WHITE HOUSE INITIATIVE
on EDUCATIONAL EXCELLENCE for HISPANICS
25 Years of Fulfilling America's Future

Fulfilling America's Future: Bright Spots in Hispanic Education
NOMINATION FORM

Thank you for nominating a *Bright Spot in Hispanic Education (Bright Spot)*. Please provide responses to the questions below to the best of your ability. Please note that the information captured on this form may be shared within the federal government and made public. In order to fully consider your nomination we would like to receive responses to all of the following questions, however, your response to each question is voluntary.

BRIGHT SPOT REQUIREMENTS

As you consider nominating *Bright Spots*, please ensure they address each of the following educational priorities and requirements before submitting your nomination:

- □ Targets or serves the Hispanic community;
- □ Mission aligns with the Initiative's key educational priorities: Early Learning, College Access, College Completion, Latino Teacher Recruitment, STEM Education; if other, please indicate in summary below.
- □ Has measurable goals that evaluate its effectiveness and impact; and
- □ Demonstrates an evidence-based approach.

BRIGHT SPOT NOMINATOR CONTACT INFORMATION

Asad M. Madni, P.hD., D.Sc.(h.c.), Sc.D.(h.c.), D.Eng.(h.c.), CEng.
FNAI, LFIEEE, FIEE, FIET, FSAE, FIAE, FAAAS, FNYAS, LFAIAA, LFIBA

Member, U.S. National Academy of Engineering
President, Chief Operating Officer and CTO (Retired) BEI Technologies Inc.
Executive Managing Director & Chief Technical Officer Crocker Capital
Distinguished Adjunct Professor/Distinguished Scientist, Electrical Engineering Department
UCLA Henry Samueli School of Engineering and Applied Science

3281 Woodbine Street
Los Angeles, CA 90064

Tel/Fax: (310) 839-6148
*Email: **ammadni@yahoo.com***

I would like to nominate the AIMS^2 program at California State University, Northridge, led by Dean S. K. Ramesh as a Bright Spot in Hispanic Education. This program entitled AIMS^2 was recognized with a national award by Excelencia in Education in 2014 and commended by Congressman Tony Cardenas on behalf of the Congressional Hispanic Caucus. To date this award winning program has served approximately 200 students in five cohorts

BRIGHT SPOT CONTACT INFORMATION

The AIMS^2 program at CSUN is nominated for a Bright Spot award. Based on the success of the AIMS^2 program CSUN was invited by the White House Office of Science and Technology Policy (OSTP) to host one of the four national White House STEM workshops at CSU Northridge. This very successful workshop was held at CSUN on October 7, 2014 and attracted leaders from academia, government, and industry to discuss efforts to broaden participation in the STEM disciplines, remove barriers, and improve student graduation rates- especially in engineering and computer science.

The AIMS^2 program is led by Dean S. K. Ramesh whose contact information may be found below.

S. K. Ramesh, Ph.D.
Dean,
College of Engineering and Computer Science &
Professor of Electrical and Computer Engineering
California State University, Northridge
CA 91330-8295
Tel: 818-677-4501 Fax: 818-677-2140
E-mail: s.ramesh@csun.edu
URL: http://www.csun.edu/engineering-computer-science/ramesh

BRIGHT SPOT ORGANIZATION INFORMATION

Full Name of the nominee: The AIMS^2 program at CSU Northridge
URL of AIMS^2 program: http://www.ecs.csun.edu/aims2
Region served: Northridge, San Fernando Valley, and Southern California
Program Director: S. K. Ramesh, Ph.D.,
Web Address (if applicable): http://www.csun.edu/engineering-computer-science/ramesh

The primary mission and goals of the program are:

•To increase the number of Hispanic and low-income students who successfully transfer from Glendale Community College (GCC), and College of the Canyons (COC) to California State University, Northridge, to pursue majors in Engineering and/or Computer Science.

•To increase the number of Hispanic and low-income students who join CSUN as upper division transfer students and graduate with degrees from one of the undergraduate programs in the College of Engineering and Computer Science.

