Damien Robertson - Curriculum Vitae

Website | GitHub | Email | Twitter | LinkedIn

Profile

- B.Sc., M.Sc. degree in physics and astronomy.
- Most recent experience with Python, Scala, SQL, Apache Spark, Ruby, php, git[hub] on Unix systems.
- Deep experience with numerical programming in C++/Python/Fortran.
- Experienced in full stack data science via data mining (acquisition), machine learning techniques and statistical analysis (classification), and data presentation (visualization) using primarily Python and supporting languages.
- Advanced problem solving, troubleshooting and self-directed learning skills.
- Curious, self-motivated, and capable of understanding complex phenomenon quickly.
- Experience with scientific technical writing and technical presentations.
- Three published scientific articles including one as lead author.
- Participated in international collaborations with physicists, astronomers, and engineers.

Experience

Affinio | **Data Scientist**. Ottawa, Ontario | Oct 2016 - Present

- Create new and maintain existing data pipelines.
- Data integrity and ETL tasks.
- Data infrasctructure provisioning on AWS and Azure.
- Research and develop new methods to extract KPI's.

Shopify | **Data Engineer**. Ottawa, Ontario | May 2015 - Oct. 2016

- Team member of Risk Algorithms helping to minimize a number of financial risks through modelling and predictive analysis.
- Model business processes using Apache Spark (PySpark), Cassandra, Kafka for business intelligence consumption.
- ETL, data cleaning and reconciliation
- Create custom data sources and reports using Tableau for business users.
- Contribute to the evolution of Shopify's data pipeline framework.
- Build out new data endpoints from core rails products and extract for data use.

ShapeCapture | **Numerical Programmer**. Hamilton, Ontario | Oct. 2014 - Feb. 2015 (Part Time)

- Worked with structure from motion (SfM) algorithms to reconstruct three dimensional shape of an object using multiple two dimensional images.
- Prototyping of custom feature matching algorithms using Python/C++ with the openCV library.

McMaster University | **Researcher**. Hamilton, Ontario | Sept. 2012 - Aug. 2014

- Developed Python programs utilizing the scikit-image library to combine multi-wavelength, multi-instrument infrared, and radio observations of star forming regions in two and three dimensions.
- Created Python programs for astronomical structure identification in data sets.
- Setup, maintained, and queried SQL databases of pre-stellar cores.
- Utilized machine learning to cluster massive pre-stellar core candidate lists.
- Developed analysis criteria for evaluating source finding algorithm efficacy.

Tri-University Meson Facility (TRIUMF), TITAN | **Researcher**. Vancouver, British Columbia | May 2011 - Aug. 2011

- Designed, fabricated, and tested an electrostatic ion gauge barrier to improve detector performance.
- Maintained, tested ultra high vacuum components, and implemented new vacuum pump in beam line.
- Team member on two mass measurement experiments along with routine equipment maintenance.

Saint Mary's University | **Researcher**. Halifax, Nova Scotia | May 2009 - Sept. 2012

- Utilized data reduction pipelines in Bash, C++ to process X-ray and UV observations of active galaxies.
- Created and maintained bulk data sets, mined data for exploration, and quantity correlation.
- Created Python program to correlate unevenly sampled time series.
- Published paper on time series analysis, worked based on undergraduate thesis.
- Created *N-body* C++ code to simulate the evolution of the solar system with and without the Jovian planets.

Education

McMaster University. Hamilton, Ontario

- M.Sc. Physics and Astronomy | Sept. 2012 - Aug. 2014

Saint Mary's University. Halifax, Nova Scotia

- B.Sc. Honours, Astrophysics (Summa Cum Laude) | Sept. 2008 - May 2012

Algonquin College. Ottawa, Ontario

- Diploma - Business Marketing | Sept. 2004 - May 2006

Publications

Articles Published or Accepted in Refereed Journals

Robertson, D., Gallo, L.C., Zoghbi, A., Fabian, A.C. (2015) *Searching for Correlation in Simultaneous X-ray and UV Emission in the Narrow-line Seyfert 1 galaxy 1H 0707–495.* Monthly Notices of the Royal Astronomical Society, Submitted.

Pattle, K., Ward-Thompson, D., Kirk, J.M., White, G.J., Drabek-Maunder, E., Buckle, J., Beaulieu, S.F., Berry, D.S., Broekhoven-Fiene, H., Currie, M.J., Fich, M., Hatchell, J., Kirk, H., Jenness, T., Johnstone, D., Mottram, J.C., Nutter, D., Pineda, J.E., Quinn, C., Salji, C., Tisi, S., Walker-Smith, S., Di Francesco, J., Hogerheijde, M.R., Andre, P., Bastien, P., Bresnahan, D., Butner, H., Chen, M., Chrysostomou, A., Coude, S., Davis, C.J., Duarte-Cabral, A., Fiege, J., Friberg, P., Friesen, R., Fuller, G.A., Graves, S., Greaves, J., Gregson, J., Griffin, M.J., Holland, W., Joncas, G., Knee, L.B.G., Konyves, V., Mairs, S., Marsh, K., Matthews, B.C., Moriarty-Schieven, G., Rawlings, J., Richer, J., **Robertson, D.**, Rosolowsky, E., Rumble, D., Sadavoy, S., Spinoglio, L., Thomas, H., Tothill, N., Viti, S., Wouterloot, J., Yates, J., Zhu, M. (2015) *The JCMT Gould Belt Survey: First results from the SCUBA-2 observations of the Ophiuchus molecular cloud and a virial analysis of its prestellar core population.* arXiv, 1502.05858, Accepted.

