**RajaSangeetha Vijayam**

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**SUMMARY:**

Bioinformatics graduate with 15 years of software design and development experience. Looking forward to exploring and expertise in Bioinformatics/healthcare/data science product design, development, and engineering opportunities.

**TECHNICAL SKILLS:**

|  |  |
| --- | --- |
| * Python 3.6.8, Pandas, Numpy, Jupyter NB, Atom, Unix * Data Analysis and Database design and development * BioPython 1.78, data statistical visualizations * Data acquisition and Data Modeling * NGS Analysis – FASTQC, Prokka, IGV, Artemis * Mathematica, Rules engine, Informatica, ETL * Gradle, Docker, AJAX, jQuery, JSON, XML, XSD * JDBC, MS SQL 2005, Stored procedures * Team City, GIT, Jenkins, JUNIT, Mockito, Jacoco * REST, JMS, Tomcat, Splunk, AWS, swagger API * IBM Operational Decision Manager 8.5.1, Splunk * ILOG JRules, Agile, JIRA, ANT, JMeter 5.1 * Agile and Waterfall, Gradle Nimble methodology * CICD, Bioinformatics Pipeline * Angular, Node.js, Tableau | * Spring, Spring Boot, Struts * C++, Web services, SOA, REST, SOAP, * Software design, development, testing and deployment. * Data management, Object oriented programming * Bioinformatics analysis, R Programming * Trinity, UCSC table browser, Tableau * SPADES, QUAST, BOWTIE2, HPC * JAVA, J2EE, JSP, JSF, JMS, MDB, SONAR * SQLite, DB2 11.1, Oracle, Sybase * JAXB, JAXP, Axis, GLUE, Service Now * Servlets, JDBC, Maven, Ant, Jenkins * Rational Rose, Microsoft Visio * IBM Web Sphere, WebLogic, Kibana * Machine Learning, Spring batch |

**EDUCATION:**

Master of Science: Bioinformatics (Dec’ 2022) – GPA:3.91 – University of North Carolina |   Charlotte, NC

Bachelor of Engineering – Information Technology – Sri Krishna College of Technology, Bharathiar University, Coimbatore – 79.5 %

**ACADEMIC EXPEREICE:**

Internship – University of North Carolina at Charlotte – May 2022 till date

**Title: The evolution of immunogenetic diversity in Holocentridae, an emblematic clade of nocturnal coral-reef fishes**

* To describe the sequence diversity of toll-like receptors, diverse immunoglobulin containing proteins, and novel immune type receptors, three key gene families of the innate immune system
* Transcriptomes and genomes are searched for sequences
* Sequences are verified using maximum likelihood based phylogenetic inference and PFAM analyses
* NITRs are analogous to human natural killer cell receptors, the results suggesting that rise and fall of biodiversity hostpots may have played a large role in shaping the molecular basis of the killer-cell response in coral reef fishes
* Design and development of pipelines and workflows
* NGS data analysis and proteomics datasets

**Technical Environment:** iqtree2, hmmer-3.3.2, mafft, python 3.6.8, slurm

<https://github.com/rajasangeetha/Immunogenetic_diversification_Squirrel-fishes>

Graduate Research Assistant - North Carolina Research Campus – Jan 2022 till May 2022

**Title: Annotation and Characterization of the Newly Assembled Pitcher Plant Mosquito Genome**

* Used Repeat Modeler to identify repeat element boundaries and family relationships and to refine/classify the families and to produce the library of transposable element (TE) families for Wyeomyia Smithii sequence.
* Used Repeat Masker to screen the sequences for interspersed repeats and get the query sequences with masked annotated repeats.
* Used Infernal for finding RNA structure and sequence similarities and to identify RNA homologs with their secondary structure

**Technical environment:** RepeatModeler 2.0.2, RepeatMasker 4.1.2, structRNAfinder 17.03.29

<https://github.com/rajasangeetha/Dr.Cooper_NCRC_Wyeomyiasmithii_Modules>

Graduate Teaching Assistant – Aug 2021 till Dec 2021 & Aug 2022 till Dec 2022

* Conducted Lab’s and graded assignments for the Python programming course.
* Held office hours to help students resolve issues related to coursework and assignments.
* Graded assignments & HomeWorks for 20 Undergraduates, Master’s, and PhD students.
* Prepared course material for sequence Analysis course for undergraduates.

