Curriculum Vitae
&
Leadership Portfolio

of

Nagi G. Naganathan, Ph.D., ASME Fellow

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Personal Information

Date of Birth May 4, 1956

Citizenship United States of America

Degrees, with field, institution and date

Ph.D.	Mechanical Engineering	Oklahoma State University, Stillwater, Oklahoma	Dec. 1986
M.S.	Mechanical Engineering	Clarkson University, Potsdam, New York	May 1981
B.E. (Honours)	Mechanical Engineering	National Institute of Technology, Tiruchirappalli (University of Madras), India	Oct. 1978

Education (other)

Graduate of the Harvard Institutes for Higher Education Leadership Program (MLE: Institute for Management and Leadership in Education), Harvard Graduate School of Education, Summer 2006

Recipient of ***Doctor Honorius Causa***, Technical University "Gheorghe Asachi", Iasi, Romania (Awarded on May 21, 2015 in Iasi, Romania).

Oregon Institute of Technology, Klamath Falls, Oregon

President	Effective April 2017

The University of Toledo, Toledo, Ohio

Years of Service: 30+

Faculty rank: Tenured Professor of Mechanical, Industrial & Manufacturing Engineering [MIME] (promoted as Full Professor in 1995)

Dean of Engineering	Jul. 2015	-	Mar. 2017
Interim President	Jul. 2014	-	Jun. 2015
Dean of Engineering	May 2003	-	Jun. 2014
Interim Dean of Engineering	Nov. 2000	-	Apr. 2003
Professor & Founding Chair of MIME	Jul. 1995	-	Oct. 2000
Interim Chair of Mechanical Engineering	Oct 1994	-	Jun. 1995
Assistant/Associate Professor of Mechanical Engineering	July 1986	-	Sep. 1994

Other related experience - teaching, industrial, etc.

9/92 - 6/93 - Sabbatical leave, Spicer Clutch Division, Dana Corporation, Auburn, Indiana.
1/81 - 7/86 - Teaching Assistant, Oklahoma State University, Stillwater, OK
8/79 - 12/80 - Teaching Assistant, Clarkson University, Potsdam, NY.
6/78 - 7/79 - Product Development Engineer, Ashok Leyland Motors, Madras, India.

Consulting

- Dana Corporation
- Eaton Corporation
- Ford Motor Company (Glass Division)
- General Motors
- Proctor & Gamble
- Reed Air
- Solar Energy Research Institute
- Teledyne CAE

Other Professional Accomplishments as a Member of the Faculty*

- Secured nearly $7M dollars in external grant funds for educational and research projects.
- Guided 48 graduate students on their master's theses and doctoral dissertations since 1986.
- Served in 50+ MS and Ph.D committees (other than serving as primary advisor).
- Advised nine different undergraduate research students.
- Supervised four post-doctoral and visiting research associates.
- Published over 100 articles in journals and conference proceedings.
- Awarded a U.S. Patent: *Active Suspension Systems and Components Using Piezoelectric Sensing and Actuation Devices*, US Patent 5,390,940, February 21, 1995.

Summary of Educational Administrative Experience

Service as Interim President (July 1, 2014 – June 30, 2015)

I was honored to serve as the Interim President of The University of Toledo between July 1, 2014 and June 30, 2015, upon the invitation of the Board of Trustees (BOT). I made a commitment to our BOT and our key stakeholders that the year of interim administration would not be a year of transition; but a year of accomplishments. In so doing, I made it a priority to reach out to the broader university community to gather their ideas and input on important topics that needed to be addressed, and empowered people to pursue and implement change in an aggressive time period.

On August 14, 2014, I invited the campus leaders for a facilitated discussion to identify priority topics that should be addressed during the 2014-15 academic year and launched several important university wide initiatives. We recognized that not all initiatives would be completed during the year; yet they were too important not to begin. Some of the outcomes included:

* Additional details are included in the Appendix starting on page 23 of this document.

- **Improving the undergraduate experience & safety:** We focused on campus safety, and in particular, the topic of sexual assault. I directed our Chief Human Resource Officer to initiate a complete review of the university's policies and procedures relating to Title IX and sexual assault to ensure that our policies and practices are among the strongest in the nation. We conducted a comprehensive, external review of the university's Title IX policies and procedures and initiated a search for a Director of Human Resource Compliance and Title IX coordinator.
- **Transformation of the university's medical enterprise:** We specifically explored affiliating the University of Toledo College of Medicine and Life Sciences with a clinical enterprise to achieve a better balance between our academic mission and the clinical learning opportunities for all of our health science students. While such an agreement has been pursued for almost a decade, we were able to mobilize this effectively last year. On May 13, 2015, UT's College of Medicine and Life Sciences signed a Letter of Intent of affiliation with ProMedica Health System, after due approval by our Board of Trustees on May 11. The Letter of Intent was signed to finalize a 50 year affiliation agreement, whereby the ProMedica Health System will be contributing **$2.5 billion dollars** to the University of Toledo to enhance the quality of the academic mission of our College of Medicine and to develop a world-class academic medical center in NW Ohio. The Boards of both ProMedica and the University of Toledo formally approved the agreement in August 2015.
- **Advancement Initiatives:** As of June 15, 2015, relative to the previous year, the number of donors was up 8%; pledges, as a subset, were up 9%; and the annual giving was up 5%. I travelled widely with our advancement team to visit with our alumni and donors across the nation. We also exceeded our annual fund raising goal of at least $15M for the year of interim administration.
- **Campus master plan:** We selected a consultant and negotiated a contract in May 2015. The Master Planning Initiative began in June 2015 with the first campus visit tentatively planned for fall 2015.
- A new **faculty hiring plan** across the two major academic campuses where each of our 12 academic colleges was asked to develop and present their faculty hiring plans based on their current capacity, projected growth and programmatic changes. These plans were reviewed by the Provost office and final hiring approvals were given. This resulted in the hiring of 37 tenure-track faculty members at the end of my administration while another 16 searches were underway. We also hired eight lecturers with seven other pending searches as of June 30, 2015.

As Interim President I made it a priority to personally connect with our campus community. I implemented a new program ***"Walk with the President"*** to ensure that students had the ability to personally and directly communicate with the President and in return, the President was able to directly hear the students voice their comments about their experiences. The program was very well received by our students. In addition, I visited with every college and division on campus to understand and appreciate their specific contributions to the mission of the university and how the office of the president can help them advance their mission.

I worked closely with our faculty and administrators to lead the university's response to the Toledo water crisis in August 2014 – a first ever event where the city's water supply was

suddenly declared as undrinkable by the city government. I assembled an emergency response team and closed appropriate divisions of the university for two days, worked with the team to provide the needed water supplies to campus, to make arrangements to protect students on campus and patients at our academic medical center (UTMC), and to communicate effectively with our stakeholders on and off campus. In addition, we responded to community needs by holding a public forum on campus to provide information on the crisis that attracted over 250 people. Seizing this challenge as an opportunity, we formed a ***Water Task Force*** that brought together faculty experts from six different academic colleges to identify solution strategies for the future. We worked with the Chancellor of the Ohio Board of Regents and members of the northwest Ohio delegation to the State Assembly in providing funding to UT and other universities to better understand the problem and provide helpful directions to elected officials and state and federal agencies for preventing such occurrences in the future. We helped our faculty compete and receive about $800K of the $2M dollars of funding provided by the Governor of Ohio to support water quality studies at Ohio's universities.

I continued to work closely with our Athletics division and our Athletic Director to make sure our student-athletes continued to do well both on the field and in the classroom. During the last year, we dedicated the newly renovated Larimer Complex (with $5M in private funds) with state of the art training facilities as well as the Marcia & Roy Armes Academic Center. In addition to our successes on the field, I am pleased to share that for the first time in school history, every team recorded a 3.0 GPA or higher in the spring semester of 2015. UT received the 2014-15 Mid-American Conference Institutional Academic Achievement Award.

