

MUGUNDHAN (DHAN) ELAMATHI, FRM

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Quantitative Research, AI/ML Engineer * (551)-226-9540 * emugundhan@gmail.com

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- Over 20 years of extensive experience in Financial Services across in various roles including System integration/consolidation and developer.
 - Problem solver and enabler among a myriad of competing priorities and regulatory deadlines

SKILLS

Data Mining

Python – numpy, pandas, sklearn, multiprocessing, joblib, numba, polars
R – parallel, dplyr, datatable

Machine Learning

Python – xgboost-gpu
Random forest

Deep Learning

Python – Pytorch CNN/RNN/FC
US Patent# 11854286 (Image-Based Financial Statement Review)

Statistical Models

GLM/Random Forest, GMM

Database

PL/SQL, Oracle 10g, Sybase

Others

VBA, Qclic, PL, Shell scripts, linux, bokeh, bqplot, plotly
Risk/Regulatory/Compliance verticals dealing with multiple lines of business in various phases of implementation

EDUCATION

Bachelor of Engineering (Madras University) - 2000
FRM (Financial Risk Manager) - 2016
Oracle Certified Professional - 2003

EXPERIENCE

JPMorganChase

November 2013 – Current: Quantitative Research (CIB)

Business knowledge –

- **Credit Risk Underwriting,**
- **Portfolio Scenario analysis,**
- **Wholesale Credit Risk Analytics,**
- **Structured products,**
- **Basel Credit parameters**

April 2017-Present: (Credit Risk Analytics)

- **AI /Neural Networks based credit risk underwriting:** Created AI Model using Company Financials like EBITDA, Cash Flow metrics, Leverage ratios, Debt Service Coverage metrics, Duration risk etc. to predict default grade. The effort is currently under provisional patent paperwork process.
- **AI/ML to conduct Portfolio Scenario analysis.** Created ML/AI to model GDP/LIBOR/Automobile Sales/Macro scenarios against quarterly performance of various financial metrics (PD/LGD/Exposure) of lines-of-business. Model then predicts future performance for various macro scenarios. This is an alternative approach to CCAR regression models.

November 2013 – April 2017 (Credit Risk Technology)

Role involved leading various efforts to streamline credit risk analytics within the Morgan risk organization.

- Currently working on CCAR TCP sensitivity framework that mimics QR launch point processing and MEV files to produce accurate sensitivity numbers and solve potentially more use-cases (In design/proposal phase)
- Amended WAFL calculators for Term Loans and Reducing Revolvers in compliance with accounting policy as well as regulatory policy. Slated to go live Q4'17
- Performed modelling overview of CMBS (Commercial Mortgage back Securities) and reproduced historical annual PD rates published by S&P using TREPP data. (This was with Prafulla Nabar and Navin Jhamna)
- Collaboration with allowance group to reconcile historical Loss reported numbers published in 14Q with that of strategic sources.
- As part of strategic CCAR efforts, helped QR conduct back test on historical launch point files (27 quarters). This is to compare WCLF (Segment level) projections with Notebook (facility/loan level) projections.
- Worked with CRE (Steven C Gilbert) to bring CTL (Commercial Term Lending) risk-grading process in-house. Their risk model was run by an external vendor (Zoot Softwares) and was coded in python.
- Worked on analysis and adoption of S&P ratings and financials, Moody's ratings, and financials for wholesale clients via strategic source (
- **CCP:** Handled adoption of clearinghouse and netting set configurations via firm wide strategic sources. Worked on synchronizing Anchor and Gauss adoptions to facilitate upstream exposure calculations.

Deutsche Bank

September 2009 – November 2013

Product knowledge – Equity Derivatives, Exotics, Commodities

Volcker Metrics: A tactical phase was put together in 2013 to generate Inventory Ageing and CFTR metrics, in preparation for 2014 deadline. Worked with multiple lines of business in analyzing un-organized position feeds and generate metrics for various asset classes.

