Sanjeev Malalur, Ph.D.

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SUMMARY

Over 10 years of experience collaborating with domain experts to translate business requirements into data driven solutions, leading the development of machine learning powered data products, and supporting clients worldwide to ensure their success. Experienced in startup and small business culture with an agile mindset for problem understanding, learning, rapid prototyping and delivering results.

SKILLS

- Programming: Python & C
- Libraries & Frameworks: Numpy, SciPy, Matplotlib, Statsmodels, Pandas, Dask, Pytest, Scikit-learn, PyTorch, TensorFlow 2.0
- Data Management: SQL & Apache Spark
- Project Management: Agile software development, Atlassian Jira
- Tools: Git, Vim, RestructuredText, Docutils, Sphinx, Pandoc, LateX
- Web Technologies: HTML, CSS; Python web frameworks: Flask, Dash

EXPERIENCE

Research Engineer   **Jan. 2010 - Present**

Hunter Well Science (a startup founded in Dec. 2009), Arlington, Texas   *2010 - 2017*

Probe Technology Services (Hunter merged with Probe in Dec. 2017), Fort Worth, Texas   *2018 - Present*

- Lead architect for the adoption of machine learning and data driven practices into Probe's Geological Formation Evaluation Platform *(2018 - Present)*
  - Worked with the leadership team and domain experts to expand Probe's formation evaluation product line to meet unique challenges in unconventional oil reservoir management.
  - Applied neural networks, statistical signal processing, and convex optimization to physical measurements gathered from sensor arrays on oil well-logging instruments, and provided solutions for identifying oil-producing zones, diagnosing well flow and monitoring time-lapsed performance.
  - Added intellectual property in the form of trademark and trade secrets to Probe's portfolio.
  - Liaised with top-ten international oil and gas companies and provided technical assistance for global sales.
- Project and technical lead for a commercial data analysis and interpretation platform *(2015 - 2017)*
  - Led the design and development of the product. Managed a cross-functional team consisting of software engineers, geologists and petrophysicists.
  - Integrated multifaceted oil-well data with machine learning algorithms. Created data pipelines and processes for visualizing and interacting with data and for optimizing oil production over the life of an oil well.
  - The product established a revenue generating service for petrophysics interpretation and attracted international sales.

- Built end-to-end data pipelines to automate predictive model generation and consumption *(2013 - 2014)*
  - Reduced the time for sensor data analysis and interpretation by engineering automation workflows, leading to faster field decisions and significant savings in operational expenses.
  - Developed data processing pipelines to clean, format, transform, store and retrieve large amounts of synthetic sensor data generated by computer models, using the Monte Carlo N-Particle (MCNP) code.
  - Leveraged data to build customized statistical models to accurately predict unknown geological parameters including rock type, porosity, and fluid saturation.
  - Deployed an internal web application to browse, filter, search, and export the models using Python, Flask, and Dash.
- Developed a software library for controlling tools and processing data, in real-time, for Geological Formation Evaluation Solution suite *(2010 - 2013)*
  - Engineered solutions for quality control, analysis and visualization of streaming sensor data in real-time.
  - Performed applied research on using nuclear technology for measuring properties of geological formation. Migrated prototypes from research into production ready packages.
  - Worked effectively as a part of a multi-disciplinary engineering team consisting of hardware, firmware, mechanical and software engineers.

SELECTED PUBLICATIONS & PRESENTATIONS

- Robinson, M. D., Manry, M. T., Malalur, S. S. & Yu, C., "Properties of a Batch Training Algorithm for Feedforward Networks", Neural Processing Letters, Vol. 45 No. 3, pp. 841-854, 2017, Springer US.
- Malalur, S. S., Manry, M. T. & Jesudhas, P., "Multiple optimal learning factors for the multi-layer perceptron", Neurocomputing, Vol. 149, pp. 1490-1501, 2015 Elsevier.
- Jesudhas, P., Manry, M. T., Rawat, R. & Malalur, S. S., "Analysis and improvement of multiple optimal learning factors for feed-forward networks", International Joint Conference on Neural Networks, pp. 2593-2600, San Jose, CA, 2011.
- Malalur, S. S. & Manry, M. T., "Feed-forward Network Training Using Optimal Input Gains", International Joint Conference on Neural Networks, pp. 2326-2333, Atlanta, GA, 2009.

EDUCATION

- Ph.D. in Electrical Engineering from The University of Texas at Arlington, 2009
- M.S. in Electrical Engineering, The University of Texas at Arlington, 2004
- B.E., Electronics and Communication, Bangalore University, India, 2000

ACTIVITIES

- Journal peer review assignments: Elsevier Neurocomputing, IEEE TNNLS, Springer NCA.
- Professional society memberships: SPWLA, SPE.
- Active member of local machine learning, deep learning and data science Meetup groups.
- Personal practices: Meditation, strength & mobility training, playing drums, juggling.