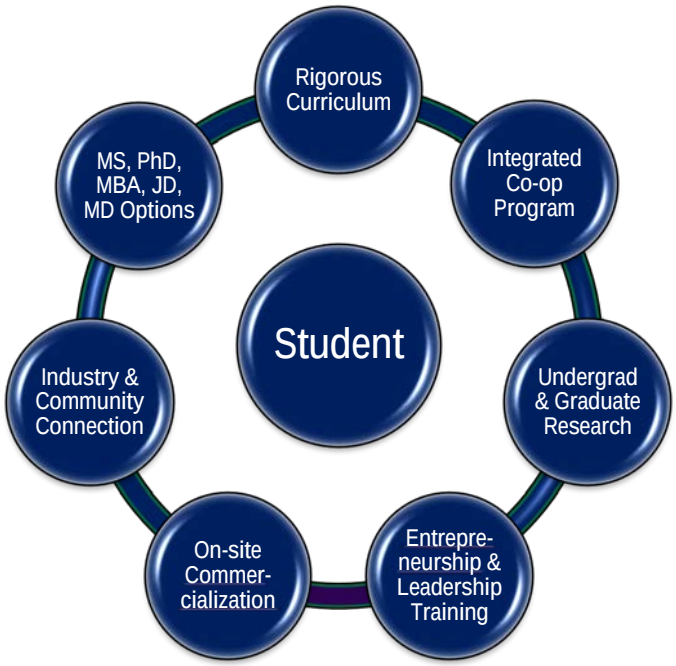
Several other important initiatives were also completed including:

- Formation of the *Human Trafficking and Social Justice Institute* to affirm the university's international leadership in the fight against human trafficking.
- Establishing a university-wide Library Collections Task Force with membership from faculty from our Libraries as well as academic colleges representing both campuses and students, to develop a three-year plan for strengthening collections in our university libraries and to recommend a vision for the physical space housing the 21st century academic library.
- Restructuring of the university's regional economic development engagement to better assist students and faculty through the creation of the Rocket Innovations program within the Office of Research and Sponsored programs.
- Successful conclusions of key labor agreements with our staff and faculty bargaining units. These contract negotiations had been stalled for nearly three years.
- Completion of several key administrative appointments: Dr. Gary Insch, as Dean of the College of Business and Innovation, Dr. Christopher Cooper as Dean of the College of Medicine, Dr. Chris Ingersoll as Dean of the College of Health Sciences, and Mr. William McCreary as Chief Technology Officer and Chief Information officer.
- Successful reaccreditation of the College of Law, led by Dean Daniel Steinbock.
- Successful reaccreditation of the College of Business and Innovation and winning the first-time accreditation of our Accounting program, led by Dean Gary Insch.
- Successful Joint Commission visit and reaccreditation of the University of Toledo Medical Center, led by Dr. Christopher Cooper and Mr. Dave Morlock.

- Establishing a consortium with several neighboring two-year community colleges: Northwest State, Terra State, and Owens.
- Working collaboratively with the other presidents of the University System of Ohio and the Inter University Council in Ohio to successfully lobby the leadership of the General Assembly for additional state share of instruction support.
- Reimplementation and elevation of the Outstanding Faculty, Staff, and Advisor Awards, as well as the University Service Awards for our faculty and staff.

Service in Administrative Roles as Chairperson and Dean in the College of Engineering (Oct. 1994 to June 2014; July 1, 2015 – March 2017)

In CY2006, my colleagues and I distilled and adopted a motto: "We recruit a *graduating* class; not a *freshman* class[SM]" -- a motto that reflects our commitment to student success. We expect every admitted student to be successful and work hard to make that a reality. To this end, we built an eco-system (*shown to the right here*) so that our students can truly become distinctive graduates.

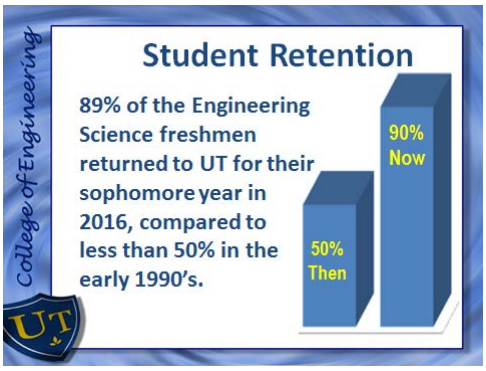


Not only does this ecosystem allow us mold our graduates to be distinctive; it also helps us and our students speak with conviction on the value of higher education and strongly rebut the question, "*Is college worth it?*" I addressed this very topic at my annual State of the College Address in October 2011 through the voices of our students, who spoke about the transformative impact of this ecosystem on their educational journeys. The continued vibrancy of such an ecosystem requires leadership that inspires commitment at all levels of the organization. Today the College of Engineering is recognized all-around as the flagship college of the university.

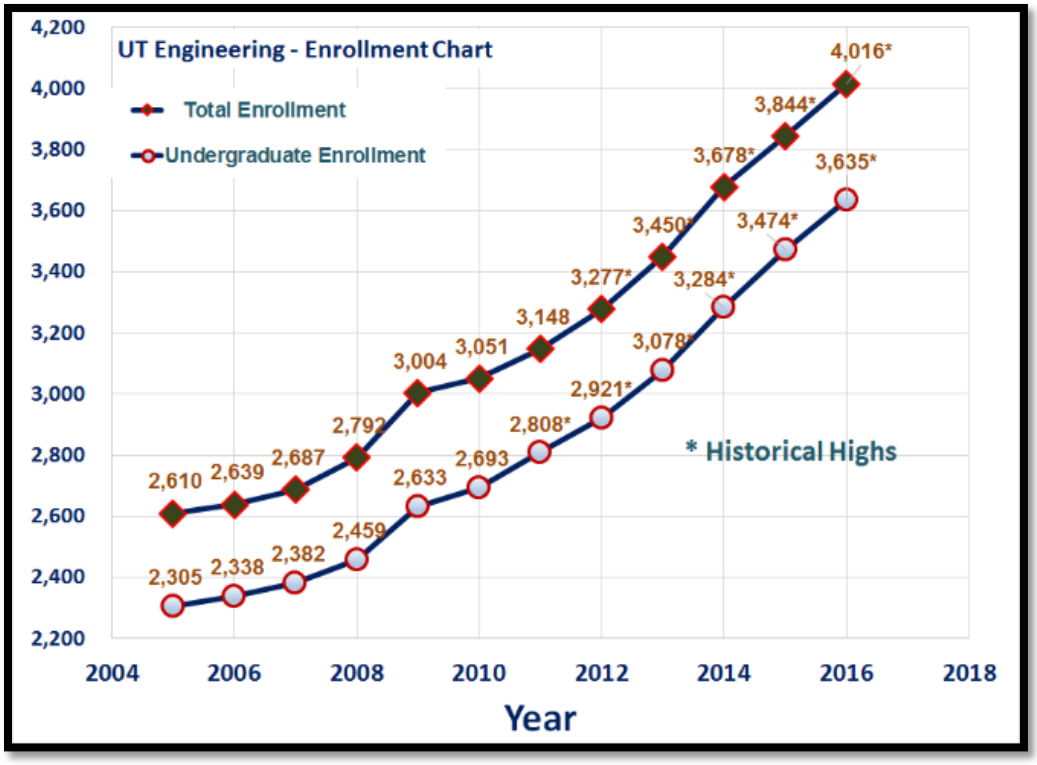
Selected administrative initiatives and their outcomes are listed below in reverse chronological order. Activities that spanned multiple years are more often listed with the year in which they were originally initiated. The initiatives are across six broad categories.

- Student-centered initiatives
- Program Development
- Mission driven collaborations
- Economic Development
- Outreach & engagement
- Resource development, including philanthropy

