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Professional Skills

Experienced hands-on Software Engineer / Healthcare Data Scientist/ Data Architect with eighteen (18) years of Software Architecture Design, System Analysis and Development experience in diverse business domains (Healthcare IT, Financial Industry). Twelve (12) years' experience in information systems integration, eight (8) years of dedicated Hospital Information Systems (HIS) and Picture Archiving and Communication Systems (PACS) integration, six (6) years' experience in Clinical Workflow analysis, modeling and re-engineering and five (5) years Clinical Data Science and Analytics work. Detail-oriented and able to work with diverse group of people in diverse environments/domains concurrently.

Qualifications and Technical Skills

- **Data Science & Analytics – Real World Evidence(RWE Healthcare)** - Healthcare Data Mining, R programming (Regression Modeling & Statistical Inferences), Clinical Data Acquisition, Cleansing and Extract Transform Loading (ETL) work, Observational Medical Outcomes (OMOP) data mining and ETL work, Exploratory Data Analysis (using R and Observational Health Data Sciences and Informatics (OHDSI)) tools, Machine Learning (algorithms such as Linear and logistic regression, decision trees etc.), Predictive Modelling
- **Clinical Workflow Analysis & Reengineering** - process modeling support for clinical workflow improvement and EMR implementation initiatives. This includes mapping of tasks within clinical workflows to appropriate Clinical Decision Support (CDS) system types within the CDS Consortium Reference Taxonomy for Clinical Workflows.
- **Hospital System (HIS) & PAC Systems Integration** - proven expertise in the integrating legacy HIS and PAC systems using HL7, SNOMED and DICOM messages.
- **Public Health, Clinical and Health & Human Services Data Integration** – expertise in integrating Public Health, Clinical and Health and Human Services data and systems.
- **Healthcare Data Consulting** – Healthcare Data Mining, ICD 10 Migration Work, HIPAA EDI Transaction Sets ETL Work, HL7 CDA Consulting Work
- **Software Engineering** - practitioner of Service Oriented Architecture, Cloud Computing and N-Tier, distributed, component-based software engineering
- Knowledge Transfer – EPIC training for Physicians, Nurses, and other clinical staff.
- **Data Modeling, Data Conversion & Migration** – Data Modeling & Migration of disparate legacy data into enterprise databases
- **Healthcare Data Standards Consulting** – HL7 (V2), HL7 (V3), OMOP, LOINC, MedDra, Snomed, RxNorm, HL7 (V3) message development and HL7 interfaces design and development.
- **XML Business Objects & Canonical Data Modeling** – XML business objects repository development and XML canonical message development.

Healthcare IT & Program Evaluation Skill Set

Health & Human Services, Public Health & Healthcare Systems Integration Skill Set

- Integration of Clinical and Claims Data
- Clinical Workflows Analysis, Mapping & Design
- XML Canonical Data Modeling and thorough understanding of HL7 (V3) Reference Information Model (RIM)
- HL7 Electronic Health Record System Functional Model (EHR-S FM) & Profiles
- Reference Taxonomy for Clinical Workflows (Clinical Decision Support (CDS) Consortium)
- Clinical Document Architecture (CDA), HL7 (V2), (V3)
- HL7 V2 to HL7 V3 Messages Conversion & Migration
- ICD 9 to ICD 10 Migration
- HIPAA EDI Transaction Sets Mining & ETL Work
- SNOME-CT, DICOM, HIPAA, ICD 9, ICD 10 & LOINC codes
- IHE Integration Profiles (IHE) Implementation
- CDA & HL7 Interfaces Development
- EPIC Bridges Interface Programming
- NIEM Framework Based Integration Expertise
- Healthcare IT Project Implementation Management
- Clinical Semantics and Concept Mapping
- OMOP migration projects

Outcome Based Evaluation (OBE) Program Evaluation Skill Set

- Project Logic Models, Key Indicators, Metrics & Monitoring Development
- Results Framework Development (Larger multi-faceted projects)
- Healthcare Data Mining

Software Architecture, Development & System Analysis Skill Set

Software Architecture Skill Set

- Service Oriented Architecture Design & Implementation
- SOA Governance (Design & Runtime)
- Integration Architectures Design & Implementation
- Enterprise Integration Patterns
- Cloud Computing, PaaS & SaaS

Big Data Skill Set

- Apache Hadoop
- Scala
- Apache Spark & Beehive
- Amazon Cloud Technologies
- Apache Cassandra

Data Science Development Skill Set

- Python programming
- iPython Notebooks
- Anaconda Data Science Development Platform
- R Programming
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Data & XML Modelling Skill Set

