Davidson Fellow
Cheenar Banerjee
$10,000 Scholarship Recipient

Personal Info
Age: 16
Rochester, Minnesota

School, College and Career Plans
A rising junior at Century High School, Cheenar plans to major in computer science and pursue a career in that area.

Davidson Fellows Submission: Technology
In her project, "Artificial Emotion: A Novel Way of Emotion Recognition for Affective Computing," Cheenar developed a method for emotion detection by computers. It remains a challenge for computers to recognize and respond correctly to the emotional states of an interactive user. After removing some facial detail by converting facial images to black-and-white sketches, Cheenar used fractal analyses to differentiate among emotions using the fractal dimensions. This process has the potential to be simpler, cheaper and more effective than current techniques of emotion detection by computers.

Biography
Cheenar has had a strong focus on math and science throughout her academic career. She has been accelerated in math since the fourth grade and completed her high school math requirements in middle school. She has taken Advanced Placement (AP) calculus and statistics and will pursue AP sciences as a junior and senior.

With an ever present interest in math and science, Cheenar's curiosity was piqued further by a visit to a nut factory in Hawaii and a car production plant in Illinois, and observing the computer based factory automation. Cheenar's parents introduced her to the field of artificial intelligence and from there, she discovered affective computing. While working on her project, Cheenar had to overcome two major hurdles, funding and time. Fractal analysis software is expensive but she researched and found the free software, Fractalyse. Through guidance from her mentor and math teacher, she was able to manage her busy course load, extracurricular activities and still work on her project.

Cheenar is active in Science Olympiad and Math League, and a member of MENSA. She plays chess and was a nationally ranked player for three years and continues to play on her high school's team. Cheenar enjoys Indian classical dance and earned a diploma in Kathak, a classical dance form. She plays the violin, enjoys reading and spending time with friends and family.

Please see next page.

- 2011   Davidson Fellow

- 2011 Minnesota Scholar of Distinction in Mathematics

- 2011 Intel Award of Excellence in Computer Science at Regional Science Fair

- 2011 Perfect Score in National Latin 2 Exam of American Classical League

- 2011 Minnesota PTA Reflections Gold Award in Film Production, Silver and Bronze Awards in Photography and Literature

- 2010 - Present Davidson Young Scholar

- 2010 Minnesota PTA Reflections Gold Award in Film Production, Silver Award in Photography

- 2010 Award in EPIC New Voices International Writing Competition

- 2010 Gold Medal in National Latin 1 Exam of American Classical League

- 2010 Junior Diploma in Kathak, Indian Classical Dance

- 2009 Awards in EPIC New Voices International Writing Competition

- 2009 Minnesota PTA Reflections Gold Award in Visual Arts, Silver Awards in Photography

- 2008, 2007 Grand Awards in Northwestern University Midwest Academic Talent Search

- 2006 Honor Roll in American Mathematics Competition 8

Community Activities

Cheenar volunteers as a chess coach for elementary and middle school students, and as a math tutor for middle and high school students. She also volunteers for community and cultural events and local organizations. She danced at local senior homes, schools, daycare centers.