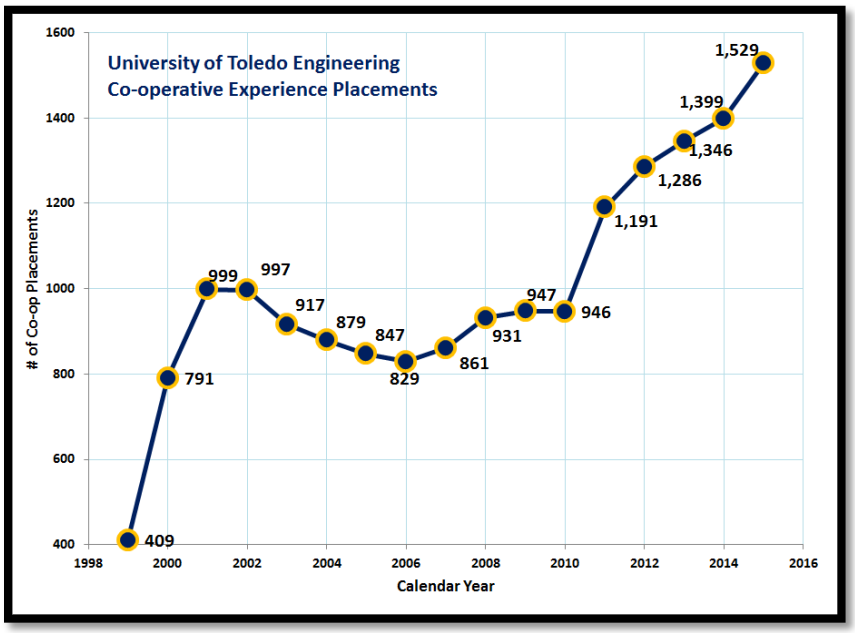
Year: 2014, 2015-present

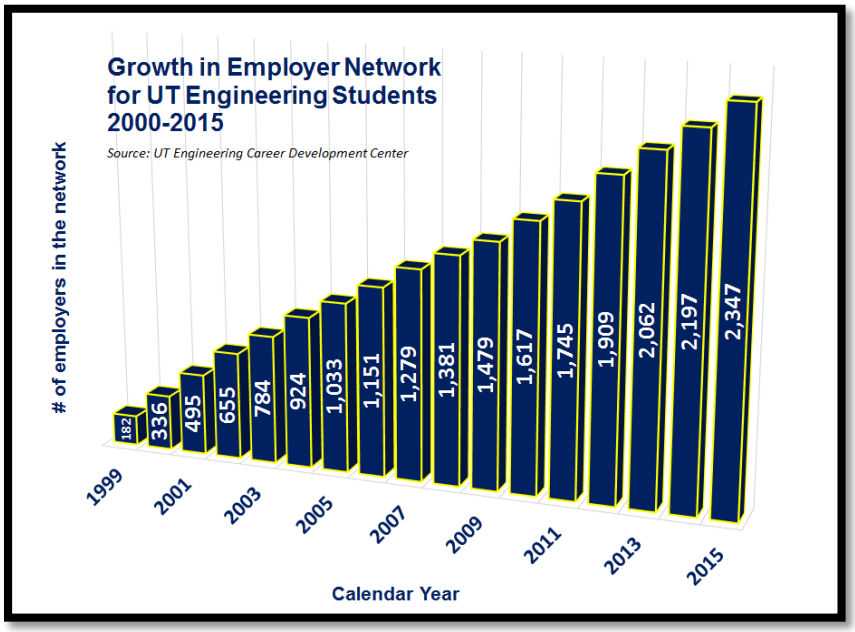


- The College instituted a successful high school student recruitment and retention process for the engineering programs effective fall 2004. In fall 2016, the College of Engineering set new historical records both for the undergraduate class (3,635) as well as for the total enrollment including graduate students (4,016). College has now grown to be the largest academic college at UT. Fall 2016 new engineering full time freshmen cohort size in the engineering science programs has increased by more than 100% during the last decade.
- The College of Engineering consistently leads the campus in terms of first to second year retention rates as well as in five and six year graduation rates. This is significantly superior to the typical rates of less than 50% in the early 1990s.
- The undergraduate enrollment has grown for more than a decade in a row since fall 2005, with six successive historical high enrollments since fall 2011. This growth is in the context of a competitive environment since there are 16 engineering colleges in Ohio. The College also leads the university in key quality metrics – 36.5% of all UT Honors students and 40% of all high school valedictorians attending UT are in the College of Engineering. The average metrics of the incoming class in engineering sciences are now at 3.76 for High School GPAs and 26.6 for ACT Composite (85th percentile in the nation).



- The College's mandatory cooperative experience program (which was started in 1999 and one of only eight such engineering programs in the nation) is vibrant and has continued to pay great dividends to the students and their families, college, and the university, including through the recession years. Our students average hourly wages exceed $17. College currently works with more than 2,300 employers (2,800+ employer sites) in 44 states, Washington, D.C., Puerto Rico, and 35 foreign countries; approximately 40% of the placements are with Fortune 500 companies). During CY 2015, students were successfully placed in more than 1,500 cooperative experience opportunities. College has placed students in more than 17,000 such opportunities during the last 15 years. The growth in annual placements as well as the increase in the size of the employer network are shown below.





- Secured philanthropic support of $1 million from Roy and Marcia Armes to create an endowment in support of the Roy & Marcia Armes Leadership Institute in spring 2014.
- Secured philanthropic support from SSOE, Group at $500,000 to seed the Engineering Technopreneurship Initiative in calendar year 2014.
- Secured philanthropic support from Craig and Kathy Bowie at a level of $100,000 to start a pilot Dale Carnegie introductory program for lower division engineering students, with a goal for every freshman to have strong foundational training in effective communication. The Craig and Kathie Bowie Student Rocket Lounge was dedicated on October 7, 2015 in recognition of their philanthropy.
- A new executive think-tank program with our industry and business partners (UT Engineering Corporate Partners Program) was launched in spring 2014. The partners have already pledged more than $600K in support of this program to help elevate the level of partnership excellence between the college and the corporate stakeholders.
- The leadership level contribution of $100,000 by Dana Holding Corporation for the above program was recognized with the dedication of a new state-of-the-art conference room in their honor on November 19, 2015. The new conference room is located within the Engineering Career Development Center.
- Secured philanthropic support from Gary and Eileen Leidich at the level of $500,000 as a lead gift to launch the new on-line, energy engineering practice-oriented master's program. The gift was formally announced on December 18, 2015.
- Secured another leadership level contribution of $150,000 in December 2015 from OI, Inc. (formerly, Owens-Illinois, Inc.) for the Corporate Partners Program. This gift will be recognized at a special event in 2016.
- Launched the Rocket Engineering Prep Program (REPP) in partnership with the Toledo Pubic Schools to increase the diversity of our graduating class. The pilot program was launched with philanthropic support from BP, one of our corporate partners (spring 2016). We will be announcing a second major gift of $500,000 from another corporate partner in spring 2017.
- The number of invention disclosures filed by our college faculty, students, and staff during the last decade reached a milestone count of 250, with more than 100 of them selected for patent prosecution. More than 40 of these invention disclosures have been licensed so far. Multiple faculty start-ups are in place.

UT Engineering Technology Innovation since Fiscal Year 2005	
# of invention disclosures	256
# of disclosures receiving patent application filing	101
# of disclosures licensed	42

UT Engineering Startups (as of Fall 2015)

turning point	GAMMA SPINE	Butterfly Spine, LLC
FREEDOM MEDITECH	ExEnSo Excellence in Energy Solutions	OsteoNovus
SuGanit	EndoSphere Spine, LLC	spinal balance
Agense LLC	Analytic Diabetic Systems, LLC	IRISENSE LLC

Year: 2013

- College played the lead role in securing a competitive grant award for $896,898 from the State of Ohio. The Ohio Workforce Accelerator Network grant helped to create new cooperative work experiences for our students with current and new employers.
- Secured an additional philanthropic support of $500,000 from Thomas and Elizabeth Brady to establish a new first year design experience for our freshmen starting fall 2013. The Thomas and Elizabeth Brady Engineering Innovation Center was dedicated in AY2013-14 adjacent to the Nitschke Technology Commercialization Complex to promote complementary programming in the areas of technology entrepreneurship. As a result of this program, a large number of freshmen learn to develop business plans in their first-semester orientation courses. Select students get to present their projects to angel investors at the end of their first year in the 'Angel-Pitch' contest.

- Secured philanthropic support for a new creative project ("Engineering Connections Mural") emphasizing innovations across the colleges of Communication and the Arts and Engineering. The Mural was dedicated during the 2014-15 academic year.
- Established task forces with representation from faculty, industry, and alumni to design and implement two new academic degree options – a new undergraduate degree in environmental engineering and a practice-oriented, on-line master's degree in energy engineering. The program objectives and educational outcomes were distilled from industry input. Both degree programs are in place this fall semester.

Years: 2012 –14

- Since 2012, the Engineering Online Graduate Engineering Program has been ranked every year among the top programs in the nation by the *U.S. News and World Report*.
- Initiated conversations with the College of Communication and the Arts regarding a Center of Excellence in Interactive Design (suspended due to administrative changes at the university level).

Year: 2011

- Implemented a new Master of Science in Mechanical Engineering degree program in Coimbatore, India, in partnership with a ranked academic institution (PSG Institute of Technology). The first cohort of 18 students graduated in April 2013.
- All of the college undergraduate degree programs went through successful reaccreditation site visits by ABET, Inc.

Year: 2010

- Established the Engineering Leadership Institute in the College of Engineering with private donor support from Roy and Marcia Armes.
- Worked with the UT Office of Residence Life to create a new Engineering Living Learning Community to help improve student success and retention.

