new home in Hutchison Hall with its modern labs and close proximity to chemistry. And this, in turn, will allow . . . Gavett to be renovated for classrooms and teaching labs.

The result will be a true engineering and sciences “quad.”

Even more exciting is what will happen in that “quad.”

Hajim School departments are poised to play significant roles in all four priority research areas identified in the University’s strategic plan for 2013–18.

The **Data Science Initiative**, for example, will draw heavily on our expertise in **electrical and computer engineering** and in **computer science**, where department chair Henry Kautz and his colleagues are already doing groundbreaking work in such areas as human computer interaction and the mining of social networking sites like Twitter as a means of tracking and predicting disease outbreaks. Both departments are expected to play key roles in such areas as predictive health analytics, cognitive systems, and analytics on demand.

Within the broad topic of “**research foundations for a healthier society,**” **optics** will be involved in collaborative efforts in immunology and sight restoration. **Biomedical engineering** will play a key role in developing smart scaffolds to address musculoskeletal disorders and researching cell adhesion as a therapy target, for example.

Research initiatives envisioned in a proposed **Institute of Sound**, part of a broader emphasis on light and sound, will involve **mechanical engineering**, computer science, biomedical engineering, and electrical and computer engineering. The strategic plan’s fourth key area, energy and the environment, includes an emphasis on transition to carbon neutral energy resources. And that, of course, has
been a traditional strength of chemical engineering as well as a focus of many faculty conducting research in the Laboratory for Laser Energetics.

In our own Hajim School strategic plan for the next five years (go to www.hajim.rochester.edu/strategicplan.html), we’ve identified these priorities:

• Achieve a target size of 1,200 undergraduates, 400 master’s degree students, 400 doctoral candidates, and 100 faculty members
• Maintain the quality of our education
• Improve the educational experience of our students by renovating and strengthening laboratory and design experiences and by expanding offerings and pedagogical approaches
• Enhance mentoring, networking, community engagement, and professional development so our students can succeed in the dynamic and competitive professions of engineering and applied science
• Expand and diversify our research programs and encourage investigators to pursue new research opportunities.
• Enhance administrative efficiency and increase staff engagement in our core mission
• Ensure that the Hajim School provides opportunities for diversity of thought and culture

A HIGH STANDARD OF EXCELLENCE

In other words, expectations are high, and I have no doubt we can deliver. Why? Because our talented faculty, staff, and students and our hardworking, supportive alumni and friends continue to set a high standard of excellence.

During the last year alone, our faculty members were honored with these awards:

Govind Agrawal, professor of optics and of physics, received the 2013 William H. Riker University Award for Excellence in Graduate Teaching. He also was installed as the inaugural Dr. James C. Wyant Professor in Optics.

Miguel Alonso, associate professor of optics, received the Edward Peck Curtis Award for Excellence in Undergraduate Teaching.

Riccardo Betti, the Helen F. and Fred H. Gowen Professor of Mechanical Engineering, professor of physics, director of the Fusion Science Center of Extreme States of Matter and Fast Ignition, and
scientist at the Laboratory for Laser Energetics, received this year’s Hajim School Lifetime Achievement Award.

**Diane Dalecki**, professor of biomedical engineering, associate professor of electrical and computer engineering, and director of the Rochester Center for Biomedical Ultrasound, was named a fellow of the American Institute for Medical and Biological Engineering.

**James R. Fienup**, Robert E. Hopkins Professor of Optics, professor of electrical and computer engineering, professor in the Center for Visual Science, and senior scientist at the Laboratory for Laser Energetics, received the Emmett N. Leith Medal from the Optical Society of America.

**Eby Friedman**, Distinguished Professor of Electrical and Computer Engineering, received the Charles A. Desoer Technical Achievement Award from the Institute of Electrical and Electronics Engineers (IEEE) Circuits and Systems Society.

**Chunlei Guo**, professor of optics, was named a Fellow of the American Physical Society (APS) and of the Optical Society of America.

**Wendi Heinzelman**, professor of electrical and computer engineering and dean of graduate studies for Arts, Sciences & Engineering, was named a Distinguished Scientist by the Association for Computing Machinery (ACM), the world’s largest educational and scientific computing society.

**Lane Hemaspaandra**, professor of computer science, was awarded the 2013 SIGACT Distinguished Service Prize. SIGACT is the special-interest group for Theoretical Computer Science of ACM.