•To develop a model, seamless and sustainable transfer program to assist Hispanic and low-income students to successfully transfer from GCC and COC to California State University, Northridge where they will complete their studies in Engineering and/or Computer Science.

BRIGHT SPOT SUMMARY

Students enrolled in the 5 year, $5.5 million HSI-STEM grant (largest in the college's history) AIMS² cohort program led by Dean Ramesh have access to special mentoring and advisement by faculty, tutoring and peer mentoring, social activities, field trips and opportunities to take part in undergraduate

research projects. Students in the cohorts recorded higher per-term units completed, per-term and cumulative GPAs, and next-term persistence rates compared to their non-participant student counterparts. Specifically, student participants (vs. non-participant students) persisted at higher rates: 96.7% (vs. 83.3%) for fall 2011-spring 2012 and 97% (vs. 86.7%) in fall 2013-spring 2014. With these new pathways in place, transfer student enrollment in engineering and computer science at CSUN from the targeted populations in 2013 exceeded the target by 122% and achieved a 210% increase over the baseline figure from 2010. Other programs in the college include the Teaching to Increase Diversity in STEM initiative (or TIDES), funded by the Helmsley Trust under the auspices of the Association of American Colleges & Universities, and the California Career Pathways Trust grant to introduce K-14 students to high wage, high growth career fields.

BRIGHT SPOT ISSUE AREA(S)

The key area addressed by this bright spot is the retention and improved graduation of Latino/a students and under-represented minorities in engineering and computer science. Transfer student enrollment in engineering and computer science at CSUN from the targeted populations in 2013 exceeded the target by 122% and achieved a 210% increase over the baseline figure from 2010.Cohort students persisted at higher rates: 96.7% (vs. 83.3%) for Fall 2011-Spring 2012 and 97% (vs. 86.7%) in Fall 2013-Spring 2014. Program completion exceeded target during the most recent evaluation period (Year 3) of the grant. 39.2% (60/153) completed a degree program for the most recent period vs. 30.9% (21/68) project target. This also represents an increase over the first project year of 29.3% (22/75), and a slight increase over the second project year of 38.8% (31/80).

CSUN has a strong institutional commitment to increasing participation of Underrepresented Minorities (URM) in STEM serving as the site of the CSU's system-wide program leadership for the first two phases of Louis Stokes Alliance for Minority Participation (LSAMP). Also, in 1968, well before the advent of LSAMP, Dr. Ray Landis, a CSUN Engineering faculty member at that time, established the Minority Engineering Program model at CSUN, a model that eventually spread nationwide. In this most recent HSI-STEM grant which also represents the largest grant received by the college, the program under Dean Ramesh's leadership has made huge strides to address the academic needs of students in the cohort, that includes proactive academic advisement and tracking, organized tutoring, peer and faculty mentoring, hands on research opportunities and project based learning, career advising and eventual transition to the workforce or advanced studies. Students in the cohort are supported with stipends to motivate and inspire them to succeed.

Students in the cohort were invited by the US Department of Education to create a collaborative web portal where all HSI-STEM grantees across the country can share their best practices and collaborate. The students successfully developed and implemented the portal which is now accessible to all grantees. The students also presented a poster on their work at the system wide CSU STEM summit in April 2015.

INITIATIVE CROSS-CUTTING CRITICAL AREAS

Synergistic activities include visits between the cohort students from the partner colleges as well as outreach visits by cohort students to other colleges and high schools to raise awareness of the grant and encourage future Latino/a students and other under-represented minorities in engineering and computer science. Gaps in course articulation agreements between the partner institutions have been identified and

the faculty has been working collaboratively to address them. Based on the success of this initiative the Program Director, Dean Ramesh was invited to make a presentation on "Best Practices in working with Community Colleges" at the 2012 Engineering Deans Institute meeting on April 17th, 2012.

