Dear Hiring Manager,

I am writing with regards to the position at BNY Mellon in the model validation group. I would appreciate the opportunity to be considered for this position. I was notified of this opening by Dr. Shangzuo Gao, a former student of my PhD advisor, Dr. Jerry Magnan.

I am presently a PhD Candidate in Applied and Computational Mathematics at Florida State University, where my research focuses on image-processing and image-analysis techniques for automated characterization of tumors in lung CT scans. Although this research might, at first, appear disconnected from the financial data analysis performed at BNY, I believe that my particular background and experience offers a unique perspective, which lends itself more generally to areas beyond my current research in medical image analysis, e.g., to data analysis in finance.

Please find my resume listed in the following pages. Should you like to discuss anything further, please feel free to contact me by phone (810.656.0561) or by email (mhancock@math.fsu.edu).

Best,
Matthew C. Hancock

Matthew C. Hancock

Address: 317 Mabry St. Apt 1021 Tallahassee, FL 32304
Phone: 810.656.0561
Email: mhancock@math.fsu.edu
Website: https://notmatthancock.github.io

Education

Fall 2012-Fall 2017 (anticipated)

Ph.D. Candidate in Applied and Computational Mathematics

Florida State University (Tallahasse, FL)

Focus: Machine learning and image-processing methods for lung image analysis

Relevant coursework: Numerical Methods (interpolation, integration, ODEs/PDEs, linear algebra, and optimization), Machine Learning, Probability theory and Statistical Inference

Spring 2012

B.S. in Applied Mathematics with Computer Science focus
Ferris State University (Big Rapids, MI)

Work

Fall 2012-present

Teaching Assistant at Florida State University (Tallahassee, FL)

Responsibilities / Accomplishments:

- Instructor, Multi-variable Calculus (Summer 2017)
- Distinguished Teaching Assistant Award (2017)
- Assistant, Foundations of Computational Math (graduate level course) (Fall 2016, Spring 2017).
- Instructor, C++ computing seminar (Fall 2016).
- Instructor, Single-variable Calculus (Spring 2016, Summer 2016).
- Instructor, Precalculus (Fall 2014, Spring 2015).
- Recitation instructor, Discrete Mathematics (Fall 2015).
- Assistant, various math courses (College algebra, Liberal Arts math, Trigonometry, Business calculus).

Fall 2011-Fall 2012

Web developer at Occupational Research and Assessment (Big Rapids, MI)

Responsibilities / Accomplishments:

- Created and designed web systems for a number of third-party organizations using the Ruby on Rails web development framework.

Fall 2009-Fall 2011 | **Programming Tutor** at Ferris State University (Big Rapids, MI)

Responsibilities / Accomplishments:

- Tutor for undergraduate introductory programming course taught with the Python programming language.

Spring 2010-Fall 2010 | **Calculus Tutor** at Ferris State University (Big Rapids, MI)

Responsibilities / Accomplishments:

- Tutor for undergraduate calculus courses (mostly single-variable calculus material).

Computational Fluency

- High-level programming languages: Python (NumPy, SciPy, Scikit Learn, Scikit Image, Theano, Cython), Matlab/Octave, JavaScript, Ruby, PHP
- Mid-level programming languages: C++, Fortran
- Markup languages: LaTeX, Web (HTML, CSS)
- Relational databases languages: SQLite, MySQL
- General Unix-like operating system tools

Activities

- **Participant in Capital One modeling competition** – Our group created a neural network model for identifying fraudulent credit card transactions. This involved preprocessing tens of gigabytes of raw data to be placed into an SQL database, whereafter a custom, GPU-based neural network was trained.
- **Creator and developer of Pylidc** – Pylidc is a software library for working with LIDC lung CT dataset. The library is built with Python and its associated scientific computing libraries and is freely available. https://github.com/pylidc/pylidc
- **C++ and Fortran Reference Guides for Graduate Seminar** – In collaboration with a fellow graduate student, Emacs Org-mode was used to create C++ and Fortran reference guides to be used in the Applied and Computational Mathematics computational seminar for first year graduate students at FSU. The guides are available under a Creative Commons license. http://notmatthancock.github.io/teaching/acm-computing-seminar/resources/langs/cpp/

Journal Publications

- Matthew C. Hancock, Jerry F. Magnan. **Lung nodule malignancy classification using only radiologist quantified image features as inputs to statistical learning algorithms: probing the Lung Image Database Consortium dataset with two statistical learning methods**. *SPIE Journal of Medical Imaging*. Dec. 2016. http://dx.doi.org/10.1117/1.JMI.3.4.044504

Conference Proceedings

- Matthew C. Hancock, Jerry F. Magnan. **Predictive capabilities of statistical learning methods for lung nodule malignancy classification using diagnostic image features: an investigation using the Lung Image Database Consortium dataset**. *SPIE Medical Imaging Symposium, Computer-Aided Diagnosis Conference (Orlando, FL)*. Feb. 2017. http://dx.doi.org/10.1117/12.2254446

Talks Given

- Matthew C. Hancock, Jerry F. Magnan. **Predictive capabilities of statistical learning methods for lung nodule malignancy classification using diagnostic image features: an investigation using the Lung Image Database Consortium dataset**. *SPIE Medical Imaging Symposium, Computer-Aided Diagnosis Conference (Orlando, FL)*. Feb. 2017. (talk associated with corresponding conference proceeding). http://notmatthancock.github.io/research/talks/spieconf2017.pdf
- Matthew C. Hancock. **10 FREE Python Libraries that will TOTALLY SHOCK you**. *FSU Math Department Graduate Student Seminar*. Spring 2017. (Presentation of various Python library for scientific computing. The title is a spoof on clickbait journalism.). http://notmatthancock.github.io/research/talks/gss-python/
- Matthew C. Hancock. **A survey a of PDE-based methods for image segmentation** . *FSU Math Department Graduate Student Seminar*. Spring 2016. http://notmatthancock.github.io/research/talks/gss-pdes/

Posters Presented

- Matthew C. Hancock, Jerry F. Magnan. **Lung nodule malignancy classification using diagnostic image features**. *SIAM SEAS Conference (Tallahassee, FL)*. Spring 2017. http://notmatthancock.github.io/research/pdf/siam-seas-2017.pdf

References available upon request.