Nicholas Sabry

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Objective: *Seeking full-time position of Level 1 Mechanical or Manufacturing Engineer*

Education

University of British Columbia   August 2024
Doctorate (Ph.D.) in Mechanical Engineering
- Accelerated from Master's program to Ph.D. by exceeding project goals beyond expectations
- Thesis: Development of Friction Stir Welding on Large Multi-Welded Components

University of British Columbia   May 2020
Bachelor of Applied Science in Mechanical Engineering
- Cumulative GPA: 4.0 | Graduated with Distinction

Experience

Mechanical Research Engineer, University of British Columbia   May 2022 – July 2024
- Optimized casting system through iterative product design, fixing production defects by identifying temperature gradient issues
- Designed for manufacturing, assembling casting components from CNC water-jet-cut steel plates, eliminating extensive machining
- Modeled parts in SolidWorks (DFM) and produced detailed engineering drawings of all components with GD&T
- Researched & developed a multi-welded process reducing tensile residual stresses by 65% lowering component defect rates
- Revealed the unrecognized impact of material texture on residual stress by applying a first-principles approach
- Mitigated in-process welding failures by analyzing simulation data with Python, resulting in 27% decreased temperature gradients
- Decreased analysis time of incoming neutron diffraction data by 200% through development of new MATLAB code

Mechanical Research Engineer, High Performance Powertrain Materials Laboratory   May 2020 – April 2022
- Resolved welding distortion issues for Nemak, a global auto manufacturer, improving battery tray tolerance accuracy to 98%
- Redesigned distortion and stress measurement methods, enabling cost-effective selection of straightening techniques
- Developed methods to measure distortion and residual stress in battery trays, resolving production disruptions
- Created custom tooling for the CNC waterjet, reducing centering and processing time by 50% through component jig alignment
- Designed fixtures that increased CNC lathe production speed 2x by eliminating multiple part re-entries

Manufacturing TA, University of British Columbia   May 2020 – July 2022
- Increased exam scores by 10% by delivering effective tutorials and providing clear examples
- Achieved a 90%+ rate of enhanced student learning based on anonymous student feedback

Materials Research Intern, Lund University   May 2019 – July 2019
- Enhanced material efficiency for next-gen engines by testing novel aluminum alloys to support lab research on climate goals
- Collaborated with international teams in a fast-paced research environment, building multitasking and data analysis skills

Projects

Production Enhancement, Tolko Industries
- Increased manufacturing output by 60% by collaborating with teams of engineers to identify key areas for improvement
- Improved production-flow by configuration management & change control, cutting labor costs by 27% raising margins by $72,000
- Reduced cycle and error-check times by 50% by developing impactful process diagrams and analyzing key metrics
- Optimized machine routing process by 100% after introducing lean manufacturing techniques and reprogramming PLCs and VFDs

Quadcopter, Personal
- Designed and 3D-printed modular upgrades, including motor mounts, electronic housings, and sensor brackets
- Developed custom software with PID control for multi-directional self-leveling and Bluetooth input integration
- Enabled accurate positioning by calibrating gyro and accelerometer sensors (MPU 6050) and integrating into Arduino hardware

Hovercraft, Robotics Competition
- Won 1st Place among 50 competitors by designing, prototyping, and testing a hovercraft
- Engineered a hovercraft with 300% lift efficiency using stacked props and optimized airflow redirection
- Set record for "Most Weight Lifted" by implementing unconventional design solutions

Skills

Software: SolidWorks (+8 years), MATLAB, Python, Arduino (C++), Thermo-Calc, OpenFOAM (CFD), ParaView
Material Analysis: SEM, EDX, XRD, EBSD, Neutron Diffraction, Tensile, Fatigue, Fracture, Hardness
Manufacturing: Lathe, Mill, Waterjet, Welding, Forging, CNC, Casting, 3D Printing

Publications

- **Sabry, N.**, et al. (2023). Characterization of microstructure and residual stress following the friction stir welding of dissimilar aluminum alloys. *CIRP Journal of Manufacturing Science and Technology, 41*, 365-379. https://doi.org/10.1016/j.cirpj.2022.11.021