GED Regulatory Disclosure (FINRA: Large Option disclosure -2K+ contracts): Reverse-engineered a broken reporting process and re-designed/coded with front-end providing multiple drill-down capabilities to evaluate Option parameters and contract-sizes/counterparty details. The tool also provides insights into type or trade executed viz. Straddle, butterfly, and basket to respond to follow up inquiries from FINRA. Consequently, queries from regulators have stopped, saving many thousands in fine.

GED Regulatory Disclosure (DH reports): Reverse-engineered and documented equally broken DeltaHedge reporting to regulators to help calibrate exposure LIMIT for any given underlying.

UBS

June 2007 – September 2009

Product knowledge – Single stock flow, Derivatives, Bonds

Position Keeping Engine: Instrumental in developing Position Keeping Engine for overnight risk calculations. Improved throughput from 800 to 2000+ positions/sec. PKE engine also feeds compute servers during live trading hours.

Coordinated and helped to build new infrastructure around operations and settlements to handle multiple lines of business. Supported Geronimo, OMS backend for global equities and derivatives trading. There was a concerted effort to split over-engineered Geronimo into satellite instances that will serve individual lines of business/verticals without dependency on each other. Supported LOBs include OTC Derivatives, Equities, corporate and structured products. Liaised with middle-office to help identify performance bottlenecks to allocate resources and identify geographical placements for relevant backend support.

Worked on automating multiple MIS reporting apps on Equity/Derivative Ops/Control/Monitoring and saved countless man-hours by maximizing throughput/accuracy and avoid repetitive tasks.

JPMorganChase

November 2004 – June 2007

(CRB-IT Data Mart Application)

JPMorganChase CRB-IT Systems Enterprise Data Warehousing wins Data Warehouse Institute's Best Practices 2002 Award for Global Data Warehousing. It comprises of numerous businesses structured to meet targeted customer needs. The Business structures are divided into various divisions like SBFS i.e., Small Business Financial Services, PFS, RFS IT Systems Data Warehouse built upon integrated legacy system; data feeds received from many business data sources like NDS/SI etc. This allows CRB Management to continue to analyze the organized data. This Data warehouse enables both tactical and strategic decision-making. The database size is close to 1400 GB of Production and accessed by approx. 2000 users globally. Similar environment is available for Development and Testing (QA) environment.

Sizing: 4.3 Terabyte

Experience working with Engineering, Quality Assurance and Change Management

Successfully Lead Enterprise-wide standards committee for Private Banking security. Adopted Oracle VPD, Single sign-on as standard and coordinated patches for reporting products like BusinessObjects and Cognos for loading appropriate details into connection information.

- Performance-Tuning to acceptable ETA through RMAN Backup strategy, and regular Stats pack analysis on mart health
- Interact with customers and users and consolidate changing requirements for implementation and provide guidance for scalability of the system.
- Responsible for security and recoverability of critical entities in the data-mart with acceptable redundancy and retention periods.
- Provide Production support for the reporting applications running on Business Objects and Oracle 9i
- Maintain integrity of data available in the mart to provide consistent, one version of truth of business performance and Customer Information.

- Designed and implemented backup and recovery strategy depending on the sensitivity of data.
- Extensively involved in database performance tuning.
- User Administration and role allocation
- Tune PL/SQL Packages/Function/Procedures and SQL Queries using Tools/EXPLAIN PLAN/AUTOTRACE.
- Contact Oracle support for the BUGS/Patches/File TARs.
- Involved in deciding table level constraints and indexes required for the system.
- Performed SGA Sizing, maintaining Disk I/O & fragmentation.
- Reducing I/O, rollback, lock contentions. Database instance tuning, maximizing performance by setting utilization, storage parameter and allocating system resources (Shared pool, Buffer cache, Redo logs, Rollback segments, Sorts) using Oracle Enterprise Manager.
- DataGuard set-up for HA
- Evaluate RAC for HA. 2 Node RHEL 4.2 node with .7TB Data Mart was successfully evaluated for Business approval.

Technologies: Oracle 9.2.0.5/9.2.0.7, IBM's AIX servers, PL/SQL, shell scripting

Role and Responsibilities: Oracle DBA Monitoring system implementation, troubleshooting, performance tuning.