One of the key objectives of this grant is the development of sustainable, seamless transfer agreements between the community colleges and CSUN. Faculty from CSUN, GCC and COC has worked collaboratively to develop and team-teach courses and address the gaps which exist in the articulation agreements. Through the grant they have created a mobile digital environment with iPad's, tablet PC's and software, to enhance communication, engagement, collaboration and creativity, and instant learning assessment of the students in the cohort. All cohort students and faculty have been provided with iPad's for use in their classes and research projects. Training sessions were offered to faculty members who received the iPad's to develop curricula and e-texts for use in their classes. Usage statistics reveal that students in cohort 2 used their iPad's 13,365 times, while those in cohort 3 used their iPad's 5,554 times. The average usage/student in cohort 2 was 461 and cohort 3 was 617. Students report using their iPad's to do their homework, access e-Texts and references for their classes and research, as well as peer/social interaction amongst fellow cohort member. The WiTEC initiative (Wireless Technology Initiative) under this grant is a unique collaborative solution that provides a model that other faculty can adapt to their subject areas; the wireless classroom is a learning laboratory open to participants from the project team who in turn reach and teach interested colleagues, and inform external stakeholders as appropriate.

BRIGHT SPOT IMPACT

The AIMS^2 program has served a total of 187 students to date in five cohorts (approximately 67 % Latino/a). This includes 100 first-time transfer students at CSUN, 45 students at GCC, and 42 students at COC. The project team from the three partner institutions consisting of 17 faculty members and 6 staff members under the leadership of Dean Ramesh from CSUN meets on a monthly basis to monitor progress on the three primary program goals. Faculty Mentors meet regularly with their students in the cohort to discuss their academic progress and work with them on research projects. The team has developed curricula to address gaps in the existing articulation agreements. The overarching program goals are tracked through 12 primary project objectives. These objectives guide the evaluation as an embedded mixed methods case study design where 35 distinct project performance measures are assessed with baseline and actual performance data at each campus (CSUN, GCC and COC). The data sources included AIMS^2 students, faculty, staff and institutional data. The data collection procedures employ journal guides, surveys, and interviews. The quantitative measures cover transfer, completion, articulation, advisors, advising, online courses, tutoring, mentoring, supplemental lab, student-faculty interaction, research participation, and cohort participation. Detailed assessment and evaluation data may be accessed from the project web site. To date, 32 of 49 (65%) cohort measures have met or exceeded targets. Students in the cohort are required to complete a minimum of 24 semester units/year and receive an annual stipend of $ 2,400. 75 % of the students are selected to participate in paid research projects ($ 15/hour). Cohorts recorded higher per-term units completed, per-term and cumulative GPAs, and next-term persistence rates compared to their non-participant student counterparts. Specifically, student participants (vs. non-participant students) completed an average of 13.3 units (vs. 10.4) in Fall 2011, 12.43 units (vs. 11.04) in Spring 2012, 12.19 units (vs. 11.52) in Fall 2012, 12.12 units (vs. 11.18) in Spring 2013, and 12.44 units (vs. 11.09) in Spring 2014. Cohort students recorded a slightly higher

average GPA 2.83 (vs. 2.78) in Spring 2014 and persisted at higher rates: 96.7% (vs. 83.3%) for Fall 2011-Spring 2012 and 97% (vs. 86.7%) in Fall 2013-Spring 2014. Overall, the research experience facilitated effective cohort interaction with faculty and the application of knowledge relevant to their majors with strong mentoring and academic advisement that extended beyond the research setting.

