

CEAS Graduate Programs & Research Newsletter

Faculty Members Receive CAREER Awards

Krishna Pillai, Assistant Professor in the Mechanical Engineering department, and Adrian Dumitrescu, Assistant Professor in the Computer Science department, are the recipients of NSF's Faculty Early Career Development (CAREER) award. CAREER awards are NSF's most prestigious awards for young researchers who effectively integrate education and research.

Pillai, who will receive almost \$450,000 for five years, is conducting research on composite materials processing, specifically polymer composites and plastics. These high-tech materials are being used in the manufacturing of aircraft, automobiles, satellites and sports equipment.

Applications of liquid moulding processes, a new composites manufacturing process, will be the focus of Pillai's research. In addition to benefiting the polymer composites field, this research will also be beneficial to other fields that use porous materials including groundwater flow monitoring, filtering, paper processing, and oil exploration.

During his research, Pillai will work with area companies that use porous materials to aid in the understanding and development of improved processes. This research will also benefit engineering students at UWM as it will help to prepare students for careers in the composites and plastics industries.

Dumitrescu was awarded \$500,000 for four years to support his research in algorithms in the areas of computational geometry and robotics. His research has three focuses: Geometric network optimization; cutting techniques applied to binary space partitions and stock cutting algorithms; and metamorphic robotic systems. This last focus is a relatively new research direction in robotics. Dumitrescu says the use of multiple identical robots which act as a unit is believed to have great potential in making fault tolerant robotic systems.

A challenging aspect in designing metamorphic robotic systems, says Dumitrescu, is finding a small set of

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Proposals Submitted

January 1, 2005 through April 13, 2005

Principal Investigator	Title	Amount
Aita, C.	Match Funds for Wisconsin Distinguished Professor	\$10,000
Bravo, H.	Development of Improved Sizing Methods for Proprietary Sediment Settling Devices	\$49,970
Buechler, D.	Engineering Applications to Strengthen Math Preparation and Improve Retention	\$20,000
Chen, J. (Jin, L.)	Development of a Novel In-situ Corona System for Low-cost and Efficient Water Purification	\$49,820
Chen, J.	GOALI: Direct Current Corona Discharge from Nanostructures for Next-Generation Ion Source	\$330,362
Christensen, E. (Klaper, R.)	The influence of biological diversity on population survival after exposure to single and multiple stressors	\$450,927
Dhingra, A.	Model Updating using Experimental Test Data: A Tool for Reliable Modeling and Diagnosis	\$49,878
Goyal, M. (Hosseini, H.)	NeTS-NBD: Fast Convergence to Topology Changes in Link State Routing Protocols	\$130,284
Helwany, S. (Titi, H.)	NEESR-II, GRS Abutment-Bridge-Pier Interaction: Improvement and Verification of Current Seismic Design Methods for GRS Abutments	\$375,004
Horowitz, A. (Titi, H.)	Impact of Increased Freight Traffic on Pavement Maintenance Costs	\$74,980
Jang, J.	Integration of production and maintenance scheduling using prognostic Information	\$48,443
Jen, T.	A Feasibility Study on Solid Waste Elimination for Environmentally Benign Machining Processes	\$30,000
Jen, T. (Pfefferkorn, F.)	Environmentally Benign (Internal) Cooling of End Mills	\$50,000
Jen, T. (Venugopalan, D.)	Experimental and Theoretical Studies of HP DMFC-Hydrogen Peroxide Direct Methanol Fuel Cell	\$50,000
Kim, K.	Biomechanics of Deformable Pneumatic Shock Isolators for Prevention of Fall-related Injuries	\$98,696
Klemer, D. (Weber, D.)	Investigation of Cardiorespiratory Health Effects of Quantum Dots using a Zebrafish (Danio rerio) model	\$199,858
Kraus, R.	Production of High-Durability Concrete for the Wisconsin Concrete Industry Using Pulp Mill Residuals	\$50,000
Kraus, R.	Use of Treated Lumber and Other Wood By-Products to Enhance Durability of Concrete	\$29,965

