Shashwat M. Pande

Machine Learning | NLP | Forecasting | Decision Science | Quantitative Methods
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EDUCATION

2015-2020 **PhD, Decision Sciences and Operational Research,** *Center for AI and Decision Sciences, University of Manchester*
Thesis: *Essays on limited attention in information-rich environments.*

2013 – 2014 **MSc, Information Systems (Distinction),** *Alliance Manchester Business School, University of Manchester*

2010 – 2013 **BBA (Hons), Business Studies,** *Lancaster University*

PROFESSIONAL EXPERIENCE

Data Scientist, *Bank of England* (2024 Oct – Present)

Lead Data Scientist, *Triumph Motorcycles* (2022 May – 2024 Sep)

My primary responsibilities included:

- Formulating the strategic development of advanced analytics and machine-learning across the company's commercial R&D activities.
- Advising senior-management on opportunities for data-driven projects and evaluating their outcomes.
- Developing collaborative research opportunities with external contributors and partner-institutions.

Some major projects included:

- *Customer-base analytics using latent-attrition models* to estimate churn-risk and identify behaviourally similar customer-segments. I led an 8-person multi-disciplinary team comprising data engineers, functional managers and corporate directors to activate a target customer-base worth £100M in annual revenue.
- *Mapping census-scale origin-destination networks and MSOA-level population-demographics* to infer data-driven behaviour-change interventions. Based on findings

from analysing the ONS origin-destination data-set and census-tract demographics, highly targetted field-surveys could be facilitated in major hubs across dense commuter-networks in the UK.

- *Detecting component failures and critical, safety-related issues in shipped-motorcycles* by leveraging public-discussions on online motorcycle rider-forums. Developed data-collection, sentiment/lexical analyses and document-clustering processes to implement a self-service analytical decision-support system.
- *Multi-step demand-prediction using a very-large set of macro-economic indicators*. Leveraged the FRED database, internal transactional-data alongside principal component analyses (PCA) and regularised regression. The method outperformed more computationally expensive benchmarks and provided an explainable direct multi-step forecasting solution capable of attaining 92-96% test-accuracy.
- *Nowcasting house-price inflation from real-estate listings* and identifying reactionary pricing-behaviours of UK house-builders in-light of interest-rate decisions and bad-news. Using hedonic-regression based methods, the methodology was able to track major bank-indices and provide high-resolution disaggregate data across 3 of the largest UK house-builders. (in partnership with Bloor Homes Ltd.)
- *Emotion detection in large textual corpora of community generated content.* This was a 3-month project that evaluated how emotion detection tools could help summarize vast volumes of data collected from social-media activity to support event-driven analyses of marketing campaigns and new-product launches. Insights from this project helped develop custom lexicons of relevance to the motorcycle industry to tag and aggregate valance across a range of core human-emotions. In addition, this project helped develop commercial datasets for use in Masters dissertation projects (in partnership with Loughborough University & Patrimony EV Ltd.)

KTP Associate (Data Scientist), *Loughborough University* (2020 Feb – 2022 Apr)

On secondment to Triumph Motorcycles on the Knowledge Transfer Partnership (KTP) *"Developing data science and machine learning capabilities for global demand forecasting and strategic decision making."*

- Developed a *recursive demand forecasting system* drawing on state-of the-art methodologies in high-dimensional time-series modelling. The system was able to reliably improve forecasting accuracy by 15-25% from prevailing practice, enabling the company to grow volumes to record levels through better demand planning processes.

- Set out recommendations for and *established a central office for "Insights and Analysis"* responsible for developing and championing data analytics and machine learning across the company.
- The project was rated outstanding for attaining the objectives of the KTP scheme by an independent panel of assessors.

Class Teacher, *London School of Economics and Political Science* (2019 Jun – 2020 Feb)

Taught lectures and seminars for the executive training course *"Strategic Decision Making for Management"* and LSE summer school course *"The Science and Art of Decision Making"* (PG).

- Both courses grappled with foundational *concepts in probability, risk and uncertainty for management* as well as behavioural theories of decision-making.
- The courses were formulated as introductions for executives and recent graduates to *foundational theories in management science*.
- Students consistently rated my teaching at 4.5/5 or above across four cohorts.

Research and Teaching Assistant, *University of Manchester* (2016-2019)

Supported faculty research in the quantitative analysis of behavioural data and provided supervision and pastoral support for Master's dissertation projects.