Independent Study Project – Fall 2022

Open-source software to estimate the durability of immunity using comparative evolutionary approaches

* To develop a python-based adaptation of Mathematica models that facilitates integration of phylogenetic, antibody, and infection data from a focal pathogen and its closest living relatives to estimate the durability of the immune response following natural infection or vaccination.
* To develop open-source project, which is freely available via GitHub, and to enable community use of these methods to aid future public health predictions of the immunity and long-term efficacy of vaccine-based interventions that, in turn, can mitigate unnecessary morbidity and mortality.
* collect, process, visualize and analyze vaccine data

**Technical environment:** Mathematica, Python 3.6.8

<https://github.com/rajasangeetha/SARS-CoV-2-immunity>

Class Project 3 – Fall 2021

**Domestication impact on tomato flavor**

* This is a statistics project was developed to test the hypothesis that tomato consumers say there is a flavor difference between the different types of tomatoes and that sweetness is considered a ‘good’ contributor to fruit, we expect consumer preference to be statically different across groups when tested, and that sugar content will increase with consumer preference.
* To test for the above-stated hypothesis, three main tests were used, Analysis of variance (ANOVA) to test for the statistical difference in consumer preference, a Two-Sample Z-test to test the level of MHO in the different variates and lastly, a linear regression to analyze the association between sugar content and consumer preference.

**Technical environment:** R Studio

Class Project 2 – Spring 2021

COVID Impact on employment

* Report generation using Pandas on COVID infection data
* Analyze COVID data set - Census data
* To plot bar graph, line graph and pie chart relating population, age and covid count. Report of impact on unemployment in Python

Note: I have used the same data to create reports with Tableau in my independent project.

<https://github.com/rajasangeetha/COVIDCasesReport_ClassProject>

Class Project 1 – Spring 2021

miRNA database design and development

To design and develop miRNA associated database (mRNA, Pathway, Disease interaction database) by collecting data from different biodata web resources mirWalk, misBase, targetMiner, targetScan

* Identified data sources and new entities using backward engineering
* Created conceptual model and ER diagram
* Converted conceptual model to Logical model
* Created DDL statements
* Created test loading data sets
* Organized and load data

**Technical environment:** SQLite

**PROFESSIONAL EXPERIENCE:**

**Morgan Stanley**

**Senior Software Engineer Aug 2019 to till Jan 2021**

**Location: New York City, NY**

**Project: Common Components Infrastructure (Financial Advisor Platforms)**

**COC** project is responsible to apply common business rules across all financial advisor products using

spring framework and Operational Decision Manager.

**Responsibilities:**

* Rules development using Java XOM
* Migrating legacy java to Spring boot framework
* Coding, unit testing and deployment into Tomcat using Team city, Gradle environment
* Supporting System Integration Testing, Quality Assurance Testing
* Supporting production deployment and Post Implementation Warranty

**Technical Environment:** IBM ODM 8.5.1, Web Services, Java 1.8, DB2 11.1, Websphere, Team City, GIT, JUNIT, Mockito, Service Now, Spring Boot, REST, JMS, Gradle, Tomcat, Splunk, Agile, JIRA, ANT, JMeter 5.1

**Freddie Mac**

**Senior Software Engineer Aug 2017 to Jan 2019**

**Location: Mc Lean, VA**

**Project: Loan in Acceleration (Investment and Capital Marketing)**

**LIA** creates the user the interface to Single-family and LPMS desk to perform auditing of the process to approve loan sale data. Once the approval is done JMS message would be sent to loan App system the trigger file is placed for the ETL process to pull the data.