- Enterprise Data Modeling
- XML Business Objects and Canonical Data Modeling (Healthcare & Financial Domains)
- HL7 Message Development
- Data Mart, Data Warehouse Design & Implementation
- Intersystems Cache ObjectScript Programming

- Healthcare Data Modeling, Analysis & Mining

Modeling Languages Skill Set

- Unified Modeling Language – UML
- IDEF1X Modeling Language

Programming Languages Skill Set

- C++
- Java, J2EE
- Objective C
- C
- PERL
- PHP
- Linux/UNIX Shell Scripting & Programming
- Structured Query Language (SQL) Store Procedures and Triggers.
- Cache ObjectScript (Intersystems) MUMPS Programming

Database Admin - Programming Skill Set

- Oracle Database Administration
- PostgreSQL - PGSQL
- MSSQL Server – Java Programming, SQL Programming, Store Procedures.
- DB2 – Embedded SQL Programming, Java Programming, Structured Query Language (SQL) Store Procedures and Triggers.
- Oracle, MSSQL, and DB2 Administration

Professional Experience

Confidential Company, Chicago, IL

September 2017 to Present

Real World Evidence (RWE) Data Scientist & Healthcare Data Architect

Design of statewide healthcare analytic platform for Texas Medical Association (TMASS). This initiative is to enable analytics across various hospitals and medical practices in Texas. The project leverages big data technologies and Observational Medical Program (OMOP) Common Data Model (CDM).

- Project healthcare data architect. Designed and implemented the data lake
- Project subject matter expert on migration of disparate data sources both clinical and claims data to Observational Medical Outcomes Platform Common Data Model (OMOP-CDM).
- Analysis & mining of clinical and claims data to support clinical outcomes and associated analytics such as Care Management, Utilization Management, Disease Management, Wellness, etc
- Healthcare Standards Consulting - HL7 V2, HL7 V3, C-CDA, LOINC, SNOMED CT, MedDra
- Observational Health Data Sciences and Informatics (OHDSI) infrastructure work
- Predictive Modeling, and Machine Learning using Anaconda (iPython) and R

Knowledgent Group, NJ

February 2017 to September 2017

Real World Evidence (RWE) Data Scientist & Healthcare Data Architect

Data scientist and healthcare architect with focus on real world evidence (RWE) and supporting data architectures and infrastructures in the healthcare, pharmaceutical and life sciences domains in support of Takeda Corporation Real World Evidence (RWE) initiative. This initiative is to harmonize R &D across the company leveraging big data technologies and Observational Medical Program (OMOP) Common Data Model (CDM).

- Project subject matter expert on migration of disparate data sources (Truven Marketscan Databases, Optum Clinformatics, etc) to Observational Medical Outcomes Platform Common Data Model (OMOP-CDM) of Takeda Corporation pharmaceutical and clinical trials facilities at Massachusetts Institute of Technology (MIT).
Analysis & Mining of Clinical Data
- Healthcare Standards Consulting - HL7 V2, HL7 V3, C-CDA, LOINC, SNOMED CT
- Observational Health Data Sciences and Informatics (OHDSI) infrastructure work
- Predictive Modeling, and Machine Learning using Anaconda (iPython) and R

Blue Cross Blue Shield BCBS Columbia, SC

November 2015 to January 2017

Healthcare Analytics & Clinical Data Mining & ETL Consulting

- Analysis & Mining of Clinical Data
- Reverse mining of unstructured clinical data into clinical abstractions/concepts in appropriate contexts.
- Analysis, design and implementation of data lakes on big data technologies.
- Implemented migration of BlueCross BlueShield disparate data sources to IBM Universal Data Model for Healthcare (**UDMH**)
- Healthcare Standards Consulting - HL7 V2, HL7 V3, C-CDA, LOINC, SNOMED CT
- Observational Health Data Sciences and Informatics (OHDSI) infrastructure work and OMOP CDM data mining
- Predictive Modeling, and Machine Learning using Anaconda (iPython) and R

Illinois Framework, Chicago, IL

February 2015 to June 2015

Data Architect -Health and Human Services

- Analysis & Design of Enterprise Shared Application Information Model
- Analysis of Illinois State Health and Human Services (HHS) Data stores.
- Development of data governance and architecture for the project
- NIEM Framework
- Development of logic models for on-going Department of Children & Family Services (DCFS) – Illinois Framework initiative

Dignity Health, Phoenix, AZ

February 2014 to February 2015

Project Management/Enterprise Security Architect

- Manage RCM functionality migration to vendor (Optum360 Corporation) systems.
- Manage all required data conversion mini-projects associated with the migration.
- Managed all required data separation mini-projects associated with the outsourcing as mandated by HIPAA Privacy and Security guidelines
- Manage associated security and role engineering mini-project mandated by HIPAA Business Partner and Minimum Necessary Access (MNA) requirements
- Minimum Necessary Data Access (MNA) Analysis & Data Mining
- Designed role engineering infrastructure for the project
- Project plan development and maintenance
- Refining project goals and setting expectations to stakeholders and team