Proposals Submitted January 1, 2005 through April 13, 2005

Principal Investigator	Title	Amount
Law, C. (Yu, D.)	Fiber optics based fault detection in power distribution systems	\$49,996
Li, J.	Mercury Control in Coal-Fired Power Plant Flue Gas	\$50,004
Li, J.	Mercury Removal from Coal Combustion Byproducts and Sorbents	\$29,988
Lopez, H.	Role of the microstructure on the hydrogen permeation and stress corrosion cracking in inconel alloy 690	\$99,734
Mani, S. (Yi-Qiang, C.)	New Methods for Natural Products Discovery from Genome-Sequenced Microorganisms	\$980,770
Naik, T. (Kraus, R.)	Implementing Best Practices for New Construction Materials Using Wood Ash from Pulp Mills and the Wood Processing Industry	\$65,000
Naik, T. (Kraus, R.)	Innovative development of New High-Performance Materials Using Pin Chips and Fines from Treated Lumber, Construction Debris, and Pulp & Wood Processing Industry	\$45,000
Naik, T. (Kraus, R.)	Investigation of Concrete Properties to Support Implementation of the New AASHTO Pavement Design Guide	\$60,000
Naik, T.	Treatment of Illinois Coal to Reduce Emissions and Enhance Ash Properties	\$25,000
Pillai, K.	A Novel Method for Repairing and Strengthening Concrete Infrastructures	\$179,912
Rahman, A.	Elimination of the External Vibration for an Open MRI Magnet	\$49,906
Rahman, A.	Metal Matrix-Ceramic Microballoon Foam for Bone implants	\$391,092
Rahman, A. (Tabatabai, H; Hawileh, R.)	Simplified Design Procedures for Unbonded Post-Tensioned Split Walls	\$18,000
Renken, K.	Application of Electrokinetic Technology to Homeland Security	\$49,731
Rohatgi, P.	Optimization of Cast Aluminum Foundry Sand Composites	\$49,962
Saxena, U.	Application of Air Curtains on Continuous Process Ovens	\$25,798
Tabatabai, H. (Ghorbanpoor, A.)	Evaluation of Methods of Rebar Protection, Spall Prevention, and Repair Techniques on Concrete Girders	\$85,000
Titi, H. (Helwany, S.)	Comparison of Basic Lab Test Results With More Sophisticated Lab and In-situ Tests Methods on Soils In Southeastern Wisconsin	\$34,997
Helwany, S. (Ghorbanpoor, A.)	Construction vibration attenuation with distance and its effect on the quality of early-age concrete	\$77,509

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Proposals Submitted Continued

January 1, 2005 through April 13, 2005

Principal Investigator	Title	Amount
Titi, H. (Tabatabai, H.)	Construction Vibration Attenuation with Distance and Its Effect on the Quality of Early-Age Concrete	\$48,351
Titi, H. (Tabatabai, H.)	Investigation of Concrete Properties to Support Implementation of the New AASHTO Pavement Design Guide	\$59,999
Wang, W.	Novel circuits design approach for soft error rate reduction	\$233,092
Ying, L. (Kelmer, D.)	Image Reconstruction Techniques for Fast Parallel MR Neuroimaging	\$149,957
Total		\$4,956,985

First Strategic Planning Session; Strengths & Weakness Identified

The College's first strategic planning session was held on March 18, 2005 at the GE Healthcare Institute in Pewaukee. Thirty participants, including CEAS employees, students, industry and UWM community members, attended this session. Through breakout groups, the participants identified the College's strengths, weaknesses, opportunities, and threats. Strengths that were identified by the group are

CEAS' nationally and internationally recognized faculty, and the location of the College, which is in close proximity to industry, offers low tuition, and the benefits of an urban university.

The weakness and threats both include the College's current funding level and possible impending budget cuts. Competition from other local engineering schools is another po-

tential threat.

The group concluded that there is potential to improve the College's image and to strengthen and foster current and new relationships with industry.

Future sessions to be held this summer will focus on revising the College's vision and mission, and developing strategic goals and sub goals.

Graduate Applications				
(As of April 11, 2005)				
	Spring 2004	Fall 2004	Spring 2005	Fall 2005
Ph.D. Candidates	26	82	25	22
Ph.D. Candidates w/o M.S.	6	18	2	4
M.S. Candidates	117	205	80	68
Total	149	305	107	94

