

## **Nathan Edward Jarboe, P.E.**

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### **Education**

**Master of Engineering in Mechanical Engineering, 2002**

**Bachelor of Science in Mechanical Engineering, 2001**

University of Louisville, Louisville, KY

**Bachelor of Science in Biology, 1994**

University of Kentucky, Lexington, KY

**Licensed Professional Engineer (P.E.)** TN License 00114958, formerly also MD and KY

### **Experience**

#### **Bell Helicopter - Piney Flats, TN.**

-Project Engineer II: 10/2010 – present.

Provide structural analysis - FAA certification of helicopter modifications and retrofits.

Produce installation and detail drawings for STC and TC projects, as well as for field approvals.

Design structural components for helicopters to mount avionics hardware and other items.

#### **SAIC - Scientific Applications International Corporation – Crane, IN.**

-Contract Electromechanical Engineer: 10/2009 – 10/2010.

Designed hardware for a \$275k small arms muzzle flash measurement system using Solid Edge Software and programmed a data acquisition systems (DAQ) using LabVIEW.

#### **Schwaniger Enterprises – Engineering Consulting**

-Owner and Principal Engineer: 03/2008 – present.

Design custom machines and fixtures for use in manufacturing projects using Autodesk Inventor software.

Created custom calculation tools for windmill support structures based on height, wind speed, etc.

Modeled and render industrial equipment and design manufacturing plant layouts.

Produce drawings and weld standards for repair of manufacturing machinery.

Produced structural support design for “*Rollerboat*” roller frame.

Produce novel waterfowl decoys using 3D printer and custom circuit boards.

#### **Kennametal Conforma Clad – New Albany, IN.**

-Development Engineer: 02/2007 – 01/2009.

Tested methods to produce a proprietary coating on novel base metals to expand marketshare.

Designed an ASME code under-the-hook lift device for furnace loading to streamline production.

Designed fixtures and tooling using Autodesk Inventor and analyzed stresses with ANSYS software.

Improved laboratory abrasion test and machine using design for six sigma (DFSS) methods.

Simulated heat transfer, nonlinear mechanics, and material yield and strain using ANSYS.

#### **U.S. Army Research Lab, Weapons and Materials Research Directorate – Aberdeen Proving Ground, MD.**

-Mechanical Engineer: 10/2006 – 02/2007.

Analyzed data from onboard diagnostic telemetry systems for “smart” weapon systems.

Calibrated sensors and installed hardware for diagnostic fuses in artillery ammunition.

#### **U.S. Army Research Lab, Human Research and Engineering Directorate – Aberdeen Proving Ground, MD.**

-Mechanical Engineer: 11/2003 – 10/2006.

Secret level security clearance attained in 2004.

Evaluated new products, vehicles, and clothing for the Army using statistically powerful techniques.

Determined suitability of potential military products using the MANPRINT system.

Brought \$140k into our department for a grenade pin pull force study. (Restricted access report)

Designed and programmed a graphical user interface using LabVIEW software for the grenade study.  
Performed statistical analyses for a shooting study involving soldiers who operated in a fully encapsulated state.  
Designed virtual cities using *Raven Shield Unreal* editor for a simulated unmanned aerial vehicle (UAV) study.  
Developed test plans including counterbalancing schemes and statistical analyses.  
Ammunition and Explosives training certification, 2005.

#### **Summers Racing Components/Tire Ball Development Corporation – Louisville, KY.**

-Mechanical Engineer in New Product Development: 01/2003 – 11/2003.

Performed thin-walled pressure vessel calculations for a run-flat tire technology.

#### **Inventio, Inc. – Charlestown, IN.**

-Mechanical Engineer, 06/2003 – 11/2003.

Created a 3-dimensional model of an articulating office chair to create and display concept drawings.

#### **University of Louisville – Louisville, KY.**

-Graduate Teaching Assistant, Mechanical Engineering: 08/2001 – 09/2002.

Created laboratory experiments to demonstrate techniques of data acquisition and measurement phenomenon.

Taught measurements laboratories on sound, temperature, fluid flow, 2<sup>nd</sup> order vibrations systems, stress and strain, and digital filtering.

-Graduate Laboratory Assistant, Bio-MEMS: 03/2001 – 08/2001.

Soldered wires onto 1mm-diameter piezoelectric crystals for microacoustical sensor arrays:

Finished microfabricated sensors were used to measure blood velocity and shear stress in vessels.

#### **Trim Masters Inc. – Harrodsburg, KY.**

-Engineer, Engineering Student Co-op Term #2 and #3: 12/1999 – 05/2000 and again 08/2000 – 12/2000.

Resolved engineering design and manufacturing challenges with Toyota seat and door components.

#### **Medventure Technology Corporation – Louisville, KY.**

-Engineer, Engineering Student Co-op Term #1: 05/1999 – 08/1999.

Designed a vacuum-formed plastic shipping container for a medical catheter using Solid Works software.

Modeled medical devices and assemblies with exploded views and bill of materials using Solid Works.

Researched coatings for heart stints to prevent post-surgical platelet clotting.

Initiated design of a heart pump test station for calculation of flow volumes and pressures.

#### **Technical Skills**

- MATLAB, Mathcad, LabVIEW, Solid Works, I-DEAS, Igor, VuSoft, Inventor, ANSYS, COSMOS, Excel, and Solid Edge software
- End mill, lathe, band saw, TIG welding, grinding, pneumatic tools, chop saw
- Microsoft Visual Basic, Visual C++ Computer Programming Experience
- *BASIC stamp* programming, mechatronics, and ergonomics, and basic electrical circuits

#### **Other Accomplishments**

- Published Article: Jarboe, N., Quesada, P., “Effects of cycling shoe stiffness on forefoot pressure,” *Foot and Ankle International*, v24(10), October, 2003
- Licensed Professional Engineer
- Designed a garden pest control device using a motion sensor, programmable microcontroller, solenoid water valve, transistors, resistors, and a solid state relay.
- Designed, built, and licensed a silencer/suppressor for a .22 rimfire rifle and a .308 caliber rifle.
- Waterfowl motion decoy designs with moving appendages