- Analysed firm-level data to cluster and isolate important variables influencing the *success of inter-organisational strategic partnerships*.
- Assisted in the *supervision of two Master's dissertations at the Alliance Manchester Business School* and managed data-collection, fieldwork, ethical compliance and the disbursal of research funds.
- Taught courses in quantitative methods and systems theory to graduate and undergraduate cohorts.
    - BMAN71791 (PG): Intermediate concepts in predictive analytics and machine-learning in Python focussing on *time-series analysis, regularisation and numerical clustering methods.* (Student evaluation: 4.7/5)
    - BMAN72720 (PG): Introductory *concepts in sampling, probability and statistics*. Topics included probability distributions, hypothesis-tests and linear(multiple)-regression with implementations taught in SPSS. (Student evaluation: 4.5/5)
    - BMAN10970 (UG): Foundational course in organisational studies and critical-theory. Guest lectured on *behavioural theories of the firm* and *the management of*

uncertainty/ambiguity for an undergraduate audience and led tutorials. (Student evaluation: 4.7/5)

PUBLICATIONS

- Pande S.M. (2022). "Implicit Behavioural Assumptions in Budgeting Decisions." *The* **31st European Conference on Operational Research** *(EURO), University of West Attica.*
- Pande, S.M., Papamichail, N. & Kawalek P. (2021). "Compatibility effects in the prescriptive application of psychological heuristics: Inhibition, Integration and Selection." **European Journal of Operational Research**, 295(3), pp. 982-995.
- Pande S.M., Papamichail, N. & Kawalek, P. (2019). "Individual Differences in MCDM choice: The interplay between attentional control, selection strategy and information load." **Advances in Decision Analysis** *(ADA), Decision Analysis Society of INFORMS*, Bocconi University.
- Pande S.M., Papamichail, N. & Kawalek, P. (2019). "Irrational Maximisers: Are behavioural maximisers more prone to biased judgements than their satisficing counterparts?" **30th European Conference on Operational Research** *(EURO),* University College Dublin.
- Pande S.M., Holland, C.P., Papamichail, N. & Kawalek, P. (2018). "The Attention Economy of Online Search: A Panel Study Using Clickstream Data." **29th European Conference on Operational Research** *(EURO),* University of Valencia.

LECTURES AND SEMINARS

- *"Lessons from the Wild: Data Science at Triumph Motorcycles."* **MSc. Data Science and Advanced Analytics** students, Loughborough University (2025).
- *"The Art of Possible: Embedding Data Driven Decision Making in Practice"*. **Global Finance Conference,** Triumph Motorcycles Ltd (2023).
- "*Driving Value through Analytics: Learnings from Triumph Motorcycles*." seminar for the **Data Insight and Enterprise IT** department for Bloor Homes Ltd., Swadlincote (2023).

- *"Key Learnings from Industrial Applications of Data Science and Machine Learning Methods."* seminar for the **Global Challenges centre for Robotics, Artificial Intelligence and Cognitive Technologies**, Loughborough University (2022).
- *"Irrational Maximisers? Ecological and Economic Perspectives on Rational Choice."* seminar for the **Decision and Cognitive Sciences Research Centre** (DCSRC), University of Manchester (2019).
- *"(In)Attention and the Web: When 'less is more' in the attention economy."* seminar for the **Centre for Information Management** (CIM) at the School of Business and Economics, Loughborough University (2018).
- *"Surveillance, Control and the Attention Economy."* lecture for post graduate students at the **School of Business and Economics**, Loughborough University (2018).
- *"Competing for Attention in Information-Rich Environments."* lecture for **MBA students** at the Alliance Manchester Business School (2017).
- *"Are we moving towards the inversion of an economy of information?"* seminar for the **Business, Economics and Strategy** (BES) research group at the Alliance Manchester Business School (2017).

PROFESSIONAL ACTIVITIES

- Peer-reviewer for *the European Journal of Operational Research* (EJOR)*; Cities: the International Journal of Urban Policy and Planning* (Cities).
- Member of the European Association of Operational Research Societies (EURO) working group on Behavioural Operational Research (EURO-BOR).
- Member of the Society for Judgement and Decision Making (SJDM).
- Member of the Editorial Board for the *FrancoAngeli* Design International series of edited volumes at the department of design, Politecnico di Milano (2024-2025).
- Visiting Researcher at the Center for Information Management, Loughborough University (2022-2023).

SKILLS

Substantive:

- Basic and applied research in information systems, data-analytics and decision-making.
- Behavioural research-methods.
- Managing ambiguous projects.
- Inductive reasoning.
- Teaching and mentoring.

Technical:

- Clustering and unsupervised data-partitioning methods.
- Classification and choice modelling.
- Time-series analysis, anomaly detection and forecasting.
- Probability models.
- Unstructured data-analytics, text-mining and natural-language processing.
- Survey and experiment design.

Technological:

- R (expert), Python and SPSS for data-wrangling, visualisation, ML and statistical analysis.
- Shiny, Markdown, LaTeX and MS Office Suite for dashboards and documentation.
- Git, Azure Synapse Analytics and Spark for versioning, cloud and HPC.

Languages:

- English, Hindi, Urdu, Kumaoni *native proficiency.*