Gallant, A.T., Bale, J.C., Brunner, T., Chowdhury, U., Ettenauer, S., Lennarz, A., **Robertson, D.**, Simon, V.V., Chaudhuri, A., Holt, J.D., Kwiatkowski, A., Mane, E., Menendez, J., Schultz, B.E., Simon, M.C., Andreoiu, C., Delheij, P., Pearson, M.R., Savajols, H., Schwenk, A., Dilling, J. (2012) *New Precision Mass Measurements of Neutron-Rich Calcium and Potassium Isotopes and Three Nucleon Forces.* Phys. Rev. Lett. 109, 032506.

Vasudevan, R., Gallo, L., **Robertson, D.**, Fulford, K. (2011) *Variability, Optical - X-ray slope and accretion disc properties in a sample of Seyfert 1 AGN.* Proceedings of Science. (NLS1)007.

Non-Refereed Contributions

Robertson, D. (2015) *The Life and Times of Betelgeuse.* Hamilton Amateur Astronomers, public talk.

Robertson, D., Wilson, C.D., Sadavoy, S., Di Francesco, J. (2013) *Herschel Cores in the Perseus Molecular Cloud*. CASCA (Canadian Astronomical Society). National conference, poster presentation.

Robertson, D., Gallo, L.C., Fulford, K. (2010) *Investigating the Relationship Between X-ray and UV Properties in Type 1 AGNs*. CASCA (Canadian Astronomical Society). National conference, poster presentation.

Teaching and Outreach

McMaster University. Hamilton, Ontario

- **William J. McCallion Planetarium** - Dr. Robert Cockcroft | Apr. 2013 - Oct. 2014
  - Public outreach.
  - Created original presentations, performed them for private and public audiences and a wide range of ages.
- **Teaching Assistant** - Neil McKay | Sept. 2013 - Apr. 2014
  - System administrator for Physics department undergraduate testing software.
  - Addressed login problems, student marking and managed course and quiz work.
- **Teaching Assistant** - Dr. Laura Parker | Sept. 2012 - Dec. 2012, Sept. 2013 - Dec. 2013
  - Astronomy: Big Questions (AST 2B03).
  - Mediated student discussion, graded student student presentations and assignments.
- **Teaching Assistant** - Neil McKay | Dec. 2013 - Apr. 2013, Dec. 2014 - Apr. 2014
  - Astronomy: Physics for Life Sciences (PHY 1L03).
  - Taught two hour tutorial course, maintained office hours for questions and administered student quizzes.

Saint Mary's University. Halifax, Nova Scotia

- **Burke Gaffney Observatory Tour Guide** - David Lane | May 2010 - Apr. 2012
  - Public outreach.
  - Responsible for guiding public audiences, speaking about different tools and aspects of the observatory and addressing any questions.
- **Teaching Assistant** - Dr. David Turner | Jan. 2011 - Apr. 2011
  - Introduction to Astronomy (ASTR 1000).
  - Responsible for grading student assignments throughout the semester.
- **Teaching Assistant** - Jodi Asbell-Clarke | Sept. 2009 - Dec. 2009
  - Astronomy: Life in the Universe (ASTR 1010).
  - Responsible for grading student assignments throughout the semester.

Awards

- Ontario Graduate Scholarship - 2014
- NSERC Canada Graduate Scholarships - 2013
- Ontario Graduate Scholarship - 2013
- Entrance Scholarship - McMaster University - 2012
- SMU, First Place - Eighth Annual SMU Undergraduate Mini-Symposium (Talk) - 2011
- TRIUMF Summer Research Award - Atlantic Region - 2011

- Canada Undergraduate Physics Conference, Second Place - Astrophysics Category (Talk) - 2010
- NSERC Undergraduate Student Research Award - 2010
- Atlantic University Physics and Astronomy Conference, Honourable Mention (Talk) - 2010
- Achievement Scholarship (SMU) - 2009 - 2012
- William N. Duggan Memorial Scholarship - 2009
- William Chisholm Scholarship - 2009
- SMU, First Place - Sixth Annual SMU Undergraduate Mini-Symposium - 2009
- Dean's List (SMU) - 2008 - 2011