

**School of Dynamic Systems
COLLEGE OF ENGINEERING**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: March 1, 2011

The School of Dynamic Systems is pleased to offer the following research project for the summer of 2011. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be and, if possible, develop a timetable for the twelve-week research period.

PREDICTION TOOLS FOR MACHINE CONDITION MONITORING

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Project Description

Machine condition monitoring is an essential and integral tool in any manufacturing facility to ensure a reliable and uninterrupted production operation, as well as maintaining the quality of parts being produced. Industrial robots and press machines, typically found in automotive manufacturing sites, can provide large data that describes their operation (temperature, pressure, force, speed, etc.). Currently, maintenance personnel with vast experience and training can confidently interpret how this data can be utilized to diagnose the condition of the machine. The project will attempt to capture this expertise and know-how by identifying prediction tools to can perform the following: multivariate analysis (sensor-fusion), feature reduction and selection, performance assessment and failure prediction.

The applicant is expected to learn different IMS predictive tools that can be used in analyzing machine condition. The applicant will be applying these tools to real-world data collected from industrial robots and press machines found in well-known manufacturing facilities such as Nissan and Toyota. Throughout the project, the applicant will be working with a team consisting of MS and PhD students, as well as engineers from Nissan and Toyota.