NIMIT PATEL

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Passionate technical and strategic leader with **~10 years of experience** of bringing together deep **data science expertise and people leadership** to drive multi-disciplinary teams**.** Delivered over **$400M of impact** by addressing complex technology use-cases across Healthcare, Manufacturing, Energy, Pharma, Banking etc. from **ideation to production** deployment at-scale. Track-record of **counseling senior client executives** on long term strategy around AI & analytics.

Work experience

McKinsey & Company | *Principal Data Scientist II, Pittsburgh PA* *Feb 2017 – Present*

- **Counseling client executives and building technical capabilities**
  - Technical leader in QuantumBlack, spear-heading development of advanced analytics solutions and AI strategy for Fortunate 500 companies, across **multi-year digital transformations** with cumulative impact of over $200M.
  - **Guided senior executives** in designing the **funnel of AI use-cases** to set the strategic vision and transforming their technical organization & capabilities across 10+ clients, with cumulative impact of over $200M.

- **Internal product development and risk frameworks building**
  - Developed **framework for data science best practices** when deploying **large scale AI/ML models** in production, guiding engineering principles to **reduce Enterprise Risk**, to be used across numerous McKinsey Digital client engagements.
  - Lead contributor for developing & deploying **OptimusAI** - **McKinsey's proprietary AI solution** for optimizing heavy industrial processes, **delivering >$4B in impact** globally across Chemicals, Metals & Mining, Oil & Gas, Electric Power etc.
    - McKinsey article on OptimusAI

- **Client use-cases in Manufacturing, Mining & Energy**:
  - **Reduced R&D time by 3x for discovering a new coating polymer** for a Specialty Chemicals company, thereby reducing time-to-market by ~2-3 years and **increasing $25M/year EBIT**. Used **LLM-based models** for extracting molecules from publications/patents & used Chemistry **Foundation models like Unimol+ & PolyBERT** to build a molecular discovery engine that generates novel molecules with desired properties.
  - **Boosted copper mine's production** by **~10%,** resulting in **~$350M+ in EBIDTA improvement and ~200M copper pounds production increase** by building a recommendation engine that combines Neural Network based predictive models and Particle Swarm optimization to identify optimal operating parameters. Deployed it across North America & Peru.
    - Case study published in the REWIRED book
    - Other articles: Financial Times, International Mining, Harvard digital, International Copper Asso.
  - Increased **thermal efficiency of 67 Coal & Gas power plants**, capturing **~$60M/year in savings** and **reducing CO2 emissions** by ~1.6M tons/year (equivalent to taking ~300k cars off the road), by deploying prescriptive engine to recommend optimal operating modes.
    - Articles: McKinsey digital, Grid monitor, Power Engineering, WIRED.com

- **Client use-cases in Healthcare & Pharma:**
  - **Accelerated fungicide discovery process by ~4x** for molecular biology laboratory, by developing a molecular discovery engine that combined **Knowledge Graphs and ChemBERTa Foundation model** to predict properties of lab fungicides
  - **Increased accuracy of predictive text by 23%** for a MedTech client's alternative communication product, using **GPT3.5-based models,** to reduce communication time for patients with speaking disorders.
  - **Increased sales by 10% for atopic dermatitis** drug, by using combination of Deep Learning NLP-models on physician transcripts and claims data to identify physician segments for targeted marketing strategies.

- **Client use-cases in Banking & Finance**:
  - **Reduced troubleshooting time by 11%** for banking client's call centers, by building an **NLP-agent for auto-classifying incoming customer calls** based on initial description and recommending questions to ask for faster resolution.
  - **Increased prepaid card spending for payments firm by $15M,** by using a clustering algorithm to identify customer profiles and building a **recommendation engine to customize marketing strategies** per customer sub-group**.**

National Science Foundation | *Data Analytics Researcher, West Lafayette IN* *Jan 2016 – Dec 2016*

- National Science Foundation award for the work
- **Reduced "dropouts" for Undergrad Engineering course by 42%,** by analyzing classroom videos & transcripts to identify optimal instructor actions and using insights to develop an "Improved Education delivery" framework.
- Built **computer vision models using CNNs** and natural **language parser models using RNNs**, to connect instructor movement & voice over to student performance and use insights to improve classroom delivery.
- Conducted student interviews & surveys, to layer on qualitative information on top of the machine learning insights and **published findings in multiple journals and conferences** focused on improving Engineering Education

Technical Skills

- **Coding languages & packages:** Python, R, SQL, PySpark, PyTorch, Git, Scikit-Learn, Keras, Tensorflow, Kedro
- **Cloud & big data platforms:** AWS, Azure, Google Cloud Platform, Databricks, Hadoop
- **Data Engineering, DevOps & MLOps:** Snowflake, Graph databases, MLFlow, Docker, Sagemaker, Azure DevOps
- **Deep Learning:** Computer Vision, Natural Language Process (RNNs, CNNs, LSTM, MLP)
- **GenAI & Large Language Models:** OpenAI, Cohere, AWS Bedrock, Huggingface
- **Data visualization & Business Intelligence:** PowerBI, Tableau, Alteryx

Certifications

- AWS Certified Machine Learning – Specialty
- Microsoft Certified Azure AI Fundamentals
- AWS – Introduction to Generative Artificial Intelligence
- McKinsey Certified – Accredited Delivery Manager (AI)

Publications

- "Video coding of classroom observations", *Australian Journal of Engineering Education (2018):* *click here*
- "Perspectives of pedagogical change", *European Journal of Engineering Education (2018):* *click here*
- "Longitudinal analysis of instructor actions in classroom", *IEEE Conference (2017):* *click here*
- "Transforming a Dynamics Course", *ASEE Conference (2017):* *click here*
- "Development of a video coding structure", *Research in Engineering Education Symposium (2017):* *click here*
- "What does an In-Class meeting entail", *ASEE Annual Conference (2017):* *click here*

Technical leader across journals, hackathons, awards

- **Judging international hackathons:** Judged for 9 hackathons with Devpost, with over 1200 participants and $900k in prizes
- **Judge international awards:** Served as a judge for 3 international awards with prestigious organizations like Business Intelligence Group and Globee awards.
- **Editorial board member and peer reviewer with renowned AI/ML journals:**
  - Editorial board member for IJBIC
  - Peer reviewer for various Research Lake and Springer publications journals: IJAAIML, IJBFIT, IJIET, IMMI

Education

M.S in Industrial Engineering & Data Analytics *Aug 2015 – Dec 2016*
Purdue University, Indiana ***GPA***: 3.91/4.00

B.Tech in Mechanical Engineering *Aug 2011 – May 2015*
NIT – Surat, India ***GPA***: 9.15/10.00