- Proactively identifying all critical paths and issues and effecting appropriate mitigations
- Ensure team members adhere to project timelines
- Hiring and resource allocation
- Coordinates with other project leads to resolve any inter project dependencies

Optum (Alere Health), Atlanta, GA

June 2013 to January 2014

Senior Data Integration Architect (Payor Data Analytics & Integration)

- Healthcare Data Analysis & Mining
- R Statistical Programming
- Machine Learning (Regression Modeling, Decision Trees etc)
- Statistical Inferences
- Machine Learning (iPython Jupiter Notebooks,R)
- HIPAA EDI Transactions Sets ETL Work
- HL7 CDA Analysis & Development Work
- ICD 9 to ICD 10 CM & ICD 10 PCS Migration Work
- Design and Implementation of Relational Datastore for HIPAA EDI Transaction Sets Data
- Person Centric Healthcare Data Predictive Modeling (Physician Visits Data & HEDIS Measure Indicators)

Medica Fabrica Corporation, Atlanta, GA, Toronto, Canada

July 2008 to Present

Lead Technical Integrator (Private start-up)

Implementing “My HealthePeople” collaboration platform. “My HealthePeople is an electronic health personal system with the following characteristics:

- Controlled and owned by the person
- Serves as a web portal
- It is healthcare provider independent
- Enables coordination of care through –
 - trusted health information access
 - electronic health record access and share
 - transactions and messaging among persons and clinicians
 - eHealth program support (e.g. moderated discussions, chronic disease management and monitoring, etc)

The platform when completed will support the “Care in the Community” healthcare delivery model and integrate with the information exchange networks in the US (using Nationwide Health Information Highway (NwHIN)) and the Canadian Infoway in Canada.

Required Skill Sets

- Nationwide Health Information Highway policies & standards & Architecture (US) knowledge & experience
- Canadian Infoway Infrastructure & Architecture (Canada) knowledge & experience
- Connect Framework (US Federal Government sponsored open source java-based integration framework for the healthcare domain) knowledge & experience
- Health Insurance Portability & Accountability Act (HIPAA) Transaction sets & Regulations
- Office of the National Coordinator for Health Information Technology (ONC) standards and certification criteria
- Meaningful Use and Associated Legislations
- XML Canonical Data Modeling and thorough understanding of HL7 (V3) Reference Information Model (RIM)
- Experience in SNOME-CT, DICOM, HIPAA, ICD 9,10 & LOINC codes
- IHE Integration Profiles (IHE) Implementation
- HL7 V2 to HL7 V3 Messages Conversion
- Extensible Markup Language (XML) Technologies – XML, Schema, XSLT, XPATH, XQuery, etc.
- SOA Infrastructure Design & Implementation

- CDA & HL7 Interfaces Development
- Drupal Framework & PHP Programming
- Cache Programming (InterSystems Corp)
- Hadoop, MapReduce & Apache Cassandra
- Terracotta
- Healthcare IT Project Management.

Grady Hospital, Atlanta, GA

February 2010 to June 2011

Electronic Healthcare Record System Migration Lead/Project Manager

- Technical lead/project manager hands-on position.
- Managed all aspects of the clinical conversion of disparate EHR-S to EPIC (Data conversion, interface developments, project tasks sequencing and coordination, resources management, refine and communicate project goals and expectations to team members and stakeholders)
- Worked with department managers to identify initiatives, pain points and critical paths in the conversion project
- Analyzed and modeled clinical workflows for EPIC pre-implementation phase.
- Analyzed and identified all decision support functionality that needs to be migrated from legacy systems to EPIC.
- Supported Epic Inpatient, Cadence and ASAP modules analysis and build
- End user defined data objects programming in Chronicles (EPIC DB).