Major Interdisciplinary Research Center for CEAS

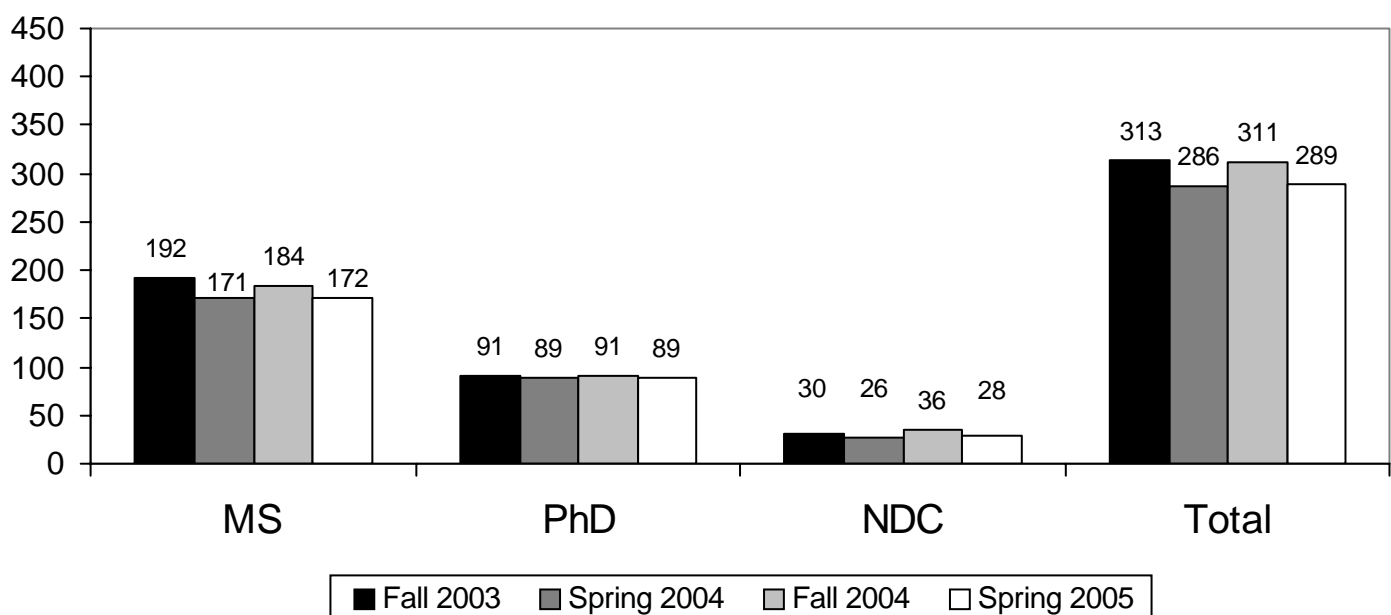
CEAS will receive major funding to establish an interdisciplinary research initiative in the area of biomedical imaging and health technologies. This initiative stems from Chancellor Santiago's Strategic Research Development Program (SRDP) at UWM. This program is intended to build nationally recognized research programs around select interdisciplinary teams in strategic areas of research strength. For this program, the University will invest 1 million dollars in recurring funds (i.e. for faculty and staff salaries) and 1 million dollars in one-time funds. The program anticipates major funds to be leveraged from industrial partners.

In collaboration with the College of Health Sciences, Department of Physics, School of Nursing, School of Business Administration, and the Medical College of Wisconsin, CEAS has lead an extensive effort to prepare and submit a competitive SRDP proposal to the Chancellor in March 2005. Through this effort, an interdisciplinary research center will be established at UWM. The research center will be identified as the *Wisconsin Institute for Biomedical & Health Technologies (WIBHT)*. Total funding for the Institute from UWM and the industry partners (GE, Aurora and Cerner) will exceed 15 million dollars. This proposal has been se-

lected for funding and Chancellor Santiago will officially announce it during the May 2, 2005 Biomedical Technology Alliance Conference on the topic of Biomedical Imaging Technology. The conference will be held at the UWM School of Continuing Education Conference Center.

For additional information, please contact Associate Dean Al Ghorbanpoor at algh@uwm.edu, or 414-229-4962.

Graduate Student Enrollment



Proposals Funded January 1, 2005 through March 31, 2005

Principal Investigator	Proposal	Agency	Amount
Aita, C.	Match Funds for Wisconsin Distinguished Professor	UWM Foundation	\$10,000
Chen, J.	Support for Dr. Chen's Research in Corona Discharges	Xerox Corporation	\$20,000
Dumitrescu, A.	CAREER: Algorithmic Issues in Geometric Network Optimization, Binary Space Partitions, And Metamorphic Systems	National Science Foundation	\$474,918
Horowitz, A.	Statewide Travel Forecasting Models (36-09)	National Cooperative Highway Research Program	\$29,000
Saxena, U.	Industrial Assessment Center	U.S. Dept of Energy	\$151,000
Yu, D.	Image Processing Techniques for Digital Video	National Science Foundation	\$16,000
Total			\$700,918

Competitive Stipends for Graduate Research Assistants

UWM's Office of Academic Affairs has recently announced that effective this summer, graduate students appointed as Research Assistants will be eligible for in-state tuition remission. Currently, only the non-resident portion of tuition is covered for Research Assistants. This new program is intended to provide competitive stipends for graduate Research Assistants at UWM. With the expected increase in the number of RAs, it is anticipated that the volume of external sponsorship of research will also increase.

The parameters of the program include:

- In-state tuition for graduate students appointed as Research As-

sistants at a level of 33% or higher is remitted by the university.