**Technical Environment:** Angular, Node.js, Spring Boot, REST, JMS, Gradle, Docker, Nimble methodology, Tomcat, Kibana, GIT, Jenkins, Jacoco, Mockito, Java 1.8

**Responsibilities:**

* Developing messaging platform to send loan updates to down streams by creating the trigger

file

* Enhancement of LIA UI
* Coding and unit testing
* Deployment in Docker, Gradle environment
* Supporting SIT, UAT testing
* Supporting production deployment and Post Implementation Warranty
* Conversion of LIA application into Docker (cloud ready) environment
* migrated Struts project to Docker

**Delta Dental of California**

**Senior Java Developer Aug 2016 to Jun 2017**

**Location:** San Francisco, CA

**Project: Smile way**

This project is developed for delta dental of California to create SmileWay® Wellness Benefits program which provides enrollees of large groups with enhanced benefits based on certain specified medical conditions. Currently, Delta Dental only offers an enhanced benefits program for pregnant women. SmileWay enables Delta Dental to offer benefits for Diabetes, Cardiovascular Disease, Cerebrovascular Disease (Stroke) and Rheumatoid Arthritis conditions also.

**Technical Environment:** Spring Core, Oracle Web Services, SOAP, XML, Oracle, SVN, WebLogic, SOAP UI, Java 1.8

**Responsibilities:**

* Development and enhancement of Smile way web service
* Publishing and Consuming Web Service
* Created batch framework for SmileWay batch processing
* Coding and unit testing
* Supporting DIT, MOT testing

**Freddie Mac**

**Senior Java Developer – McLean, VA May 2015 to Jul 2016**

**Project: Loan Prospector Feedback Improvement (Enterprise Decision Service)**

This project is developed to generate feedback report to loan companies for the submitted loan applications. The decisions are applied against borrower liabilities, income, and assets. Loan Origination web service calls the decision engine to evaluate the loan before applying the feedback logic parameters.

**Environment:** Web Services, IBM ODM 8.5.1, DB2 9.5, Version One, Remedy, Websphere, Team Forge GIT, JUNIT, Service Now, Agile, Maven

**Responsibilities:**

* Rules development using XSD
* Performed Rule Discovery, Rule Analysis, Rule Design, Rule Authoring, Rule Validation, Rule Deployment.
* Created rules, decision tables, decision trees, action rules, technical rules, rule flows. Created Rule Artifacts, Vocabularies, and functions.
* Created necessary XSD’s (XML Schema’s) for request and responses in published web services.
* Involved in the test-driven development by interacting with SIT and QA team

**Merrill Lynch**

**Assistant Consultant**

**TCS India Aug 2014 to Jan 2015**

**Project: Corkite (Traded Products)**

This project is developed to manage operational risks for the various LOBs of Bank of America. GBAM (Global Banking and Markets) will be utilizing this application for preparing its process, subprocess, Risk, and Control assessment.

**Environment:** Spring MVC, Spring Data, AJAX, jQuery, Oracle, web services, SOAP UI, Websphere

**Responsibilities:**

* Lead overall delivery of the project
* Co-ordinating 5-member team
* Performed Internal Quality Assurance, External Quality Assurance and Final Inspection for the deliverables done by the offshore team
* Provide estimates and commitments for the deliverables
* Enhancement of Corkite UI using Spring
* Consumed product web services/REST
* Involved in Stored Procedures and SQL development

**Assistant Consultant**

**Pennington, NJ Jan 2014 to Jul 2014**

**Project: ODM Rules Development (GWIM)**

This project takes care of creating rules to validate and update the Client and account Database with all the profile updates carried out by the financial advisors, to merge and synchronize the profiles, to

provide a well-defined infrastructure to authorize the profile maintenance operations **Environment:** IBM ODM, JRules, WebSphere

**Responsibilities:**

* Design, Implementation, Authoring, deployment and publishing Rules into Decision Centre
* Design and Development of Rules artifacts
* Conversion of .Net rules to JRules
* Development of HTDS with Rules
* Tested rule projects using Soap UI testing.
* Used Rule Team Server as the main business tool for deployment to RES
* Lead the offshore team of 4 members to deliver the project before the stipulated time.
* Converted the .Net rules to JRules

**Bank of America**

**Assistant Consultant – Charlotte Aug 2011 to Dec 2013**

**Project: Fee Refund Application**

This project is developed to include all fee types with NSF/OD/EOBC fees for decision making in FRA. As part of this project partial refund is supported. The associate can refund the suggested amount or can override the amount with proper reason.