Year: 2009

- Advocated with the university administration to secure $5 million to facilitate renovation of appropriate office and laboratory facilities for our Engineering Technology programs.
- Launched the College of Engineering Sustainability Lecture Series to promote a larger, community wide conversation on energy, environment, and sustainability.
- Received dual-accreditation of the UT Computer Science and Engineering Technology (CSET) program by both the Engineering Technology Accreditation and by the Computing Accreditation Commissions (the first degree program in the U.S. to receive this distinction).
- Secured donor support at $500,000 to facilitate the renovation of the College Colloquium facility; the SSOE Seminar Room was dedicated on May 6, 2009.
- Worked closely with faculty and department researchers to develop shared advanced laboratory facilities. A state of the art microscopy facility, Center for Materials and Sensor Characterization, which was founded on such a collective vision, formally opened on April 16, 2009 and has established a vibrant partnership with several industries. Undergraduate and graduate students have direct access to state of the art microscopy as a result of this collaborative initiative among our faculty and staff, as do our industry partners.

Year: 2008

- Co-authored a *Choose Ohio First* Scholarship proposal to the State of Ohio, resulting in state scholarship awards of more than $4,000,000 to students from Ohio. Several hundred students have benefited from these scholarship awards. Each recipient is also required to complete a minor in entrepreneurship in the College of Business and Innovation and is encouraged to pursue a co-operative work experience in an entrepreneurial setting.
- Secured donor funds from Plastic Technologies, Inc. to establish the PTI Innovation Fund in support of student entrepreneurial start-ups.

Year: 2007

- Facilitated joint appointments of senior faculty across Colleges of Engineering and Medicine (with shared funding) for the first time in the history of the college.
- Secured philanthropic support at $1.65 million to augment other funds and facilitate the construction and location of a new technology commercialization facility adjacent to the College of Engineering (fall 2007) to accelerate the technology incubation and commercialization efforts of our faculty, students, and staff. The Nitschke Technology Commercialization Complex was dedicated in 2010 as a mixed-technology incubator.

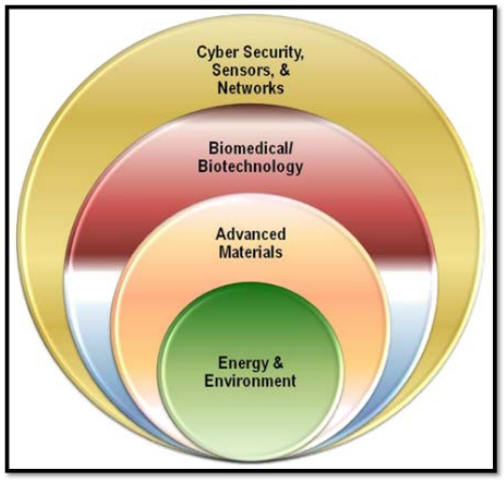
- Secured faculty, university, and the Ohio Board of Regents approval for a new, baccalaureate degree program in information technology (BSIT). This degree program has been offered jointly with the College of Business Administration since fall 2007.
- Secured faculty, university, and the Ohio Board of Regents approval for a new, joint PhD program in Biomedical Engineering between the Colleges of Engineering and Medicine effective fall 2007.

Year: 2006

- Cultivated donor interest and garnered donor support of $250,000 from Thomas and Elizabeth Brady to start a freshman entrepreneurship program.
- Established the new Engineering Research Center for Orthopaedic Research Excellence (E-CORE), in partnership with our College of Medicine.
- For the first time in its history, UT Engineering Graduate Program was ranked among the top 20 in the nation by Princeton Review (October 2006).
- Secured an investment of $500,000 from FirstEnergy Corporation in support of engineering student recruitment and retention (January 2006).
- Started a new Engineering Library, in partnership with the University Libraries; also, raised donor funds from the McMaster family ($250,000) to support investments in the Engineering McMaster Library.
- Signed a 10-year partnership agreement with Lorain County Community College in support of the on-site computer science and engineering program at Lorain. This was recently renewed for another 10 years until CY2026.

Year: 2005

- Developed and launched the strategic plan for the College of Engineering that had clearly distilled goals for the next decade. The strategic plan emphasized three areas of focus. (i) Focus on being Student-Centered; (ii) Focus on Innovation; and (iii) Focus on Connections.
- The plan also identified strategic focus areas of research for the college: Energy and Environment, Biomedical/Biotechnology, and Advanced Materials. This has since been expanded to include Cyber Security. The focus areas has been used to provide the framework for a faculty hiring plan.



- Co-chaired the University Prioritization Committee with Faculty Leaders (2005-2006).

Year: 2004

- College faculty and students involved in multiple statewide Third Frontier Research initiatives involving other state universities and industries – Wright Fuel Cell Group, Center for Multifunctional Polymer Nanomaterials and Devices (CMPND), Institute for the Development and Commercialization of Advanced Sensor Technology (IDCAST), and Ohio Center for Aero Propulsion and Power.
- Formed the first National Visiting Board for the College in AY 2004-05. Accomplished leaders from industry and academia serve as members of this board. Faculty, deans, and provosts from prominent universities (Carnegie Mellon, Case Western Reserve, Cornell, Maryland, Michigan, Northeastern, Ohio State, UCLA, and Rose-Hulman) have served as members of this board.
- Established the Small Gas Turbine Research Institute with continued collaborations with industry (Teledyne, CAE, Inc.) and NASA.
- College instituted a successful high school student recruitment and retention process for the engineering programs effective fall 2004. After a decade, in fall 2014, the College of Engineering set new historical records both for the undergraduate class (3,284) as well as for the total enrollment including graduate students (3,678).

Year: 2003

- Created an Office of Assessment and Planning to help the departments prepare effective assessment plans for continuous improvement and to prepare for accreditation visits.
- Founded a freshman leadership organization, FYRE: First Year Rocket Engineers, to help engineering freshmen nurture a sense of community and cultivate social and leadership skills.
- The College successfully collaborated with our Office of Research to garner a new award of $937K in support of Advanced Materials Research. Faculty partnership from this

award was leveraged into a successful Wright Center of Innovation award on fuel cells in partnership with Case Western Reserve University.

Year: 2002

- Successfully lobbied the UT central administration for the renovation of Palmer Hall classrooms and for hazardous material abatement in North Engineering.

Year: 2001-2014

- Oversaw multiple successful accreditation visits for all of the engineering science programs (2001, 2005, and 2011) and our Engineering Technology Programs (2001, 2006, and 2011) and contributed to Higher Learning Commission accreditation visits.

Year: 2001

- Served as a faculty advisor of the student chapter of the National Society of Black Engineers and helped student members organize annual industry leadership programs. Today, UT NSBE student chapter is a vibrant organization with more than 50 members each year. Members are now able to attend regional and national conferences annually.
- A new distance learning classroom studio was put in service, allowing web-based instructional broadcasts to remote sites, enabling us to reach more underrepresented students and their teachers.
- Created a new position and hired a Senior Associate Director of Engineering Pre-College Programs to work with college offices, the Division of Enrollment Services, and the Provost's Office under the guidance of the Associate Dean of Engineering Undergraduate Studies, to increase the quality and diversity of the incoming student body. The office has now been elevated as the College Student Services office and serves as a key resource for our students.
- Instituted a successful on-site Computer Science & Engineering degree program partnership at the Lorain County Community College. The program was established in 2001 and is continuing to do well.
- Nitschke Auditorium became a popular venue for community events, building on the wishes of the donor. The auditorium became the annual site for such events as the regional MATHCOUNTS competition and Dr. Martin Luther King Oratorical Contest.
- Reorganized the College Career Management Office as the Engineering Career Development Center with a particular objective to increase the quality of placement opportunities for our students in the mandatory co-op experience program; Expanded Engineering Career Fairs to two per year which attract 100+ companies each semester to the engineering complex for co-op and full time placement opportunities for our students;
- Started a student chapter of the National Society of Professional Engineers in the college.
- The college became an active member of the University Intermodal Transportation initiative.
- The UT Engineering Council (Dean's Student Advisory Council) was reinvigorated as a service organization, with our students undertaking many leadership and service roles,

not only within the College of Engineering, but also with the other colleges and the community at large.

Year: 2000

- The College was honored to dedicate the Finkbeiner, Pettis and Strout, Inc. Design Laboratory in Civil Engineering in recognition of their philanthropic support to the College.

Year: 1999

- Both the industrial and mechanical engineering programs were successfully accredited under the new outcome assessment based accreditation guidelines, during the ABET site visit in fall 1999.
- Cultivated donor support as a department chair resulting in the Clarence and Margarete Simon Manufacturing Processes Laboratory (alumnus donation of $100,000).

