Adam J. Brzezinski

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EDUCATION

Ph.D., Aerospace Engineering (exp. Apr. 2011)
University of Michigan - Ann Arbor
Dissertation (tentative): Sensor-Only Techniques for Fault Detection
GPA: 7.41 / 9.0

M.S.E., Mechanical Engineering (2006)
University of Michigan - Ann Arbor
GPA: 6.87 / 9.0

B.S.E., Aerospace Engineering (2005)
B.S.E., Mechanical Engineering (2005)
Minor, Mathematics (2005)
University of Michigan - Ann Arbor
GPA: 3.69 / 4.0

EXPERIENCE

NSF I/UCRC: Center for Intelligent Maintenance Systems
Researcher 01/06 - Present

• Worked with General Electric and BorgWarner on projects regarding machine monitoring and condition-based maintenance.
• Collaborated with TU Aachen and Abitibi Consolidated on a project with McKinsey & Company regarding ways to evaluate maintenance and performance reliability.
• Regularly presented to industrial forum about project status.

S.M. Wu Manufacturing Research Center
Graduate Student 01/06 - Present

• Formulated sensor-only system ID scheme to facilitate fault detection.
• Developed real-time peak detection method for a noisy, non-stationary signal.
• Researched and applied methods for sensor fusion to detect tool breakage.
• Performed filtering, time-frequency, and time-series data analysis.
• Graduate Student Instructor for "Air & Spacecraft" (AE 245) and "Aerospace Engineering Lab II" (AE 405) courses.

General Electric, Aviation - Evendale, OH
Summer Intern 06/09 - 09/09

• Implemented real-time fault detection and diagnosis system in machine on shop floor; connected system to plant intranet to allow remote access to current machine condition.
• Began collaboration with Engine Diagnostics group to leverage engine health

monitoring system to machine health monitoring applications.
• Developed techniques for easier access and display of data in historical databases.

U.S. Army Tank Automotive Research, Development, & Engineering Center (TACOM/TARDEC) - Warren, MI
Summer Hire 06/04 - 09/04, 06/05 - 09/05

• Conducted market research for product feasibility and cost.
• Evaluated test reports to determine whether contract requirements were met.
• Composed reports on past and current mine/IED diffusion technology.
• Created virtual environment for 3-D vehicle motion simulator

SKILLS

Languages: MATLAB, LabVIEW (CLAD), C++, Simulink, VB, HTML, XML
Applications: Unigraphics, ProEngineer, SolidWorks

JOURNAL PAPERS

Y. Wang, A. J. Brzezinski, X. Qiao, J. Ni, "Tool condition monitoring and feature selection for the shaving process," in preparation.

A. J. Brzezinski, L. Li, X. Qiao, J. Ni, "A new method for grinder dressing fault mitigation using real time peak detection," *International Journal of Advanced Manufacturing Technology*, vol. 45, pp. 470–480, February 2009.

CONFERENCE PAPERS

A. J. Brzezinski, S. Kukreja, J. Ni, and D. S. Bernstein, "Sensor-only fault detection using pseudo transfer function identification," *Proceedings of the American Control Conference*, Baltimore, MD, June 2010.

A. M. D'Amato, A. J. Brzezinski, M. S. Holzel, J. Ni, and D. S. Bernstein, "Sensor-Only Noncausal Blind Identification," *Proceedings of the 15th IFAC Symposium on System Identification*, Saint-Malo, France, pp. 1698–1703, July 2009.

A. J. Brzezinski, Y. Wang, D. K. Choi, G. Qiao, and J. Ni, "Feature-based tool condition monitoring in a gear shaving application," *Proceedings of the ASME International Conference on Manufacturing Science and Engineering*, Evanston, IL, Paper No. 72297, October 2008.

AWARDS AND HONORS

Extraordinary Student Service Award, S.M. Wu Mfg. Res. Center (2008, 2009)
Member: MI Gamma Chapter of Tau Beta Pi Eng. Honor Soc. (2002-present)
Member: Phi Kappa Phi Honor Soc. (2001-2005)
Recipient: William J. Branstrom Freshman Prize (2001)