- In-state remission by the campus is available only to RAs funded on an extramural grant or contract (fund 144 or 133) coded as research and to RAs funded as part of grant matches committed by the Graduate School or other schools and colleges. Appointments on gifts to the UWM Foundation that become available to PIs via Fund 133 accounts are not covered.
- Prelim and Dissertator rates for stipends are eliminated and replaced with a single stipend rate for all Research Assistants. For a 50% academic year appointment, the stipend will be

\$17,000. A 50% A-Basis appointment (12 months) will carry a stipend of \$20,778.

- School/College administrations will ensure the appropriate appointments of RAs, and BFS will audit sources of funding on RA appointments and charge schools and colleges for in-state tuition costs if an appointment is not research grant/contract or grant-match related.
- In-state tuition costs for Research Assistants will not be charged to external sponsors on research grants and contracts.

For more information on RAs, consult the Graduate School's Research Assistant Manual at:
http://www.uwm.edu/Dept/Grad_Sch/Publications/

Rohatgi's Research Gains Attention

Pradeep Rohatgi, Professor in the Materials department at CEAS, has recently gained attention with his research on the rapid manufacturing of lightweight materials for military vehicles and health care applications. These lightweight materials include composites, foams and nanostructured materials.

This research can potentially have a significant effect on the foundry in-

dustry in Wisconsin. The development of fast-track technologies to manufacture lightweight materials will aid in keeping foundries open. These technologies will allow industry to manufacture lightweight materials for military and civilian use at a more competitive rate. Rohatgi has recently applied for federal grants to continue his research and allow for foundries to invest in these technologies.

Order of the Engineer & Alumni Awards

Faculty, staff and alumni are welcome to join members of the College of Engineering and Applied Science's May and August 2005 graduating class for the bi-annual Order of the Engineer Ceremony and Outstanding Alumni Awards on Saturday, May 21, 2005 in UWM's Union Theatre at 3:00 PM.

Each department within the College of Engineering and Applied Science has been asked to nominate alumni for outstanding alumni awards. From those nominees, one will be selected as the Dean's Award winner. In addition to the Dean's Award, one departmental outstanding alumna/us award will be presented for: Civil Engineering and Mechanics, Computer Science, Electrical Engineering, Industrial and Manufacturing Engineering, Materials, and Mechanical Engineering.

All nominees receiving awards will be notified and invited to the presentation and to participate in the Order of the Engineer Ceremony.

The Order of the Engineer was established in the United States in 1970 to foster a spirit of pride and responsibility in the engineering profession, bridge the gap between education and practice, and present to the public a visible symbol identifying the engineer.

Patterned after the Canadian "Ritual of the Call of an Engineer," which was founded in 1926, the induction ceremony is brief, dignified and impressive. It includes the acceptance of the Obligation of an Engineer and the placing of a stainless steel ring on the little finger of the working hand.

Important Dates

May 9, 2005

Thesis Defense Deadline

May 16, 2005

Thesis Submission Deadline

May 21, 2005

Order of the Engineer Ceremony and Alumni Awards

May 22, 2005

Commencement

June 17, 2005

Window Thesis Defense Deadline (August Grads Only)

June 24, 2005

Window Thesis Submission Deadline (August Grads Only)

August 8, 2005

Thesis Defense Deadline (Students must be registered for minimum of 1 credit.)

August 15, 2005

Thesis Submission Deadline (Students must be registered for minimum of 1 credit.)

August 20, 2005

Summer Graduation (No Ceremony)

September 6, 2005

First Day of Fall Classes



Commencement

When: Sunday, May 22, 2005

Where: U.S. Cellular Arena
500 W. Kilbourn Avenue
Milwaukee, WI 53203

Time: 9:00 A.M.
Graduate School Ceremony
for Masters, Specialists and
PhD Candidates

1:00 P.M.
Baccalaureate Ceremony

Contact the Secretary of the University's Office with any questions or for further information at 414-229-5988.

CAREER Awards, *continued from page 1*

motion rules that are sufficient for allowing a large degree of freedom, while being relatively easy to implement in real systems.

Pillai and Dumitrescu are two of only thirteen faculty members at UWM to ever receive CAREER awards.

Qualifying Exams

A total of 16 students from four different departments (Civil Engineering, Computer Science, Electrical Engineering, and Mechanical Engineering) participated in the qualifying exam on April 14 & 15.

Results of the exam will be mailed to students the first week in May.

CEAS Graduate Programs & Research Newsletter

Editor:

Melody Clair,
mclair@uwm.edu,
414-229-2954
EMS e387



College of Engineering and Applied Science
Graduate Programs and Research
Office of the Associate Dean
PO Box 784
Milwaukee, WI 53201-0784