Year: 1998

- Cultivated donor support as a department chair resulting in the Richard Schreder Laboratory (alumnus donation of $140,000).
- Founded the Senior Design Clinic in the MIME department –an experience that allows our senior students to explore solutions for an actual industry problem with associated guidelines similar to a professional workplace. The client contributions to the clinic allowed the department to create a set of resources supporting student learning, which would otherwise not be possible. The Clinic is successfully continuing its operations even today. The students also get to showcase their projects to the community on the last day of each semester at the Senior Design Exposition. Typically, more than 500 people attend the exposition.

Year: 1997

- As the founding chairperson, in partnership with the faculty and staff of the newly merged department of Mechanical, Industrial, and Manufacturing Engineering, created and implemented the first strategic plan for the department. The department grew to be more than 800 undergraduate and graduate students and continues to be among the university leaders in external grant funded research.

Year: 1996

- Articulated a customized, practice-oriented, master's degree program for Dana Corporation in Vehicle Engineering. Several cohorts of Dana professionals earned their master's degrees in this program which was funded by Dana Corporation.
- Supported student efforts for the SAE Formula Car by actively seeking industry support ($100,000+ during 1996-2000).
- Transformed an opportunity that came as an inquiry for a few student interns from the Lucas County Commissioners Office to a multi-year applied research and learning opportunity for our students for solid waste analysis research. It was a win-win partnership as the County was able to meet the EPA mandate of a minimum of 25% solid

waste recycling ahead of schedule. The Waste Analysis Laboratory, founded in 1996, has continued to attract external grant funding and remains in operation today.

Year: 1994-1995

- Organized the relocation of the department to the new Engineering Complex in Nitschke Hall with supplementary renovations and space reallocations during the relocation process.
- Launched a Research Experience for Undergraduates program in the department to help faculty encourage talented undergraduate students experience research and to promote their interests to pursue graduate studies.
- Supported faculty efforts to launch two research consortia in the department: ULTRA (University Laboratories for Tribology Research and Applications with NASA, Akron, OSU, and CASE) and AMMC (Abrasive Micro Machining Consortium in partnership with industries).
- Two university research centers in manufacturing were launched: Manufacturing Systems supporting a Presidential Faculty Fellow Award to Professor Chen; and another to conduct the activities of a $724K contract from the Defense Logistics Agency. Also, worked with department faculty to secure two major awards from the Office of the Governor in the area of precision manufacturing.■

Leadership Philosophy

I believe leadership originates from one's core values of sincerity and authenticity founded on integrity and trust and where 'us' is prioritized before 'I'. A true leader is committed to bringing about positive changes through a process where the journey is valued as highly as the destination itself. I firmly believe that the most positive outcomes will result from collaborative engagements within the university and with our regional and global community at-large.

A leader understands that a clearly articulated vision provides the perspective needed to evaluate opportunities in the context of the mission of the university. A visionary president must be able to recognize such opportunities, build consensus while not shying away from the critical role of a courageous leader, define an effective process and take concrete actions to capitalize upon these opportunities.

Commitment to quality and commitment to access need not be and must not be mutually exclusive topics. The president must be committed to providing an outstanding student-learning environment, founded on the capabilities, energy, and passion of a well-qualified faculty and staff. To this end, the president must be committed to energizing and mobilizing the current faculty and staff at the institution in a strategic manner while attracting additional world-class talent, to bring about future growth despite difficult economic times and the associated challenges. The president must be able to respond to shifting regional and national priorities. Leadership and creativity are essential in further developing strong undergraduate and graduate programs and to enhancing national and international visibility.

Success at a comprehensive university will not be realized if the president merely pontificates about excellence from behind a desk. Instead, the president must envision and implement an energetic

outreach program both within the university and outside, thus increasing its visibility. The president must be capable of developing a strong rapport with and support from all constituents, both internal and external. All constituents of the university must believe they have an active voice and be able to contribute to elevating the stature of the university on the national stage. Additionally, the president must actively lead philanthropic development for the benefit of all programs in the institution.

It is imperative that the elements of a leader's vision be substantive and not mere platitudes. There are six distinct elements in my vision for the future.

For a vibrant future, a comprehensive higher education institution must:

- Be a top choice for talented, prospective students and high-caliber faculty and staff.
- Foster a culture dedicated to quality learning, scholarship, and a high quality student experience both within and outside the classroom.
- Be recognized by employers, alumni, and all key stakeholders as a source of outstanding graduates.
- Enhance the resource streams for the university by promoting entrepreneurial and innovative programming and through dynamic philanthropy.
- Believe and practice that professionals practice in the context of humanities.
- Share an environment where an unwavering commitment to excellence, embracing a culture of inclusion for all members of the university community, and collegiality are clearly visible core values and practiced every day.

All elements of this vision are clearly related to the university's reputation and resources. In addition, national and international prominence cannot remain a perpetual aspiration for institutions of higher learning. It requires established goals and concrete steps to attain the vision. Increased prominence at both the national and international levels will help us attract new financial resources, whether these are investments from regional partners, endowments, or novel programs that generate revenue. Additionally, such a reputation will enable the University to recruit outstanding faculty, staff, and students in an increasingly competitive marketplace. Similarly, the University will become a preferred source of outstanding graduates for major employers.

However, financial resources alone are not sufficient to help us realize a vision of national and international prominence. The resonant relationships we form with our alumni, employers of our graduates, other university partners, and the larger community are equally important resources for our success. The president must have the ability to articulate a vision internally and externally and to rally the various constituencies in support of that vision. Accomplishment of the vision will require all the energy and passion that a leader can inspire.

The more sincere and authentic a leader is in word and action, the more eager his or her constituents are to participate with energy and passion. To have the credibility to lead such an effort, the university president must also have garnered the credibility and personally demonstrated significant accomplishments as a faculty member and as an administrator.

I firmly believe my leadership philosophy and vision will elevate a comprehensive university's national and international prominence. In turn, this will make the institution a choice destination for students so that they can become distinctive graduates, and a preferred home for world-class faculty so that they can help to elevate the university's reputation as a premier center for education, scholarship and innovation.

Honors and awards

- Recipient of ***Doctor Honorius Causa***, Technical University "Gheorghe Asachi", Iasi, Romania (Awarded on May 21, 2015 in Iasi, Romania.)
- **Distinguished Alumnus Award,** National Institute of Technology, Tiruchirappalli, India, April 2007.
- **2003 Engineer of the Year,** Technical Society of Toledo & Toledo Society of Professional Engineers, January 2003.
- Invited to membership in Rotary International, December 2002.
- Awarded the grade of **Fellow** by ASME International Board of Governors**,** September 2002.
- Awarded **Certificate of Appreciation** from the National Committee for Employer Support of the Guard and Reserve, September 2002.
- University College **Fellow award for Economic & Community Development**, April 2002, The University of Toledo.
- **University Outstanding Researcher Award**, April 2001, The University of Toledo.
- **Ken Waldron Award**, Applied Mechanisms and Robotics Conference, December 1999.
- Received the **Mechanical Engineering Outstanding Teacher Award**, May 1994. (Instituted the Sastri-Deshpande Scholarship in the College of Engineering using the award amount as the seed funding.)
- Received the **University of Toledo Outstanding Teacher Award**, May 1989.
- **Howard Watrous Award for Applied Research**, Applied Mechanisms and Robotics Conference, November 1993.
- **Region V ASME Outstanding Faculty Advisor Award**, April 1991.
- Received the national **Society of Automotive Engineers Ralph R. Teetor Educational Award**, Feb 1991.
- Phi Kappa Phi - Honorary Scholastic Society (1986)
- National Dean’s List (1984-86)
- National Merit Scholarship (1973-78)

Scientific and Professional Societies

ASME	Fellow Grade (since September 2002)
	Member since 1986
	Member of Region V Northwest Ohio Executive Board (1987-1999)
	Past Region V Northwest Ohio Programs Chair and Newsletter Editor
	Faculty Advisor during 1987-91 for UT Student Section.
ASEE	Member
NSBE	Faculty Advisor for the UT Student Section (2003-2005)
Phi Kappa Phi	Member
Pi Tau Sigma	Honorary Member
SAE	Member
Sigma Xi	Member
SME	Member
SPIE	Member
Tau Beta PI	Honorary Member
UTEC	Faculty Advisor (Nov. 2000 to June 2014, July 2015-present)

Professional Service Contributions

- Member, Citizens for Effective Government Committee -- a six-member committee appointed by the Mayor Paula Hicks-Hudson of the City of Toledo to recommend restructuring Toledo's city government operations (Appointed September 2016).
- Member, Board of Directors, United Way of Greater Toledo, March 2015-present.
- Member, ASEE International Advisory Committee (Appointed July 2015)
- Chair, ASEE Global Engineering Education Committee (Appointed August 2015)
- Elected nationally as a member of the Executive Board, ASEE Engineering Deans Council, 2014-17.
- Member, Board of Trustees, Toledo Chamber of Commerce, 2014-2015.
- Member, Board of Directors, Regional Growth Partnership, 2014- 2015.
- Member, Executive Committee of the World Board of Directors, World Association for Cooperative and Work-Integrated Education, 2011-present.
- Elected member, Executive Committee, Council of Energy Research and Education Leaders, 2011-present (elected as President in July 2015).
- Co-Chair, Search Advisory Committee, Dean, College of Medicine, 2014.
- Elected member, Public Policy Committee, ASEE Engineering Deans Council, 2011-13.
- Member, Ohio Board of Regent's Innovation, Technology Transfer and Commercialization Task Force, 2013.

