Matthew T. Bowen

Profile

Hello! I'm Matt, a student at the Royal Military College of Canada, where I am pursuing a Master's of Science degree in Physics & Space Science with a research focus on remote sensing. I graduated from Queen's University in 2018 with a Bachelor's of Science (Honours) in Physics and Computing Science. In addition to my studies, I have a background in electrical engineering through various jobs and volunteer positions. Currently, I am the Chief Technical Officer for the Queen's Space Engineering Team's Satellite Project, as well as a Junior Web Developer at Docupet Inc., a Kingston based technology startup.

Education

- **Royal Military College of Canada** — Kingston, ON
  Master's of Science - Physics and Space Science — *2018 - 2020*
  - NSERC CREATE International Space Mission Training
- **Queen's University** — Kingston, ON
  Bachelor of Science Honours - Physics Major, Computing Minor — *2013 - 2018*

Experience

- **Queen's Space Engineering Team - Satellite Project** — Kingston, ON
  Chief Technical Officer — *September 2019 - Present*
  - Manages and supports a team of 50+ students which designs and constructs a 3U cube satellite.
  - Hired project managers for the major satellite subsystems.
- **Docupet Inc** — Kingston, ON
  Junior Web Developer — *October 2018 - Present*
  - Responsible for large data set analysis and ETL using Python and MySQL.
  - Developing Docupet Import Module using Django.
- **Royal Military College of Canada - Physics & Space Science Department** — Kingston, ON
  Observatory/Teaching Assistant — *September 2018 - Present*
  - Trained students on reflector telescope usage for undergraduate astronomy courses.
  - Guided student astronomical observing sessions.
- **Alma Mater Society of Queen's University Inc** — Kingston, ON
  Director of Information Technology — *March 2017 - May 2018*
  - Member of the AMS Board of Directors, responsible for corporation-wide strategic planning.
  - Maintained the technological infrastructure, performed account management, and oversaw project development.
  - Trained and managed first level IT support staff.
- **Queen's Space Engineering Team - Satellite Project** — Kingston, ON
  Electrical Systems Design Lead — *May 2017 - May 2019*
  - Designed and implemented the power generation and delivery system for CoSMOSat.
  - Managed the periphery electrical subsystems, including command/data-handling, and attitude determination.
- **Queen's Solar Design Team** — Kingston, ON
  Electrical Projects Director — *May 2016 - April 2017*
  - Delegated and monitored projects in data collection, energy storage, and low power home electricity usage.
  - Designed and installed a fully off-grid photovoltaic power generation system for a 600sqft home.
- **Queen's Solar Design Team** — Kingston, ON
  Data Systems Manager — *September 2015 - April 2016*
  - Designed and installed weather and data monitoring systems for the Queen's Solar Education Centre.
  - Includes hardware implementation throughout the home as well as software development.
- **Various Part-time work** — Kingston, ON
  Roles in service industry, education, and university athletics — *2014-2018*

Projects

- **Polar Dust Loading Analysis using MetOp-A AVHRR Imagery** — Royal Military College of Canada
  Master's of Physics and Space Science Thesis Project — *May 2019 - Present*
  - Aims to produce a large time scale dataset of new high latitude climate markers and determine, if applicable, what insights can be gained through statistical analysis with contemporary polar climate data.
  - Studies the impact of dust aerosols on polar amplification models and the disappearing cryosphere.
  - Utilizes Advanced Very High Resolution Radiometer (AVHRR) imagery and novel distributed computing techniques to perform mass trend analysis.
- **Space Mission Design & Analysis** — Royal Military College of Canada
  NSERC CREATE International Space Mission Training — *January 2019 - July 2019*
  - Collaborated with international colleagues to design a 3U cubesat mission to study polar mesospheric clouds using an infrared spectrometer
  - Worked with a team of students from the University of Tromsø and the University of Saskatchewan to design and construct a a weather balloon mission to study ionizing radiation at high altitudes.
- **NGVS Surface Brightness Profile Fitting** — Queen's University
  Honours Physics Thesis Project — *September 2017 - May 2018*
  - Study the light profile of Virgo Cluster galaxies to detect the trace of stellar halos.
  - Use of chi-squared and Markov Chain Monte Carlo minimization techniques to determine the light percentage contributed by halo stars.
- **Investigating Hydrodynamic Quantum Analogues** — Queen's University
  Physics Laboratory, PHYS 350 — *December 2016 - May 2017*
  - By mechanically vibrating viscous fluids, several quantum mechanical effects can be demonstrated.
- **Implementation of Kalman Filters for Apogee Detection in Rocket Flight** — Queen's University
  Queen's Rocket Engineering Team — *September 2016 - January 2017*
  - Research into the viability of using a Kalman filter to deploy airbrakes on atmospheric rocket flight.
  - Implementation of algorithm using an Arduino platform with pressure altimeter and 9-axis accelerometer.
- **Determining the Width of the Kirkwood Gaps** — Queen's University
  Computational Methods in Physics, PHYS 313 — *September 2015 - December 2015*
  - Wrote a limited N-body code (in C) to simulate the motion of asteroids in resonance with Jupiter and Saturn.
  - Co-wrote scientific report detailing the findings and results of the Verlet simulation.

Skills Profile

	Technologies	**Skills**
Programming:	Proficient in Python Experience in C, MATLAB, Java	Space mission design
Web:	Proficient in Django, Bootstrap, Symfony Experience in JS/HTML/CSS/PHP/MySQL	Astrodynamics and Orbital Mechanics
Software:	Typesetting in LaTeX Space simulation in AGI STK PCB design in KiCAD/Eagle Graphic design in Inkscape/GIMP/Visio 3D design in SOLIDWORKS	Volunteer and team management Agile development and Git version control Scientific computing and ETL processes

Certifications and Courses

- **Amateur Radio Operator (callsign: VE3KSP)** — Toronto, ON
  Innovation, Science, and Economic Development Canada — *February 2017*
- **Graduate Professional Skills Certificate** — Saskatoon, SK
  University of Saskatoon — *August 2019*

References

- **Dr. Ron Vincent** — Royal Military College of Canada
  Professor of Physics — *Master's thesis supervisor*
- **Andrew Comber** — Docupet Inc.
  Chief Technology Officer — *Direct supervisor*
- **Dr. Stéphane Courteau** — Queen's University
  Professor of Astronomy — *Undergraduate thesis supervisor*