Nicholas Bourgeois

Highlights of Qualification

1) Engineering Skills
    a. Specialization in the fields of applied multibody dynamics and control systems design.
    b. Knowledgeable at solving engineering problems using the principles of solid mechanics and computational modeling.
    c. Experienced at performing research and analyzing engineering techniques from journal papers and other related literature.
    d. Knowledgeable in the production and interpretation of engineering drawings, and of drafting and computer-aided-design (CAD) standards.
    e. Experienced in the use of 3D printing technologies for rapid prototyping of engineering designs.
2) Computer Skills
    a. Aptitude with computers to be able to quickly adapt to any computer environment and learn to use new software and programming languages.
    b. Experienced in using object-oriented C++ with Qt or MFC to increase work productivity and to solve complex engineering problems.
    c. Experienced combining sensor data from multiple sources through serial, network, and national instruments communications.
    d. Experience managing large datasets with C++ and MATLAB.
    e. Experience working with engineering software packages Creo (Pro/Engineer), MATLAB, Simulink, LabView, and CAD software.
3) Communication Skills
    a. Familiar with the creation and use of engineering technical documents such as letters, memos, proposals, progress reports, and technical reports.
    b. Proficient and confident in the preparation and delivery of oral presentations (in English).

Education

Carleton University – Doctorate of Philosophy in Aerospace Engineering
Completion Date: December 2015

Carleton University – Masters of Applied Science in Aerospace Engineering
Completion Date: October 2008 (A-) (Specialization in Computer Systems)

Carleton University - Bachelor of Aerospace Engineering – Co-op
Completion Date: April 2006 (B+) (Specialization in Dynamics and Simulation)

Language proficiency: English
Citizenship: Canadian, b. December 2, 1982, Peterborough, Ontario, Canada
Marital Status: Single, willing to relocate and travel

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Recent Projects / Work Experience

Aircraft Procedure Designer Software – Maxar (MDA), Richmond, BC – July 2016 to present

- Contributed to both the development and testing teams through various parts of the software production lifecycle.
- Designed and implemented algorithms for calculating geodetic distances relative to runway.
- Added new features on small development teams that added flexibility for customers.
- Developed software test documents that verified requirements and performed the tests during customer test event.

Aircraft Flight Recorder Data Analysis Software – NRC, Ottawa – May 2006 to April 2016

- Lead in software design, development, testing, and maintenance.
- Software developed in C++ and Qt is used for aircraft data analysis on a daily basis.
- Features processing and presentation of large amounts of data while providing users with minimal load times and optimal performance.
- Implemented test-driven development practices.

Human Postural Stability Modelling and Simulation - Ottawa, 2011 to 2015

- Lead in the design and execution of shipboard experiments in the North Atlantic Ocean in collaboration with DRDC-Atlantic.
- Modelled humans as a series of mechanical linkages using advanced spatial multibody dynamics techniques, coded in MATLAB.
- Designed and implemented a human-like control system based on experimental data gathered during a heavy-weather sea trial.

Teaching/Research Assistant – Carleton University, Ottawa – 2006 to 2015

- Responsible for teaching future engineers the fundamentals in a variety of engineering principles, primarily in solid mechanics and dynamics.
- Required to prepare teaching materials and to quickly achieve proficiency in any unfamiliar material.

Flight Deck Motion Display – Carleton University, Ottawa – Apr. 2007 to Sept. 2008

- Design, development, testing, and user evaluation of a ship motion monitoring device for use in improving the safety and efficiency of helicopter – ship operations.
- Hardware selected to meet military standards of ruggedness.
- Software developed in C++ using cross-platform Qt libraries, featuring real-time data acquisition and presentation functionality.
- User interface evaluation held in Halifax with military pilots from 12 Wing, Shearwater.

Volunteer Work

Musician: June 2009 to present, Ottawa Community Concert Band, Richmond Community Concert Band.
Scout leader 2005 to 2008, Scouts Canada, 36th Ottawa Scout Troop, Ottawa, ON

Primary Author Publications

July 2016 – **7th International Conference on Applied Human Factors and Ergonomics**
Prediction of Human Postural Response in Shipboard Environments

May 2015 – **CCToMM Mechanisms, Machines, and Mechatronics Symposium**
Derivation and Validation of a Spatial Multi-link Human Postural Stability Model

May 2015 – **25th Canadian Congress on Applied Mechanics**
Indicators of Motion Induced Interruption Occurrences in Heavy-Weather Sea Conditions

May 2014 – **International Conference of Control, Dynamic Systems, and Robotics**
Quest Q-348 Sea Trial: Human Postural Stability Studies

September 2009 – **International Symposium on Ship Control Systems**
Refinement of a Flight Deck Motion Monitoring System Through User Interface Evaluation Trials

June 2008 – **Canadian Society of Mechanical Engineers Forum**
Design and Implementation of a Flight Deck Motion Monitoring System