Dr David Thomas Hill

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Employment/Academic history

May 2011 to present
Cantab Capital Partners LLP (latterly part of GAM Systematic)
Software Engineer (Scientist): Python 2/3, SQL (postgres), SQLAlchemy, C++, Qt, javascript.

Part of the core programming team, I've worked on the entirety of the firm's trading infrastructure, from execution and reporting to reconciliation. Key projects:

- Implemented the SOR that allows the firm to simultaneously trade buy and sell requests in futures markets.
- Produced the GUI that the firm's execution traders use to send orders to the market, directly or through the firm's proprietary OMS.
- Automated the pipeline that sends equity requests to brokers via an intermediary, and manages the construction and booking of fills from received fix messages.
- Extended the firm's EMS so that orders can be executed using counterparty algos, and supported the automatic execution of orders for baskets of future options.
- Designed the system that creates and sends daily trade files to relevant parties.
- Established the overnight journalling processes that calculate commissions, book the expiration of forward contracts, exercise/expire option contracts and realise profits following the close-out of future contracts and equity cfds.
- Developed the internal fund nav calculation system, with much input from the fund accountants, that generates daily returns for every share class of the funds that are managed by the firm. The output of this system is used in many parts of the firm, including marketing documents and fund trading-level calculations
- Created the code that generates the figures used in quarterly regulatory reporting (including Annex IV, CPO-PQR, and Form PF).
- Setup many of the importing processes that download and parse trades and balances files from counterparties, forming the basis of the middle office's reconciliation system.
- Composed and improved a number of Qt GUIs used across the firm, including the tools for examining, amending and booking trades, and reconciling positions versus counterparties. I also extended the proprietary python IDE used by the core infrastructure and strategy teams, adding functionality to view database objects, track exceptions back to the code that caused them, and simplify complicated text operations.
- Planned the system that manages the creation, storage and presentation of the daily reports that are used by the strategists to examine the firm's risk.
- Managed the transition into live trading of the majority of the firm's funds.

October 2007 to June 2011
University of St Andrews (School of Physics and Astronomy)
PhD in Astronomy:
The optical and NIR luminous energy output of the Universe : the creation and utilisation of a 9 waveband consistent sample of galaxies using UKIDSS and SDSS observations with the GAMA and MGC spectroscopic datasets[1]
C, C++, R, AWK, csh, latex

My PhD was a data processing and analysis project. I took images from a number of telescopes, corrected them for various biases (such as seeing convolution, and image zeropoint), and stitched them together into three complete mosaics, each covering 36 square degrees of the sky. This was repeated using equivalent observations from different parts of the near-infrared and visible spectra.
Standard astronomical source extraction software was ran upon each mosaic, creating a catalogue of sources: their positions and brightness in the sky. Sources in the different colour catalogues were matched up to produce a common catalogue, whose contents were combined with redshift information (that provides distances to each source).
Properties of the derived catalogue of galaxies were compared and contrasted over the different wavelengths of observation; bi-variate brightness and size distributions were calculated from this sample of galaxies, and parameterised functions were fitted to the results. Two published papers:

The ugrizYJHK luminosity distributions and densities from the combined MGC, SDSS and UKIDSS LAS datasets [2]
Galaxy and Mass Assembly: FUV, NUV, ugrizYJHK Petrosian, Kron and Sérsic photometry [3]

October 2003 to June 2007
University of Bristol
MSci in Physics and Astronomy (Upper second)
Physics topics studied from particle to astrophysical scales, and useful tools - computer and practical skills, formal report writing, presentational skills, complex mathematics and statistics.

October 2006 to June 2003
Bablake School, Coventry
3 A Levels (All A), 3 AS Levels (1 A, 2 B), 10 GCSEs (3 A*, 5 A, 2 B)

Interests

Associate member of the Institute of Physics, and a Fellow of the Royal Astronomical Society.
I read a lot, principally history and politics. I grow flowers, fruit and vegetables in the summer.
I'm an armchair fan of football, rugby and cricket, and a fair weather cyclist.
I have some hobbyist experience with Java (early Android development), PHP, and HTML/JavaScript/CSS.
More recently I've been experimenting with D/GTK/cairo. I'm a regular user of Linux and Windows

References

Available upon request

[1] `http://hdl.handle.net/10023/1696`
[2] `http://adsabs.harvard.edu/abs/2010MNRAS.404.1215H`
[3] `http://adsabs.harvard.edu/abs/2011MNRAS.412..765H`