**Tye Ukpong. Ph.D.**



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Biography

 Dr. Ukpong's current research interest is in inter and intra cellular communications in manufacturing and logistics to enhance collaborative product design/development.

Education

**Ph.D., Mechanical Engineering**, University of Missouri, Rolla, MO, December 1998 (Graduated with Honors. GPA. 3.9/4.0).

***Dissertation:*** *“*Real-Time Intelligent Monitoring and Diagnostic System for a CNC Turret Lathe in a Production Environment Using Multi-Sensing and Neural Network”

***Honors:***Recipient of National Science Foundation graduate research traineeship, 12/95 to 12/98.

Courses Taught

IE 6610 – Introduction to Six Sigma

IE 6005-901- Automotive Engineering Statistics

IE 6240 – Quality Management Systems

IE 7420 - Flexible Manufacturing Systems Design

IE 6000 - Digital Automation in manufacturing

IE 4331/IE 4332 - Intermediate Facilities Design and Materials Flow

IE 641/IE 642 - Advanced facilities Design and Logistics

Research Interests

**Virtual manufacturing Work cell data communications for engineered product quality:**

(PI: Dr. Ukpong}; Current  
Quality attributes in manufacturing to be communicated automatically at each stage of manufacturing to ensure corrective feedback or process stage interruption. The cumulative effects of quality attributes deviations downstream would be impactful in terms of cost strategy and product quality

**INDUSTRY**

General Motors Company – North America Vehicle Engineering Center

5/09 – Present: SENIOR PROJECT ENGINEER, CAE Body Structures, GMNA

* Currently the Project Leader for D2JCI/D2JCP Body Structure CAE
* **Charged with driving designs to meet static, dynamic, and durability targets**.
* **Oversees the analysis and correction of models, procedures, and systems** (e.g., child restraint anchorage system analysis, seat-pull analysis, roof crush analysis, roof and panel stiffness analysis, oil canning and dent resistance analysis, and body structures modal/mobility/ fatigue analysis).
* **Mentored engineers for structural durability** using NCODE and FE-FATIGUE.
* **Led a late stage structural remediation of D2JCI Rear** to meet Global Torsional and Structural Durability Targets (Peer Award)
* **Developed and implemented Analysis Procedures cheat sheets for Static Structural durability** with Twist Ditch, Belgian Blocks, Cornering, Pothole #2, and Driveway loads.
* **Made technical changes to pothole analysis model on Lambda** using LS-DYNA3D simulation with inertia method that corrected serious design issues. Resolved energy ratio problems through the use of analysis and diagnostic tools that restored full compliance with specifications.
* **Predicted maximum pothole to create permanent set on Lambda** used to benchmark theta-epsilon vehicle. Built full-body model, setting up materials and other properties, running the model, and monitoring accuracy. Provided design leadership to ensure that performance targets were met.

1/02 –5/09: SENIOR PROJECT ENGINEER, FRONT AND REAR CLOSURES CAE, GMNA

* **Charged with driving designs to meet static, dynamic, and durability targets**.
* **Responsible for analysis and validation objectives of Rear Closure commodities including Liftgates, Endgates, Decklids and SwingGates**
* **Responsible for analysis and validation objectives of Front Closure commodities including Fenders and Hoods**
* Led analysis simulation of GMT345 Jack and Tools Stowage for DFSS – Green Belt
* Identified and implemented improved analytical processes involving performance requirements and diagnostics that combined to drive substantial cost savings, eradicate process redundancies, elevate consistency and accuracy, and facilitate subsequent process automation.
* Commended for product development and simulation leadership that resulted in approximately $2M in savings per program (for a total per-annum bottom line improvement of $16M each year).
* Cut product development time by more than half and eliminated the majority of empirical evaluation phases by leading upfront design analysis and synthesis using finite element programs. Efforts accelerated time-to-market without compromising quality goals (with JD Powers indices on quality and productivity very high and now approaching that of GM’s primary rival, Toyota).

12/98 –12/01: SENIOR CONTACT ENGINEER, CLOSURES CAE, GMNA

* **Charged with driving designs to meet static, dynamic, and durability targets**.
* Used LS-DYNA to resolve problematic windshield intrusion issue during 30-degree vehicle crash testing on Saturn truck model.
* Created simulation used to refine design and restore compliance with FMVSS (Federal Motor Vehicle Safety Standard) requirements.

Publications

1. “On-Line Prediction of Tool Wear and Surface Roughness during Turning on a CNC Turret Lathe in a Production Environment Using Multi-Sensing and Neural Network,” *Journal of Manufacturing Science and Engineering,* 2009
2. “Real-Time Tool Status Monitoring during Turning on a CNC Turret Lathe in a Production Environment, Part 2: Dynamic Characterization,” *Journal of Machine Tools Manufacture,* 2008
3. “Review of Developments in Sensors for Untended Machining,” Annual Conf., Monterrey, CA, 1996
4. “Tutoring and Mentoring of Youths,” Comcast Newsmakers (Southfield, MI), TV Interview, 2003
5. “The Role of Parents in the Educational Achievement of Our Youths,” Detroit Public School System and MEVONE (Detroit, MI), 2005