Robbie Beane

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Education

Ph.D. in Mathematics | Missouri S&T | May 2008

- Dissertation Title: "Inverse limits of permutation maps"

Master of Science in Mathematics | Missouri S&T | May 2005

- Thesis Title: "Local compactness of the hyperspace of connected subsets"

Bachelor of Science in Mathematics | Missouri S&T | May 2002

- Minor: Computer Science

Skills

- **Python** – Advanced knowledge of Python. Considerable experience with NumPy, Pandas, Scikit-Learn, Matplotlib, Keras, XGBoost, LightGBM, Optuna, and PySpark. Some experience with SciPy and PyTorch.
- **R** – Advanced knowledge of R. Used primarily tasks for relating to data analysis, machine learning, and time series modeling. Experience with ggplot, dplyr, shiny, and others.
- **SQL** – Moderate knowledge of SQL.
- **Other Programming Languages** – Varying levels of experience with C++, Java, PHP, Perl, and JavaScript.
- **Machine Learning** – Advanced knowledge of machine learning techniques. Understand both theory and application of many classification and regression models, including linear models, support vector machines, tree-based models, and ensemble models. Very familiar with a range of validation strategies and methods for performing hyperparameter tuning.
- **Deep Learning** – Advanced knowledge of creating deep learning models, primarily in Keras. Experience includes building CNN models for image and audio classification, as well as creating RNN models for working with sequential data. Some experience with NLP tasks.
- **AI and Reinforcement Learning** – Moderate knowledge of many techniques related to AI and reinforcement learning, such as informed and uninformed search, genetic algorithms, swarm optimization, Markov decision processes, dynamic programming, and Q-Learning.
- **Mathematics and Statistics** – Strong background in many areas of mathematics and statistics including probability theory, mathematical statistics, statistical modeling, Monte Carlo simulation, optimization, financial mathematics, dynamical systems, and topology.
- **AWS** – Moderate knowledge of AWS services. Direct experience working with the following services: EC2, VPC, S3, EBS, and EMR. General understanding of many more AWS services.
- **Databricks and PySpark** – Experience setting up and managing Databricks deployments supported with AWS resources. Some experience with using PySpark for data analysis, data manipulation, machine learning, and stream processing.
- **Jupyter Notebook** – Considerable experience working in Jupyter Notebook and other notebook-based environments, such as Google Colab and JupyterLab.

Professional Experience

Maryville University, Aug 2019 – Present

Program Director for Computer Science, Jun 2021 – Present

- Responsibilities include strategic planning, program development, hiring, supervising faculty, student recruiting, building partnerships, course scheduling, and others.

Assistant Professor of Data Science, Aug 2019 – Present

- Taught and developed undergraduate and graduate courses in Data Science, Computer Science, Mathematics, and Actuarial Science, offered in both an in-person format and a fully online format.

Lindenwood University, Aug 2010 – Aug 2019

Director of Division of Mathematics and Computer Science, Aug 2016 – Aug 2019

- Responsibilities include strategic planning, program development, hiring, supervising faculty, student recruiting, building partnerships, course scheduling, and others.

Associate Professor of Mathematics, Aug 2010 – Aug 2019

- Taught and developed undergraduate courses in Data Science, Mathematics, and Actuarial Science, offered in both an in-person format and a fully online format.

Penn State University, Aug 2008 – July 2010

Lecturer, Aug 2008 – July 2010

- Taught courses in Calculus and Linear Programming.

Professional Exams

Society of Actuaries Exams Passed

- Exam FM, Score of 10, April 2014
- Exam P, Score of 10, January 2015
- Exam MFE, Score of 9, July 2016

Selected Teaching Experience

- **Machine Learning** – Developed and taught undergraduate course in Machine Learning as well as undergraduate and graduate courses in Statistical Learning.
- **Deep Learning** – Developed and taught undergraduate course in Deep Learning. This course was taught using Python and Keras.
- **Big Data Analytics** – Developed and taught graduate and undergraduate courses in Big Data Analytics using PySpark and Databricks. Supervised multiple sections of this course.
- **Data Science Capstone** – Developed and taught graduate and undergraduate Data Science Capstone courses. Students in these courses work on challenging projects selected from Kaggle with an emphasis on Machine Learning and Deep Learning.
- **Python Programming** – Developed and taught graduate and undergraduate Python programming courses.
- **Artificial Intelligence** – Currently developing undergraduate and graduate courses in Artificial Intelligence and Reinforcement Learning.
- **AWS** – Currently developing a course intended to prepare students for the AWF Certified Cloud Practitioner exam.
- **Probability and Statistics** – Developed and Taught several courses in probability and applied statistics at both the undergraduate and graduate levels.
- **Linear Programming** – Taught undergraduate course in Linear Programming.

Publications

Peer-Review Publications

- RB, "Local compactness of the hyperspace CLC(X)", Houston Journal of Mathematics 37 (2011), 977-994
- RB and Włodzimierz J. Charatonik, "Kelley remainders of [0,∞)", Topology Proceedings 32 (2008), 101-114.