Phillip John Paine, PhD.: Résumé

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Summary and Technical Skills:

- Data scientist in the Underwriting Analytics team at BCAA
- Two years as a statistical consultant and two years as a post-doctoral research fellow in Statistics and Probability.
- PhD. in Statistics from the University of Nottingham, UK

Programming: Python, Spark, R, Matlab

Data Science Tools: SQL, AWS (Glue, EC2, Sagemaker Studio), PowerBi, Git, AirFlow, Docker containers

Professional Experience:

Data Scientist, Underwriting Analytics, BCAA

Vancouver **May 2019 – Present**

Duties are providing data-driven support to the team and wider organisation by managing dataflows (AWS), --something statistical analysis/modelling (R, Python, Sagemaker)-- and creating dashboards (PowerBi).

- Established pipelines for new business opportunities and customer retention to inform business decisions, using a hierarchical clustering in PySpark, data management using AWS Glue and a dashboard in PowerBi.
- Modelling claim outcome from intial claim notes using a pre-trained word-embedding encoder and CNN and LSTM layers in tensorflow.
- Improve insurance pricing over multiple projects using time series analysis, gradient-boosted models and Gaussian processes. Includes forecasting future new business and retention and spatial analysis of recent claim data. Output includes Shiny web app for demonstrating business value.

Statistical Consultant

University of Sheffield, UK **Sept. 2016 – Sept. 2018**

My role was to work with researchers from within the University and external research centres to provide short-term (2 - 3 months typically) statistical consultancy on science- and engineering-based projects.

Selected Projects:

Modelling Commercial Fisheries and Marine Tourism Revenue under Proposed Fishing Effort Scenarios

- Collaborated with researchers at Plymouth (UK) Marine Laboratory to model commercial fisheries revenue and marine tourism. A Bayesian network with regularised regression models at relevant nodes was implemented to evaluate the impact of fishing strategies on marine-life valuable to tourism.

Bayesian Analysis of Clonogenic Survival Assay Data

- Produced a dose-response curve from data on the irradiation of cancer cells with multiple repeated measurements and experiments.
- A Bayesian hierarchical model was used to create a heat map around the dose-response mean curve quantifying the level of uncertainty for each source of error. The outcome was a paper published in the Journal of Radiotherapy and Oncology.

Post-Doctoral Fellow (Statistics)
University of Nottingham, UK **Sept. 2014 – Sept. 2016**

The purpose of the grant was to develop novel regression methods for manifold-valued data and landmark data; providing theoretical justifications, model diagnostics and numerical implementations for the methods. Applications of the work includes predicting weather patterns and modelling vector-cardiogram signals.

Education:

PhD Statistics, University of Nottingham **Sept. 2010 – Aug. 2014**
Thesis: Parameter Estimation in Stochastic Differential Equations for Discretely-Sample Observations

In the thesis a novel method was developed for estimating the unknown parameters in a general class of stochastic differential equations given time-series observations. The work focussed around providing theoretical results for asymptotic properties of the estimators and implementing numerical simulations in Matlab and C++ to demonstrate practical application using financial time series data.

BSc Mathematics, Cardiff University **Sept. 2006 – July 2010**
First Class Honours

Other Experience:

Lecturer for Topics in Statistics – Spring Semester 2016
Lecturer for a final-year undergraduate and masters module that covered hypothesis testing in sequential analysis.

Relevant Publications:

Collis, J., Hill, M., Nicol, J. R., Paine, P. J., Coulter, J., *A hierarchical Bayesian approach to calibrating the linear-quadratic model from clonogenic survival assay data,* Radiotherapy and Oncology, 124:3, 541-546, 2017.
Paine, P. J., Preston, S. P. et. al., *Spherical regression models with general covariates and anisotropic errors,* Statistics and Computing, 30, 153-165, 2019.
Dryden, I., Kume, A., Paine, P. J., Wood, A. T. A., *Regression modelling for size-and-shape data based on a Gaussian model for landmarks, https://doi.org/10.1080/01621459.2020.1724115*, Journal of American Statistical Association, 2019.