- **Professional Service Contributions (continued)**

- Member, Physician Compensation Committee, University of Toledo Physicians, LLC.
- Chair, Search Committee, University Provost (2010-11)
- Chair, Search Committee, Dean of the College of Graduate Studies, 2008.
- Member, Board of Directors, Ohio Aerospace Institute, 2008–11, 2013-16.
- Member, University Technology Committee, 2008.
- Member, UT BOT Tenure Track and non-Tenure Track Faculty Contract Negotiations, 2008.
- Member, ASEE Engineering Deans Council Committee on Diversity, 2007 – present.
- Member, Northwest Ohio Executive Council, Prevent Blindness of Ohio, 2007 – 2008.
- Served as a member of the Selection Committee to select the contractor for the $45M Toledo Waterways Initiative Engineering upon invitation by the City of Toledo Public Utilities department, 2007.
- Member, University Strategic Planning Implementation, 2007.
- Member, Search Committee, University Provost, 2006-2007.
- Member, University Finance and Strategy Committee, 2006-present.
- Member, Steering Committee, Ralph Regula School of Computational Science, 2006.
- Member, UT-MCO merger Faculty Synergy Group, 2006.
- Member, UT BOT Tenure Track & non-Tenure Track Contract Negotiations, 2006.
- Co-Chair, University Prioritization Committee, 2005-2006.
- Ohio Engineering Deans Council President, 2004-2005.
- Ohio Engineering Deans Council Secretary, 2003.
- Member, UT BOT Tenure-track and Adjunct Faculty Contract Negotiations Committee, 2004-2005.
- Member, Rotary International, 2003 - present.
- Member, Board of Directors, Wright Fuel Cell Group (Headquartered at Case Western), 2003 - 2007.
- Member, UT Ohio Board of Regents Instructional Equipment Committee, 2002-2003.
- Member, UT Transportation Institute Oversight Committee, 2001- present.
- Member, UT Facilities Planning Council (Deans' Council Representative), 2001-2005.
- Member, UT Strategic Planning Technology Sub Committee (#3), 2001-2002.
- Member, Innovation Awards Selection Committee, Dana Corporation, 2001 & 2002.
- Member, UT BOT non-Tenure Track Contract Negotiations Committee, 2001-2002.
- Member, UT Ohio Board of Regents Instructional Equipment Committee, 2000-2001.
- Member, UT BOT Tenure Track Faculty Contract Negotiations Committee, 2000-2002.
- Member, NW Ohio Regional Technology Alliance Advisory Committee, November 2000 – 2003.
- Member, Capital Campaign Committee, West Side Montessori Center, 1999-2002.
- Member, Board of Trustees, West Side Montessori Center, 1999-2002.
- Member, College of Engineering Dean Search, 1994.

Professional Service Contributions (continued)

- Member, Director of International Students Office Search Committee, 1994.
- Member, Associate Vice President of Academic Affairs Search Committee, 1994.
- Member, University Strategic Planning Steering Committee, 1991-1992.

Invited Talks

- Luncheon Keynote address: Global Partners Luncheon, WACE 19th World Conference on Cooperative & Work-Integrated Education, Kyoto, Japan, August 20, 2015.
- Presentation: College of Engineering, Kagawa University, Takamatsu City, Japan, August 19, 2015.
- Keynote presentation: Technical University "Gheorghe Asachi" from Iasi, Iasi, Romania, May 21, 2015.
- Keynote address: PSG Institute of Technology, India, January 27, 2014.
- Presentation: American University of Beirut, Lebanon, June 7, 2012.
- Multiple public speaking engagements including community organizations such as Rotary Club, Toledo Public School Foundation, engineering societies, & international partner sites, 2009-present.
- *Automotive Engineering*, a presentation to PSG College of Technology, Coimbatore, India, March 2009.
- *Diversity & Workplace*, Panel Member, Society of Women Engineers, 2005 Ohio Valley Region G Conference, February 2005.
- *International Students*, testimony to Select Committee on Ohio's System of Higher Education, August 2002.
- *Transportation Geotechnics Conference*, Toledo, Ohio, May 2002.
- *SAE Fatigue Committee Conference*, Toledo, Ohio, 2001.
- *A Career in Engineering*, Presentation to St. Johns Jesuit High School, May 2002.
- *Manufacturing Education Today*, Society of Manufacturing Engineers, 2001.
- *Analysis of Heavy Duty Driveline Vibrations* -- a talk to Paccar Truck Company, Mt, Vernon, WA, December 1997.
- *Simulation of Driveline Torsionals* -- technical presentation to Kenworth Truck Company, Seattle, WA, November 1994.
- *Heavy Duty Truck Torsional Vibrations* -- technical presentation to Ford Motor Company, September 1994 & November 1994.
- *Smart Structure Research* -- Guest lecture at the National Aeronautical Laboratory, Tokyo, Japan, August 1993.
- *Autonomous Guided Vehicle* -- guest lecture at IIT Bombay, India, August 1993.

Invited Talks (continued)

- *Piezoceramic Automotive Suspension* - a presentation at Monroe Auto Co., Monroe, MI., 1991.
- *Research in Robotics Lab* -- presentation in ME Dept. Graduate Forum, 1991.
- *Microactuation using Piezoceramics* -- a talk to the Edison Center Technical Steering Committee, Edison Center, Toledo, Ohio, November 1, 1990.
- *What do Engineers do?* -- a talk to the Lucas County High School Students on the 11th Annual Lucas County Career Day, March 1990.
- *Mathematical Modeling and Computer Graphic Simulation using IGRIP Software*, a talk to the technical staff of DeVilbiss Company, Toledo, March 21, 1989.
- *Artificial Intelligence*, a talk to the Instrument Society of America, Toledo Section, October 19, 1988.
- *A Career in Engineering*, a talk to the Lucas County High School Students on the 8th Annual Lucas County Career Day, March 24, 1987.■

Review Panels/Short Courses/Conferences, etc.

ASEE Science, Mathematics and Research for Transformation Panel, Arlington, VA, January 2008.

Member of NSF Review Panel, ITR Program/CMS Division, Arlington, VA, May 2000.

Member of NSF Review Panel, Undergraduate Education Program, Arlington, VA, July 1995.

Member of NSF Review Panel, Mechanics and Materials Program, Arlington, VA, July 1995.

Member of NSF Review Panel, Mechanics and Materials Program, Arlington, VA, Feb 1994.

Member: Conference Coordinating Committee: National Applied Mechanisms and Robotics Conference, Cincinnati, Ohio, 1989, 91, 93, 95, and 97.

Member: Computer Aided Instruction of Machine Design Planning Group, University of Delaware, December 1989-90.

Successfully organized the 3-day ASME Regional Student Conference, Toledo, Spring 1991, as host Faculty Advisor, with more than 400 students in attendance.

Paper presentations as well as Chairman/Vice Chairman responsibilities at:

- Adaptive Structures & Active Materials Conferences.
- Smart Structures & Materials Conferences.
- ASME Flexible Assembly Conferences.
- ASME Mechanisms Conferences.
- Applied Mechanisms and Robotics Conferences.
- ASME Design Automation Conferences.

Review Panels/Short Courses/Conferences, etc. (continued)

Attended The University of Michigan Summer Engineering Conferences, Ann Arbor:

- *Digital Signal Processing* (1987)
- *Finite Element Methods (Static Analysis)* (1987)
- *CAD of Vehicles & Machinery* (1989)
- *Production Control Systems* (1991)

Participated in the *Workshop on Production Systems*, National Center for Manufacturing Sciences, Ann Arbor, MI, Fall 1991.

