# Gregory Lemieux, Computational Engineer

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SUMMARY
I'm an engineer with a passion for developing scientific software applications to help solve some of the most pressing problems facing our world. My particular interest lies in applied optimization and towards this end I am pursuing a graduate degree, part-time, with a focus on Computational Engineering. I have a broad technical background developed through work in both academic and industrial organizations, providing both research-oriented and commercially-focused products and services. As such, I am extremely comfortable communicating within a variety of environments and have a proven ability to adapt to changing responsibilities based on evolving project requirements.

EXPERIENCE

**Guidance, Navigation, and Controls Engineer** 2012-04 — Present
*Space Systems/Loral*

- Developing the next-generation orbit propagator for controls design and Vehicle Hardware Lab simulation as well as the on-board flight software orbit estimation Kalman filter.
- Collaboratively building a Git submodule-based simulation architecture to enable code reuse and standardization for the Mathworks environment.
- Devised a package management system to automatically check and load necessary library dependencies for simulation submodules.
- Implementing Mathworks-based autocode generation toolchain to help streamline flight software build efforts.
- Produced new, Jupyter and Julia-based mission analysis tools for the NASA Restore-L mission to help guide hardware subsystems decision-making which included a sensor placement optimization and visualization tool.
- Expanded verification and validation test routines for Chebyshev-based ephemeris approximation code.
- Founding member of the Guidance, Navigation and Control Software Development Working Group which formed consensus-based guidelines for code commonly utilized by multiple departments.
- Designed and conducted critical orbit-raising maneuvers as the Mission Planner for more than five geosynchronous communication programs.
- Developed training for new Orbit Dynamics Group hires in using the heritage mission analysis tool set.

**Research and Development Engineer** 2008-06 — 2012-04
*Space Sciences Laboratory*

- Developed science data accumulation forecasting tool to aid in real-time planning for mission critical science collection activities.
- Integrated DSN Service Scheduling Software into active mission operation scheduling architecture and process.
- Helped Flight Dynamics team replace functions developed in-house with industry standard JPL SPICE toolkit functions.
- Contributed to the Deep Space Network Scheduling Advisory Group and Mid-range Management Group to prepare for deployment of next-generation scheduling process to all missions utilitzing the DSN.
- Scheduled communication support for ARTEMIS mission including critical maneuvers such as Lunar Orbit Insertion.
- Participated in the integration and test activities for the NUSTAR mission.

**Opto-mechanical Engineer** 2003-12 — 2006-05
*Janos Technology*

- Designed infrared lens assemblies for commercial, defense, and research applications in coordination with staff optical scientist.
- Represented the Engineering department as a member of the company-wide Quality Control Committee seeking AS9100 compliance.
- Conducted performance tests for multiple types of lens assemblies using a scanning-slit modular transfer function (MTF) test bench.

**Mechanical Engineer** 2001-09 — 2003-06
*Center for Space Physics*

- Designed and developed the vacuum-sealed opto-mechanical assembly for the main science payload for the SPIDR NASA mission proposal.
- Conducted both simulated and real-world structural analysis using finite element model to guide the build of test flight hardware.
- Produced failure modes and effects analysis documentation for payload hardware failure mitigation.

## SKILLS

**Scientific Programming:** Matlab/Simulink, Julia, NumPy, Fortran

**Source Control:** Git, Subversion

**Documentation:** Markdown, TeX, Pandoc

**Productivity:** VScode, Jupyter, Vim

**Operating Systems:** Linux, macOS, Windows

## EDUCATION

**Purdue University** 2016-09 — Present

M.S. Interdiscplinary Engineering, with focus in Computational Engineering

**Boston University** 1997-09 — 2002-05

B.S. *Aerospace Engineering*

## PUBLICATIONS

**SSL Commercial Geosynchronous Spacecraft Orbit Raising Considerations** 2016

- Presents analysis results for a survey of all SSL launches since the 1990s.

**THEMIS Mission Networks Expansion** 2010

- Discusses the results and experiences integrating the Deep Space Network software and processes for the ARTEMIS mission extension.

## AWARDS

**Asterism Award, SSL** 2015

- Peer-to-peer recognition for developing and delivering introductory training material for new orbit dynamics group employees.

**Apogee Award, SSL** 2013

- Received for contributions to a 2013 NASA Institute for Advanced Concepts (NIAC) proposal for a deep space communications architecture concept.

**ARTEMIS Project Recognition, Space Sciences Laboratory** 2010

- For contributions to the Lissajous and Lunar Orbit Phases.

## VOLUNTEERING

**UUCB - Social Media Team** 2018-07 — Present

- Administrative member of the church Social Media Team responsible for training and technical support to the church program groups.

**UUCB - Safety Implimentation Team** 2017-09 — Present

- Responsible for educating all church program groups on the Safety Plan requirements.
- Trained Family Ministry and Religious Education volunteers on emergency evacuation procedures.