Students in the cohort are excelling in their studies, making steady progress towards graduation, and working closely with faculty and peer mentors who provide academic and career guidance as well as opportunities to work on relevant "hands-on" projects. Recent research projects ranged from simulations of civil engineering or construction processes to refurbishing lab equipment that hadn't been used in a while, the design and fabrication of an intake manifold, and to using an Arduino microprocessor to control a remote-controlled car from a laptop via a Bluetooth interface. Sometimes the projects required improvisation which was an empowering learning experience for the students. AIMS² also has begun leaving its mark on the community college students. At Glendale Community College, it sparked the creation of a new club, called Supersymmetry, and led to field trips to CSUN and a naval station in San Diego. At College of the Canyons, AIMS² students and faculty have been meeting monthly for updates, creating a real learning community. The success of cohort students is a testament to the quality and impact of the program. By way of example from cohort 3 – Catherine Hartnek was elected as the President of the IEEE-HKN (Electrical Engineering Honor Society) Lambda Beta Chapter at CSUN. Other cohort students have made presentations on their research at regional and national meetings including CCSC, ASM, SAMPE, and ASEE. Cohort students working under the supervision of their faculty mentor – Prof. Gloria Melara won a first Place Award for their poster – "An interactive classroom management tool – Class Pi" at the CCSC conference in March 2014. Details on student accomplishments may be found online on the project site at http://www.ecs.csun.edu/aims2/student_accomplishments.html

This grant is already having an impact on the academic success and career choices of the talented youth in our region, and ultimately, we hope an enduring impact on the growth and health of California's economy. As these talented students, who represent both minorities and females, matriculate to the university, they will, in turn, serve as role models for others in their communities. This collaborative partnership between CSUN, GCC and COC will be instrumental in creating a larger, more inclusive pool of STEM graduates.

BRIGHT SPOT PARTNERS

The external advisory committee http://www.ecs.csun.edu/aims2/advisory_committee.html consisting of prominent members from academia and industry meets annually with the project team to review progress in meeting the objectives and offers suggestions for improvement. Internal assessment of the program objectives and outcomes is being conducted continuously by the Program Assessment and Evaluation Committee made up of the PI's of the grant and the internal program evaluator.

US DEPARTMENT OF EDUCATION (ED) OR FEDERAL GOVERNMENT INVOLVEMENT

The CSU, Northridge Engineering and Computer Science HSI-STEM Initiative, is funded by the United States Department of Education FY 2011 Title III, Part F, Hispanic-Serving Institutions (HSI) STEM and Articulation Programs cooperative arrangement development five-year grant, Award Number P031C110031, CFDA Number 84.031C is a collaborative project lead by the College of Engineering and

Computer Science, in partnership with Glendale Community College (GCC) and the College of the Canyons (COC). It has been recognized by Excelencia in Education in 2014.

PRESS ATTENTION

The AIMS^2 program was recognized by Excelencia in Education during their annual awards ceremony in Washington DC in September 2014. Excelencia in Education is a program that accelerates Latino student success in higher education by providing data-driven analysis of the educational status of Latinos and by promoting education policies and institutional practices that support their academic achievement. A committee of national experts and Excelencia in Education officials selected the college's Attract, Inspire, Mentor and Support Students (AIMS^2) program for special recognition from Excelencia. U.S. Representative Tony Cardenas (District 29) personally attended the celebration to congratulate Dean Ramesh and the program on behalf of the Congressional Hispanic Caucus.

Dr. Ramesh has recently been selected to be part of an elite group of extraordinary CEOs. Miller Ingenuity CEO, Steve Blue looks across the country and hand picks expectation-shattering leaders to be a part of his League of Extraordinary CEOs. While Ramesh is not a CEO, Blue has made an exception to the rules for his exceptional accomplishments within engineering academia and dedication to preparing the next generation of innovative engineers and scientists to lead us into the future. His efforts to provide cutting edge programs in the engineering and science fields to lead us into the future may be accessed from the full Blue-Ramesh interview in the Business Journal: League of Extraordinary CEOs: S.K. Ramesh.

In 2014 Ramesh was invited by the White House Office of Science and Technology Policy (OSTP) to host one of the four national White House STEM workshops at CSU Northridge. This very successful workshop was held at CSUN on October 7, 2014 and attracted leaders from academia, government, and industry to discuss efforts to broaden participation in the STEM disciplines, remove barriers, and improve student graduation rates- especially in engineering and computer science. Besides organizing the entire event, Dean Ramesh was responsible for organizing and leading a workshop on "Connections to Industry and Careers" – which was a key theme during the College Opportunity Summit hosted by the President and the First Lady on December 4, 2014.