Participation in *WITNESS workshop*, Training for Discrete Simulation Software, FORD Advanced Manufacturing & Technology Center, Dearborn, MI, Summer 1991.

Participation in *FLEXIS workshop*, Training for Workcell Control Logic Simulation Software, Flexis Control, Inc., Ann Arbor, MI, Summer 1991. Participated in the ASME Faculty Advisor Retreat, Akron, Ohio, September 1990.

Participation in *Modal Analysis*, a short course offered by Structural Measurement Systems, Ann Arbor, Michigan, August 1990.

Participation in *Microcomputers: Hardware, Software, and Interfacing*, a short course offered by Life Tree International, Washington, DC, May 1990.

Participation in *Design for Assembly*, a short course offered by SME, Dearborn, MI, November 1989.

Participated in the *Excellence in Engineering Education* - A Seminar on Teaching Excellence, Organized by The University of Toledo, September 1988.

Participated in the *NSF Faculty Enhancement Program in Manufacturing Engineering*, The University of Michigan at Dearborn. Course Director: Dr. William Spurgeon, UOFM at Dearborn. (June-July, 1988)

Offered a short course: *Finite Element Methods using COSMOS/M*, to the technical staff of Toledo Stamping Company, Toledo, January - June, 1988.■

Appendix

Additional Details: Accomplishments in Graduate Education, Grantsmanship, & Scholarship

Supervision of Theses, Projects, & Dissertations

Graduate Research Supervised as Primary Thesis/Dissertation Advisor

#	Name	Degree	Topic	Yr.
1	Ciocanel	Ph.D.	Magnetorheological Fluids	2006
2	Karuppaiah	MSME	Failure analysis of Clutch Springs	2006
3	Molyet	Ph.D.	Magnetorheological Fluids	2005
4	Gorle	MSME	Gear Rattle	2005
5	Lee, S.	MSIE	Flex Plate Design Synthesis using DFMA	2002
6	Bandekar	MSME	Flex Plate Project (co-advisors: Dr. Huang, Dr. Pourazady)	2001
7	Kulkarni	MSME	Study of MR Fluids in multiple flow modes	2001
8	Agrawal	MSME	Design of a MR Fluid Center Bearing	2001
9	Yu	Ph.D.	Hysteresis in Piezo Actuators	2000
10	Peelamedu	Ph.D.	Impact Detection Using Smart Materials	2000
11	Essi	MSME	Prediction of propshaft assembly critical speeds	1999
12	Phadnis	MSME	Characterization of a Piezoelectric Actuator	1999
13	Srinivasan	MSME	Dynamics of CV Joints	1998
14	Kumbla	MSME	Automotive Driveline Vibrations (Project)	1998
15	Alt	MSME	Reliability of Piezoelectric Actuators	1997
16	Lee, S.	Ph.D.	Integrated Simulation	1996
17	Molyet	MSME	Piezoelectric Actuation	1996
18	Duggan	MSME	Modal Analysis of a Drive Shaft Testing Machine	1995
19	Katoria	MSME	Effect of Electrode Geometries in Piezoactuators	1995
20	Kumar	MSME	Dynamic Analysis of a Cardan Universal Joint	1995
21	Niemeyer	MSME	Analysis of XY Array Actuators	1995
22	O'Neil	MSME	Drive System Design for an AGV	1995
23	Rao, S.	MSME	Rattle in Transmissions (Project)	1995
24	Salvady	MSME	Hysteresis of a PZ Actuator	1995
25	Thirupathi	Ph.D.	Active Suspension using Piezoceramics	1995
26	Tipnis	MSME	FEA of Belleville Springs (Project)	1995
27	Ziauddin	MSME	FEA of a Coil Spring in a Clutch Application (Project)	1995
28	Govindaswamy	MSME	Active Damping via Piezoceramics (Project)	1994
29	Majumder	MSME	Real Time Implementation of Collision Avoidance Algorithm	1993
30	Onders	MSME	Manufacturing Simulation	1993
31	Sreeram	MSME	Mobile Robotics	1993
32	Xu	MSME	Design of a Ultrasonic Sensor System for a Mobile Robot	1993
33	Lee, H.	MSES	FEA of a Truck Driveline	1992

#	Name	Degree	Topic	Yr.
34	Shivaram	MSME	Manufacturability Issues in Die Design	1992
35	Van Benthem	MSES	Modal Analysis (Project)	1992
36	Kim	MSME	A Real Time Collision Avoidance Algorithm for AGVs	1991
37	Kosaraju	MSME	Finite Element Analysis of Axi-symmetric Piezoelectric Geometries	1991
38	Parthasarathy	MSME	Finite Element Analysis of Piezoceramic Plates and Stacks	1991
39	Viswanath	MSME	Transient Analysis of Piezoelectric Microactuators	1991
40	Lee, S.	MSME	Experimental Performance Evaluation of Flexible Manipulators	1990
41	Visweswaran	MSME	Collision Avoidance of AGVs using Potential Functions	1990
42	Barnett	MSME	Finite Element Technique to Model Piezoelectric Structures	1989
43	Devasia	MSME	Real-Time Motion Control of Robots (Co-Advisor: Kramer)	1989
44	Hioe	MSME	Gripper Expert: A Knowledge Base System for Robot Grippers	1989
45	Natarajan	MSME	Algorithm for Guided vehicle navigation in an obstacle filled terrain	1989
46	Rao, R.	MSME	Joint Trajectories for Industrial Robots (Co-Advisor: Kramer)	1989
47	Konkar	MSME	Modeling & Simulation of Servo-Controlled Flexible Manipulators.	1988
48	Amireddy	MSME	Determination of Cycle Times of Robots (Co-Advisor: Kramer)	1987

Thesis & Dissertation Committees (other than serving as primary advisor)

Number of MS and Ph.D. Committees -- 50+

Undergraduate Research Students Supervised

1. Christopher Rager
2. Abby Nieman
3. Todd Taylor
4. Raul Antonio Martinez
5. Amy Shrader
6. Brenda Quinlan
7. Andrew Morrison
8. Jeff Sosnowski
9. Brian Williamson

Post-Doctoral & Visiting Research Associates

1. Dr. P.N. Seshu (3/1994 - 3/1995)
2. Dr. R. Dukkipati (1/1997 – 8/1999)
3. Dr. Sheila Vieira (1/2000 – 12/2002)
4. Dr. Hideki Yamamoto (1/2002 – 10/2004)

Grants & Contracts

As PI or Co-PI, Dr. Naganathan secured the following grants and contracts for a total of nearly **seven million dollars in sponsor funds**. Sponsors included national, state, and regional sources that represent government, industry, and private foundations. Sponsor percentages below do not include University Fellowships or equipment/graduate stipend/fees matching funds.

1. *Sponsor*: Ohio Board of Regents. Choose Ohio First for Engineering Entrepreneurship (COFFEE) Scholarship.
   July 2008 to June 2015 (including two renewals for 2013-14 and 2014-15).
   Total Award: **$4,526,800.** *Sponsor*: 100%. *University of Toledo*: 0%.
   Role: Co-Principal Investigator.

2. *Sponsor*: Dana Driveshaft Division. Development of Engineering Methodologies for Heavy, Medium, and Light Duty Driveline Applications.
   July 2001 to August 2003.
   Total Award: **$124,401.** *Sponsor*: 54%. *University of Toledo*: 46%.
   Role: Principal Investigator.

3. *Sponsor*: McMaster Motor Company. McMaster Rotary Engine - Phase III.
   January 2001 to August 2003
   Total Award: **$ 201,765 .** *Sponsor*: 74%. *University of Toledo*: 26%.
   Role: Co-Principal Investigator; *Project Colleagues:* Afjeh, Masiulaniec (Co-PI).

4. *Sponsor*: McMaster Motor Company. McMaster Rotary Engine - Phase II.
   May 2000 to December 2000
   Total Award: **$256,151.** *Sponsor*: 78%. *University of Toledo*: 22%.
   Role: Principal Investigator; *Project Co-PI:* Afjeh, Sarma, Masiulaniec, Olson, Marinescu.

5. *Sponsor*: National Science Foundation. Engineering Senior Design Projects to Aid the Disabled.
   September 2000 to August 2005.
   Total Award: **$269,426.** *Sponsor*: 35%. *University of Toledo*: 65%.
   Role: Co-Principal Investigator; *Project Colleagues:* Hefzy (PI), Nemunaitis, Horn, Smallman.

