Satya Borgohain

Research Fellow, Monash University

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Education

Monash University, VIC, Australia
Master's Degree, Data Science (Advanced Analytics with Minor Thesis) — *Feb' 18 - Dec' 19*
First Class Honours (3.67 GPA / Grade H1)

Nagpur University, Maharashtra, India
Bachelor's Degree, Mechanical Engineering — *Aug' 11 - Jul' 15*
First Class

Research Interests

Machine learning, Computer vision, Natural Language Processing (NLP), Neuro-inspired learning algorithms

Publications

Borgohain, S., Kowadlo, G., Rawlinson, D., Bergmeir, C., Loo, K., Rangarajan, H., Kuhlmann, L. (2020, November). Self-organising Neural Network Hierarchy. In Australasian Joint Conference on Artificial Intelligence (pp. 359-370). Springer, Cham.

Working Papers

O'Neill, L., Angus, S., **Borgohain, S.**, Chmait, N., Dowe, D. L. (2021). Creating Powerful and Interpretable Models with Regression Networks. arXiv preprint arXiv:2107.14417.

Borgohain, S., Ackermann, K., Loaiza-Maya, R. (2021). Probabilistic Neural Network Versus Ex-Post Calibration For Capturing Prediction Uncertainty. Working paper.

Awards & Achievements

Academic Excellence Certificate from Monash Faculty of IT — *2020*
Monash Industry Team Initiative (MITI) Scholarship — *2019*
Faculty of Information Technology International Merit Scholarship — *2018*

Professional Experience

Research Fellow
SoDa Labs, Monash University | Clayton, Victoria — *Dec '19 - Present*

Machine Learning researcher and DevOps engineer for cloud platform operations. Ongoing research activities include: Bayesian Neural Networks & post-hoc methods for well-calibrated predictions, interpretable deep learning with Regression Networks, sparse neural nets, multimodal analysis of oral arguments using text & audio in legal settings, and applying Natural Language Processing (NLP) for narrative extraction around cycles of disadvantage in Australia.

Research Assistant
SoDa Labs, Monash University | Clayton, Victoria — *Sep '18 - Nov '19*

Developed and deployed the Forum Brain Analytics application, which provides an automated online forum grading platform for course units, leveraging NLP. Implemented modules for the Monash IP Observatory, and created data pipelines for ingesting high volume of unstructured, text data from the web on the AWS cloud stack (S3, Athena, and Lambda).

Machine Learning Engineer
MotionAI | Melbourne, Victoria — *Aug '18 - Apr '19*

Developed a prototype for providing aid to the elderly in aged care using 2D pose estimation and Human Activity Recognition (HAR) on edge devices (Raspberry Pi). Implemented MobileNet using OpenPose implementation with Tensorflow backend and OpenCV, to enable fast inference/classification of human poses in near real-time.

Monash Industry Team Initiative (MITI) Summer Intern
Fonterra | Cobden, Victoria *Dec '18 - Feb '19*

Audited on-site factory operations to identify paper dependency and roadblocks to better performance in processes. Investigated digital platforms and tools to enable integration of a site-based system into the manufacturing environment and facilitate data capture, analysis, and problem-solving ability. Successfully developed and deployed a web/mobile application to capture and retrieve on-site data and provide real-time troubleshooting solutions, and further demonstrated the findings to stakeholders.

Systems Engineer (Software Developer)
Tata Consultancy Services | Nagpur, India *Nov '15 - Jan '18*

Full-stack developer for a cluster of applications/models for an in-house data analytics platform which consisted of custom-built tools for modeling predictive capability on various project outcomes such as delivered defects, schedule adherence, program risk management, control and management of incident arrival rate. Furthermore, implemented dashboards with suggestive action planning, and enhanced dashboard capabilities with reporting functionalities for distinct user groups.

Projects

- Pose Estimation and Detection - A prototype for detecting falls in aged care facilities and to help improve the quality of life for the elderly. Code has been open sourced for the community. *2019*
- Forum Brain - An EduTech tool for automated online forum grading using NLP. *2019*
- Monash IP Observatory - A platform which can remotely observe, in real time, the quality of the internet at any location on the globe and publishes the results of these observations in clear, accessible visualizations. *2020*
- The Melbourne Experiment App - A web app for the landmark interdisciplinary research collaboration studying the effects of COVID-19 on the functions of a city and an international model for post-COVID-19 urban recovery and renewal. *2020*
- DataFluency Workshop - Hands-on workshop for data wrangling & analysis. *2020*
- - Applying NLP on large corpora of news articles to extract macro-narratives. *2021*

Programming skills

Languages: Python, R, SQL, Bash (Shell), Java, JavaScript
Frameworks: PyTorch, TensorFlow/Keras, Scikit-learn, Pandas, Numpy, Flask, ReactJS, d3.js
Tools: AWS, GCP, Linux, Git, Tableau, Jupyter, Colab, Excel, MySQL

Seminars & Associations

Seminars Presentations: NAISys 2020 (From Neuroscience to Artificially Intelligent Systems) at Cold Spring Harbor Laboratory, New York & AJCAI 2020 (Australasian Joint Conference on Artificial Intelligence) at Canberra, Australia.
Professional Memberships: Association for Computing Machinery (ACM), Association for the Advancement of Artificial Intelligence (AAAI) & IEEE.

References

Simon Angus, Associate Professor, (Department of Economics, Monash University)
Paul Raschky, Professor (Department of Economics, Monash University)
Christoph Bergmeir, Senior Lecturer (Department of Data Science AI, Monash University)