**James C. M. Li**, the Albert Arendt Hopeman Professor of Mechanical Engineering and professor of materials science, was announced as the 2015 recipient of the Gold Medal of ASM International, among the most prestigious of its awards.

**David Meyerhofer**, deputy director, Experimental Division director, and associate director for science at the Laboratory for Laser Energetics; professor of mechanical engineering and of physics and astronomy; and a co-principal investigator of the Fusion Science Center, was selected to receive the 2013 Leadership Award from the Fusion Power Associates Board of Directors.

**Jack Mottley**, associate professor of electrical and computer engineering and of biomedical engineering, was selected to receive the 2013 IEEE Region 1 Outstanding Teacher in an IEEE Area of Interest Award.

**Kevin Parker**, dean emeritus of the School of Engineering & Applied Sciences, William F. May Professor of Engineering, and professor of electrical and computer engineering, of biomedical engineering, and of radiology, was named a fellow of the American Institute for Medical and Biological Engineering.

**Gaurav Sharma**, associate professor of electrical and computer engineering, was named a fellow of IEEE (Institute of Electrical and Electronics Engineers).

**Scott Seidman**, associate professor of biomedical engineering and of neurobiology and anatomy, was named the Undergraduate Engineering and Applied Sciences Professor of the Year by the University of Rochester Student Association.
Ching Tang, professor of chemical engineering, was named recipient of the Eduard Rhein Award in Germany and was one of this year’s 15 inductees into the Consumer Electronics Hall of Fame.

Kevin Thompson, visiting scientist at the Institute of Optics, received the A. E. Conrady Award from SPIE.

Richard Waugh, professor and chair of biomedical engineering and professor of biochemistry and biophysics and of pharmacology and physiology, received the Biomedical Engineering Society’s 2013 Distinguished Service Award.

David Williams, dean for research in Arts, Sciences & Engineering; the William G. Allyn Professor of Medical Optics; professor of optics, of brain and cognitive sciences, of ophthalmology, and of biomedical engineering; and director of the Center for Visual Science, received the Edridge Green Medal from the Royal College of Ophthalmologists in London.

Xi-Cheng Zhang, director of the Institute of Optics and the M. Parker Givens Professor of Optics, was selected to receive the 2014 Kenneth J. Button prize by the International Society of Infrared, Millimeter, and Terahertz Waves and was elected a fellow of the American Association for the Advancement of Science.

The talent of our faculty is reflected not only in their awards but also in their ability to drive new ideas. Earlier this year, for example, Professor Jannick Rolland and her colleagues secured a federal Industry/University Cooperative Research Center grant that will leverage more than $4 million in combined federal, industry, and academic funding for the Center for Freeform Optics. Freeform optics can shape lenses and mirrors in unprecedented ways, with applications ranging from more efficient automotive and LED lighting to remote sensing devices. Freeform optics is ushering in a new era of optical innovation, and thanks to the hard work of Jannick and her colleagues, we are poised to lead the way.

With such a talented faculty to guide them, it is no wonder our students excel. This past year more than 30 of our students received major awards and fellowships. For example:

Mercy Asiedu, a junior biomedical engineering major, was awarded a summer research fellowship at the Mayo Clinic.

Cristina Canavesi, an optics doctoral student, was one of two first-place finishers in the Simon Games, a business simulation competition, earning a full-tuition scholarship to pursue an Executive MBA at the Simon School.

Amanda Chen, a BME major, was awarded a Goldwater Scholarship and a Tau Beta Pi Scholarship.
Jonathan Kho, an ECE major, received a Benjamin A. Gilman International Scholarship to study in Sydney, Australia.

Walter Lasecki, PhD candidate in computer science, received an MSR fellowship from Microsoft.

Christopher Lewis, a PhD student in chemical engineering, was awarded the James I. Mackenzie Graduate Scholarship from the Society of Plastics Engineers (SPE) Foundation.

Ankit Medhekar, a BME undergraduate, won a Fulbright Scholarship.

Mohammad Mirhosseini, a PhD student in Professor Bob Boyd’s group in optics, received the OSA Emil Wolf Prize for outstanding student paper at the FiO 2013 conference.

Jenny Quintero, a BME sophomore, also received a Gilman Scholarship.

Sarah Walters, an optics graduate student, received a National Science Foundation Graduate Research Fellowship.

Jeremy Warner, an ECE major, received an IEEE Power and Energy Society Scholarship Plus Initiative award.

The achievements of faculty and students are enabled by our staff members, who do so much behind the scenes to keep our school functioning.