6. *Sponsor*: McMaster Motor Company. McMaster Rotary Engine – Phase I.
   November 1999 to April 2000.
   Total Award: **$93,928.** *Sponsor*: 80%. *University of Toledo*: 20%.
   Role: Principal Investigator; *Project Colleagues:* Sarma, Masiulaniec, Olson, Marinescu.

7. *Sponsor*: Dana Corporation. Vehicle Engineering Program (renewal).
   October 1999 to December 2000.
   Total Award: **$256,479.** *Sponsor*: 70%. *University of Toledo*: 30%.
   Role: Principal Investigator.

8. *Sponsor*: Daimler-Chrysler Corporation. Development of a Self-locking Flexplate.
   September 1999 to August 2000.
   Total Award: **$177,535.** *Sponsor*: 62%. *University of Toledo*: 38%.
   Role: Principal Investigator; *Project Colleagues:* Co-PI: He, Huang, Pourazady.

9. *Sponsor*: Daimler-Chrysler Corporation. NVH Improvement Techniques for Automotive Seats.
   August 1999 to August 2000.
   Total Award: **$78,601.** *Sponsor*: 71%. *University of Toledo*: 29%.
   Role: Principal Investigator.

10. *Sponsor*: Dana Driveshaft Division. Driveline Analysis - Off-highway applications.
    March 1999 to August 2001.
    Total Award: **$98,951.** *Sponsor*: 71%. *University of Toledo*: 29%.
    Role: Principal Investigator.

11. *Sponsor*: National Science Foundation. Analysis, Modeling and Experimental Validation of the Three-Dimensional Dynamic Response of the Human Knee Joint.
    September 1998 to August 2000.
    Total Award: **$396,922.** *Sponsor*: 58%. *University of Toledo*: 42%.
    Role: Co-Principal Investigator; *Project Colleagues:* Hefzy (PI).

12. *Sponsor*: Daimler-Chrysler Corporation. Vehicular Applications of Smart Materials - Phase II.
    May 1998 to May 1999.
    Total Award: **$29,960.** *Sponsor*: 100%. *University of Toledo*: 0%.
    Role: Principal Investigator.

13. *Sponsor*: Dana Corporation. Vehicle Engineering Program.
    September 1997 to December 2000.
    Total Award: **$257,102.** *Sponsor*: 70%. *University of Toledo*: 30%.
    Role: Principal Investigator.

14. *Sponsor*: Dana Driveshaft Division. Driveline Analysis - Medium & Light Duty Applications.
    September 1997 to August 2001.
    Total Award: **$140,749.** *Sponsor*: 71%. *University of Toledo*: 29%.
    Role: Principal Investigator.

15. *Sponsor*: Defense Advanced Research Projects Agency (Subcontract to Material Systems, Inc., Littleton, MA). Preisach Models in Actuators.
    July 1997 to November 1999.
    Total Award: **$194,151.** *Sponsor*: 47%. *University of Toledo*: 53%.
    Role: Principal Investigator.

16. *Sponsor*: Chrysler Corporation. Vehicular Applications of Smart Materials.
June 1997 to May 1998.
Total Award: **$73,870.** *Sponsor*: 69%. *University of Toledo*: 31%.
Role: Co-Principal Investigator; *Project Colleagues:* Leo (PI).

17. *Sponsor*: Office of Naval Research (Subcontract to Material Systems, Inc., Littleton, MA).
Multi-layer Actuator Modeling.
January 1997 to June 1998.
Total Award: **$51,153.** *Sponsor*: 54%. *University of Toledo*: 46%.
Role: Principal Investigator.

18. *Sponsor*: Dana Driveshaft Division. Driveline Analysis - Heavyduty applications.
September 1996 to August 1997.
Total Award: **$68,310.** *Sponsor*: 66%. *University of Toledo*: 34%.
Role: Principal Investigator.

19. *Sponsor*: National Science Foundation and Morgan Matroc, Inc. Synthesis of Smart Material Actuator Systems for Low and High Frequency Macro-motion: An Analytical and Experimental Investigation.
September 1994 to August 1998.
Total Award: **$358,125.** *Sponsor*: 64%. *University of Toledo*: 36%.
Role: Principal Investigator.

20. *Sponsor*: National Science Foundation. Engineering Research Equipment: Data Acquisition Enhancement for Piezoceramic Material and Mechanics Characterization Studies.
July 1994 to June 1995.
Total Award: **$30,420.** *Sponsor*: 50%. *University of Toledo*: 50%.
Role: Principal Investigator.

21. *Sponsor*: Ohio Board of Regents Research Challenge Program. Macromotion Actuation.
June 1994 to June 1995.
Total Award: **$26,054.** *Sponsor*: 100%. *University of Toledo*: 0%.
Role: Principal Investigator.

22. *Sponsor*: Dana U-Joint Division. MS Windows Interface for Universal Jt Analysis.
April 1994 to August 1994.
Total Award: **$12,325.** *Sponsor*: 48%. *University of Toledo*: 52%.
Role: Principal Investigator.

23. *Sponsor*: University of Toledo Faculty Research Awards & Fellowship Program. Design of a Smart Helicopter Rotor Blade - A Feasibility Study.
June 1993 to December 1993.
Total Award: **$5,309.** *Sponsor*: 0%. *University of Toledo*: 100%.
Role: Principal Investigator.

24. *Sponsor*: Edison Industrial Systems Center & DENEB Robotics. Robotics Lesson Plans using IGRIP.
    April 1993 to September 1994.
    Total Award: **$178,183.** *Sponsor*: 82%. *University of Toledo*: 18%.
    Role: Principal Investigator; *Project Colleagues:* Kramer (Co-PI).

25. *Sponsor*: National Science Foundation. Performance of Piezoceramic Monolithic & Array Geometries in Microactuation: An Analytical & Experimental Study.
    September 1992 to September 1994.
    Total Award: **$213,992.** *Sponsor*: 65%. *University of Toledo*: 35%.
    Role: Principal Investigator; *Project Colleagues:* Co-PI: Irey, Hefzy, Kramer, Armstrong.

26. *Sponsor*: National Science Foundation. Engineering Senior Design Projects to Aid the Disabled.
    July 1993 to February 1999.
    Total Award: **$49,050.** *Sponsor*: 100%. *University of Toledo*: 0%.
    Role: Principal Investigator.

27. *Sponsor*: Ohio Board of Regents Research Challenge Program. Design of a Light weight Automotive Active Suspension.
    June 1992 to December 1993.
    Total Award: **$23,292.** *Sponsor*: 100%. *University of Toledo*: 0%.
    Role: Principal Investigator.

28. *Sponsor*: National Science Foundation. Microactuation using Piezoceramics.
    June 1989 to December 1991.
    Total Award: **$115,168.** *Sponsor*: 54%. *University of Toledo*: 46%.
    Role: Principal Investigator.

29. *Sponsor*: Edison Industrial Systems Center. Off-line Computer Graphics Simulations of Industrial Tasks.
    June 1989 to June 1990.
    Total Award: **$144,255.** *Sponsor*: 61%. *University of Toledo*: 39%.
    Role: Principal Investigator; *Project Colleagues:* Kramer (Co-PI).

30. *Sponsor*: University of Toledo Faculty Research Awards & Fellowship Program.
    Microactuation using Piezoceramics: A Preliminary Experimental Study.
    June 1989 to December 1989.
    Total Award: **$7,791.** *Sponsor*: 0%. *University of Toledo*: 100%.
    Role: Principal Investigator.

31. *Sponsor*: Edison Industrial Systems Center. Mathematical Modeling and Computer Graphic Simulation of Real World Manufacturing Alternatives.
    June 1988 to June 1989.
    Total Award: **$88,361.** *Sponsor*: 83%. *University of Toledo*: 17%.
    Role: Principal Investigator; *Project Colleagues:* Kramer (Co-PI).

32. *Sponsor*: University of Toledo Program Excellence Award. Integration of Artificial Intelligence and Knowledge-base Capabilities.
June 1987 to June 1991.
Total Award: **$5,000.** *Sponsor*: 0%. *University of Toledo*: 100%.
Role: Principal Investigator.

33. *Sponsor*: University of Toledo Faculty Research Awards & Fellowship Program. Dynamic Performance Evaluation of a Flexible Manipulator.
June 1987 to December 1987.
Total Award: **$4,500.** *Sponsor*: 0%. *University of Toledo*: 100%.
Role: Principal Investigator.

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