JPMorganChase

June 2003 - November 2004

(CRB-SBFS Data Mart Application)

Oracle Development DBA Support

JPMorganChase SMALL BUSINESS CDCI (Consumer Data Customer Information) warehouse is the enterprise data warehouse, a single view of multiple warehouses. CDCI has been merged from multiple warehouses like CDW, FDR, AMDW and ADS. Higher maintenance of multiple data warehouses and multiple ETL processes led to the evolution of a single large data warehouse. User communities include Marketing, Risk, Fraud, Insurance, CDCI clients, and the ACOE (Analytical Center of Excellence.) The ACOE is the heaviest user of CDCI as it supplies much of the analytics and reporting requirements for the other communities.

Sizing: 1.3 Terabyte

- Stringent Data Security requirements were consistently met and audited.
- Configured Oracle 8.0.5 on UNIX and Windows platforms.
- Involved in data conversion and conversion mapping.
- Was instrumental in developing and supporting various projects for different clients.
- Designed and implemented backup and recovery strategy depending on the sensitivity of data.
- Extensively involved in database performance tuning.
- Involved in multiple database installations/upgrades/patches and troubleshooting exercises.

Technologies: Oracle 8.1.6, Sun Solaris 5.7 on Sun Sparc, Oracle Forms & Reports

Roles and Responsibilities: Development DBA involving in installation, maintenance and troubleshooting of Oracle software.

Sizing: 300Gigabyte

Providian Financial

September 2002 - June 2003

(Oracle DBA Consultant)

DOTS (Disputes Online Tracking System)

The objective of this project was to analyze 11 applications of the client and come up with the possible performance tuning solutions. The applications include Policy Administration, Claims Processing, Rating, Documerge and many others. It aimed at monitoring day-to-day transactions and detects any peak in operations and settlement cycle for every single transaction. The historical retention was aimed at 4 years of transaction.

Sizing: 0.7 Terabyte

- Extensive troubleshooting of logical exceptions concerning data security
- Detailed analysis of the current functionality of the applications
- Detailed analysis on various systems and a thorough analysis on Claims System of the client
- Preparation of detailed supporting documents for the proposing a performance improvement solution
- Development of quick REXX tools for the purpose of analysis

Technologies: Oracle 8.1.5.2/8.1.7.0/9.2.0.1, Solaris 2.7/2.8, Informatica 6, Business Objects, Brio, DPA, iPlanet 2.7.2.

Data Verification for Surveillance

The objective of this project was to analyze 11 applications of the client and come up with the possible performance tuning solutions. The applications include Policy Administration, Claims Processing, Rating, Documerge and many others. It aimed at monitoring day-to-day transactions and detects any peak in operations and settlement cycle for every single transaction. The historical retention was aimed at 4 years of transaction.

Sizing: 0.6-1.0 Terabyte

- Detailed analysis of the current functionality of the applications
 - Co-ordinate downtime activities and patch applications with Oracle Support
 - Preparation of detailed supporting documents for the proposing Performance improvement solutions
 - Development of quick alternative tools and strategies for the purpose of analysis and DR SLA
- Technologies: Oracle 8.1.5.2/8.1.7.0/9.2.0.1, Solaris 2.7/2.8, Informatica 6, Business Objects, Brio, DPA, iPlanet 2.7.2*

TECHNICAL SKILLS

RDBMS:

Oracle 8/8i/9i/10g, Different options: Partitioning option, Materialized views, Transportable Tablespaces, Database resource manager, RMAN, RAC on ocfs2.0, DataGuard.
10g RAC prototypes on OCFS2.0 Linux clusters along with migration strategies from 9i to 10g ASM using RMAN.

E450, Sun Ultra Sparc, RM600, Intel x86, IBM-586, Compaq Proliant, IBM Netfinity

OS:

Sun Solaris 2.6-2.9, IBM AIX 4.1-5.3, Linux (Red hat AS), Windows NT – 2000, Strong knowledge in UNIX architecture and performance monitoring

Languages:

Oracle SQL UNIX Shell (ksh, bash), PERL, Java (Not an expert)

OTHERS:

Toad, Oracle Enterprise Manager, Erwin, Ab-Initio, Business Objects, SAP BO data-Integrator