Eileen Pullara, department administrator in computer science who received this year’s Outstanding Staff Member of the Year Award, is a prime example—a hardworking, dedicated professional who brings out the best in everyone with whom she interacts. Eileen can help plan a research conference, coordinate a new master’s program, alert faculty to new research funding opportunities—all the while flawlessly managing her department’s $3.8 million budget.

She is by no means alone. Just take a look through our Bravo Chip citations for this past year (at www.hajim.rochester.edu/bravo/index.html).

Heather Deal, in her first six weeks as the new communications specialist in BME, revised and developed new recruiting materials, completely redesigned the Rochester Center for Biomedical Ultrasound newsletter, and designed a series of departmental monikers for promotional shirts.

Scott Russell and Christine Pratt, the senior technical associates in MechE, spent the better part of a year coordinating installation of two large machines that were critical to a faculty member’s research, thereby opening the door for more funding opportunities and more projects for students.

Gina Kern, administrative assistant to the director of optics, generated more than 60 letters—in just two days—to recognize both current students for their outstanding academic performance and to welcome prospective students. Efforts like this are why students feel a sense of “belonging” and personal recognition in the Hajim School!
Talk about dedication: Gayle Hurlbutt, BME’s administrator, went home with flu-like symptoms and mild pneumonia. Four different grants were due, so she took her computer with her and completed the necessary forms from her sick bed to get the grants in on time.

And this is just a sampling. We’re going to do even more to recognize our staff members with an award named after Dottie Welch, yet another BME standout who retired earlier this year as the department’s undergraduate program coordinator. Dottie was always there when students needed a form signed—or someone to talk to. Especially telling is department chair Rick Waugh’s observation that Dottie “was always two steps ahead of me in anticipating what students’ needs would be and then carving time out of her own life to make it happen.”

We have another great resource in our alumni. They not only provide us with a proud tradition; they also generously share their wisdom, talents, and leadership skills to help us uphold that tradition.

Theo Mitsa, this year’s winner of the Hajim School Distinguished Alumni Award, provides an excellent example of how the research we do can have a direct impact. Theo and Dean Emeritus Kevin Parker were co-inventors of Blue Noise Mask, a novel approach to providing high-quality halftones.

We now have nearly 50 alumni serving on our Dean’s Advisory Committee and Visiting Committee. They have been among the most passionate advocates of our new WRT 273 class instructing students how to prepare résumés and professional portfolios; several of our alumni have volunteered to give students in this class much needed guidance and feedback.

THE CHALLENGES AHEAD
With all this talent at our disposal, I have every confidence we can tackle whatever challenges lie in store for us. Several of these have been identified in our Hajim School strategic plan: ensuring that incoming students have the foundational math skills they need for our curriculum, for example, and modernizing and streamlining our administrative processes and budget models.

One of the most pressing challenges is a byproduct of our success. As noted in our strategic plan: “We are challenged by the uncontrolled growth in some disciplines that strain the ability of faculty and staff to maintain the interactions with students that are central to our self-image. The substantial growth affects advising, availability of research opportunities, and access to class and lab facilities, many of which are aging with limited capacity.”

We’re working hard to address this issue. We’ve renovated undergraduate labs in ChemE and MechE. We’ll undertake more such projects as needed. We’ll consider hiring new faculty and technical support focused on teaching.

But we also need to be more nimble in our use of existing resources. For example, one possible solution to large class sizes is to offer spring-only or fall-only courses during both semesters. That would not only reduce class sizes but also give our students more scheduling leeway to study abroad for a semester and pick up those classes when they return.
In other words, we can create new opportunities when we meet our challenges creatively.

And so, even as we become more aggressive in seeking limited, increasingly competitive federal research dollars, we can diversify our sources of funding by embracing new opportunities through foundations and the private sector. The University is developing a new business engagement center, and we’ve recently revamped our technology transfer office. UR Ventures will be much more proactive in identifying our most promising discoveries and then working closely with faculty, researchers, entrepreneurs, and venture capitalists. This too, will create opportunities. Our students will enjoy career-oriented training, research, and placement opportunities. There will be a more direct pipeline for our discoveries to reach the marketplace. We will be better positioned to learn, discover, heal, create—and make the world a better place.

Not every challenge can be met by handing out ice cream in the Park Lot. But that spirit of inventiveness and enterprise will help us meet our challenges.

Hey, that’s what engineers do. We find solutions. That’s the Hajim Spirit!

Sincerely,

Robert L. Clark
Professor and Dean
Senior Vice President for Research