

Impact story

Dynamic forecasting with British Airways

Predicting demand for flights is central to airline business strategy, and enormously complex. In collaboration with British Airways, The Alan Turing Institute developed novel machine learning techniques to tackle the challenge.

- BA constantly updates its forecast ticket sales for each flight. It's a vital piece of its pricing strategy – a dynamic balancing game of supply, demand and price.
- BA approached the Turing to co-develop bespoke machine learning techniques to improve this dynamic demand forecasting.
- Led to a year-long joint project with the Turing's Research Engineering Group (REG).
- BA entrusted the Turing with daily ticket sales for approximately a million flights from across 3 years.
- Consisted of six billion rows of data with a complex time series structure.
- REG developed predictive models, taking a Bayesian modelling approach, which provides estimated forecasts, as well as the level of confidence in those predictions.
- Crucially, the models were not 'black box' algorithms; they could be interrogated to discover how they arrived at their forecasts.
- The new predictive algorithms went head-to-head with BA's more traditional forecasting methods, with promising results.

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- BA's dynamic forecasting capability was bolstered, providing a new approach with promising results.
- Established a positive, trust-based relationship, and a foundation for further collaboration.
- Methods developed are applicable to other large-scale data science projects at the Turing.

“Everyone involved learned a lot from the Turing team – we trusted them.”

Jack Bovey, Revenue Optimisation Manager at British Airways



Images: British Airways

BA entrusted the Turing with daily ticket sales data for approximately one million flights from across 3 years.