Submitted by: Lars Newlander, Technology Services **Idea # 126**

Improve the parking experience to use machine vision to provide a basis to communicate where open stalls are located and available on a real-time basis.

CURRENT CHALLENGE:

The parking experience on campus is a shared source of pain for everyone from students, first-time visitors as well as faculty and staff.

PROPOSED SOLUTION:

By employing an innovative software approach and the existing security camera feeds located throughout the campus, use machine vision to provide a basis to communicate where open stalls are located and available on a real-time basis. This project would be developed by soliciting proposals from students in Engineering, Computer Science another relevant fields of study in a competition to design and implement a parking vision system to evaluate parking lots and identify the locations of open stalls and communicate this in to a web-site, mobile app, twitter feed or LED Displays installed around campus.

BENEFITS TO FRESNO STATE:

This would provide the entire campus community an unprecedented level of insight to where parking is on a moment by moment basis. This solution would also elevate the campus experience, allow better utilization of parking spaces, and provide data for analysis that would help with future parking improvements.

ADDITIONAL INFORMATION:

General overview of system operation:
After a base-line image of a parking lot with no parking spaces used has been acquired from the existing security cameras, it would be converted to a grey scale image.
Then, an evaluation is performed to produce a binary image which is then enhanced to remove noise and to trace boundaries of parking spaces in a given lot.
Then the image would be monitored and compared to the baseline on a second by second basis. From the difference between the baseline it can be deduced whether or not an empty parking space is present in the image.