Sun Trust Bank, Atlanta, GA

June 2009 to December 2012

EIS Architect

- Member architect of Sun Trust SOA Initiative (SNET). This initiative is migrating Sun Trust's Mainframe infrastructure and other legacy assets to a service oriented and cloud based platform.
- Use Case Driven Requirement Analysis & Design
- Derivation of business capabilities from use cases
- Derivation of Business Architecture for Sun Trust Line of Business (LOBs)
- Thorough proficiency in SOA principles, design, technologies and implementation
- SOA Governance – Design and Runtime Governance (Derivation & Implementation in WSRR)
- XML Canonical Data Modeling (Treasury & Payments)
- Catalysis (Decomposition of Business Processes into Component Use Cases) & Service Capability Mapping
- Business Process Re-engineering
- IBM Websphere Middleware Products Suite (MQ, Process Server, Broker, ESB etc.)
- Java Web Services Development
- UML (Using Rational Software Architect Tool (7.5)
- Data Modeling (Using Erwin 7.0)
- Structured Query Language (SQL)
- Extensible Markup Language (XML) Technologies – XML, Schema, XSLT

Center for Disease Control, Atlanta, GA

July 2008 to June 2009

Public Health Data Architect/Population Health Analytics

- Member of the Data Integration team at the Center for Disease Control under Dr. Julie Gerberding that migrated the CDC from lines of disease siloes to a shared enterprise data services that now supports all public health work at the CDC.
- Business Process Analysis
- Catalysis (Decomposition of Business Processes into Component Use Cases)
- Business Process Re-engineering & Workflows Design
- Derivation of a holistic enterprise business architecture from isolated business processes siloes.
- Service Oriented Architecture Design & thorough knowledge of SOA technologies & WS-I policies.
- National Information Exchange Model (NIEM) Framework
- Data Governance & Architecture

- Outcome Based Program Evaluations & Logic Models (Roadmaps)
- Machine Learning and Predictive Modeling using R and IBM SPSS
- Derivation of Metrics from Initiative Logic Models
- Development of Results Framework (Results Based Evaluation & Monitoring Framework) for CDC Integration Initiatives
- UML (Using IBM Rational Software Architect 7.5)
- IDEFIX (Erwin 7.0) – Database Design
- Oracle PL/SQL Programming and Database Performance Tuning
- Structured Query Language (SQL)
- Extensible Markup Language (XML)

Capital Health, Edmonton, Alberta, Canada

July 2006 to June 2008

Epic Analyst

- Capital Health of Canada later incorporated into Alberta Health Services Board undertook the largest EPIC implementation project in Canada
- Required Skill Sets
- Clinical workflow & data flow analysis
- User defined Chronicles data objects programming
- Epic Bridges and Alberta netCare interface development work
- EPIC Clindoc, Cadence, Inpatient, CPOE build and support
- Cache (Inter-Systems) Database ObjectScript Programming
- Structured Query Language (SQL)
- Perl Programming
- Java Programming
- Extensible Markup Language (XML) Technologies – XML, Schema, XSLT, XPATH, XQuery etc.

University of Pennsylvania, Philadelphia, PA

November 2004 to July 2006

Lead Technical Integrator (Healthcare-IT Integration Consulting)

- Project Management, analysis, design and implementation of service oriented middleware IHE compliant message broker for University of Pennsylvania Hospital HIS and PACS systems
- Clinical Workflows Analysis, Mapping & Design
- Clinical Networks Infrastructure Design
- XML Canonical Data Modeling and thorough understanding of HL7 (V3) Reference Information Model (RIM)
- Experience in SNOMED CT, DICOM, HIPPA, ICD 9, ICD 10 & LOINC codes
- Clinical Data Repository Design & Implementation
- IHE Integration Profiles (IHE) Implementation
- Extensible Markup Language (XML) Technologies – XML, Schema, XSLT, XPATH, XQuery, etc.
- SOA Infrastructure Design & Implementation
- CDA & HL7 Interfaces Development
- Healthcare IT Project Management

Cox Communications, Atlanta, GA

November 2002 to July 2004

Lead Integrator and Integration SME

- Analysis, design and implementation of service oriented middleware message broker for Cox Communications.. This middleware enabled different Cox application system to semantically integrate with the company's Inside-Plant Network Inventory System – Granite.
- Use Case Driven Requirement Analysis & Design
- Catalysis (Decomposition of Business Processes into Component Use Cases)
- Business Process Re-engineering
- Service Oriented Architecture Design
- ETL Process Design & Implementation
- Java Web Services Implementation on WebLogic 8.1 integration Platform

- UML (Using Rational Rose Tool)
- IDEFIX (Erwin 4.1) – Database Design
- Oracle PL/SQL Programming and Database Performance Tuning
- Database Design & Implementation
- Structured Query Language (SQL)
- Java and J2EE Programming on WebLogic 8.1
- Java STRUTS Framework
- Extensible Markup Language (XML) Technologies – XML, Schema, XSLT

Education

1987 – 1994 University of Toronto - Toronto, Ontario Canada

- Bachelor of Science (Honors) Computer Science Specialist, & Human Biology Major

1994 – 1996 University of Toronto - Toronto, Ontario Canada

- Faculty of Medicine, Department of Public Health (Epidemiology)