**Environment:** Java, Web services, Axis2, WebSphere 7.0, DB2, Rational Software Architect, Rally

**Project: Future State Infrastructure**

This project is to integrate clients, channels, and applications that currently use product data with the strategic components (Product Catalog and Agreements Management) in a way that allows dynamic product and package offerings based on the terms, conditions, eligibility, and availability that is defined for each product in the Master Product Catalog. **Environment:** Informatica, DB2, UNIX, Java, Autosys

**Project: NW & CA Conversion**

This project is to convert the California and North West source systems to the Model Banking Environment for the Consumer Banking products. This project will improve customer experience, improve agility and speed to market to more effectively compete in the current environment.

**Environment:** Java, ILOG JRules, Web Services, Tortoise SVN (SubVersion), Rational Software

Architect, DB2

**Responsibilities:**

* Developed web services using Axis 2
* Exposure to the creation of Rule Project, Rule App, BAL for Fees processing
* Involved in Design and Development of JRules artifacts; Implementation of Rules with J2SE(POJO)
* Lead the onshore, offshore status reporting for all the projects in deposits
* Coordinated with the testing team for SIT and performance testing.
* Responsible for automated builds and deployments.
* Involved in design and development for ETL Modules for FSI project
* Conversion of North West and California components for all deposits modules

**Project Lead – TCS, INDIA Apr 2010 to Aug 2011**

**Project: Saving Fee Waiver Automation (eXtended Database)**

This project aims to develop and rollout automation of Monthly Maintenance Fee waiver and interest rate bump for consumer savings product. This project will reduce the number of waivers that must be reapplied manually, reduce expenses to run the manual process, reduce headline and compliance risk associated. With the current process and increased fee revenue from accounts that are getting waivers without meeting the offer criteria. This also provides the solution to accommodate additional reward in the future.

**Project: NGEN P2P (eXtended Database)**

This project is developed to enable online banking customers to send payments to anyone using the mobile number or email address. A fee will be charged for the transfer, based on the transfer amount and sending customer relationship (i.e. segment and product types). The initiating user will have the option to accept the fee and proceed with the transfer, change the transfer amount and recalculate the fee or cancel the entire operation.

**Project: Borrower Benefits (eXtended Database)**

This project is developed to create a report of student accounts eligible for discounts on their loan. External Student Loan Companies interact with Bank of America to get the student account relationship with the bank. Loan companies will provide an input file to the Bank of America, the bank would create the output file that is the owner or co-owner of an open deposit account.

**Project: ATM Day One (eXtended Database)**

This project is developed to create the feature which provides the notification to the customer that a hold has been placed on their account and Funds Availability information (Amount and Date) during the check deposit at ATM.

**Environment:** Java, Web Services, JSF, ILOG JRules, Websphere MQ, RAD, Rational Rose, Microsoft Visio, Clear case, Tortoise SVN, Rational Application Developer, DB2, ILOG JRules, Web Services

**Responsibilities:**

* Worked on Project Planning, Monitoring and Metrics Reporting
* Managed 8 members team and performed the appraisal process
* Resolved Issues/Disputes, Training and Mentoring of the team members
* Presented the deliverables, test results to the stakeholders for sign off.
* Facilitated new release activities, fine tuning of application performance and system documentation.
* Involved in design and development of stand-alone java application with Autosys setup and security certificate implementation for Borrower Benefits project
* Created Class diagrams & Sequence diagrams
* Involved in Design and Development of JRules artifacts, Implementation of Rules with J2SE(POJO) and created POC for JRules application
* Developed Spring JUNIT framework for Rules testing
* Implemented point to point money transaction using the email address
* Involved in IQA, EQA, and FI and provided suggestions for improving the quality of offshore deliverables.

**Achievement:** Successfully implemented the project for money transfer with the email address/phone number. Lead deployment of 12 components from offshore.

**Technical Analyst – Jacksonville, FL Feb 2008 to Apr 2010**

**Project: VADS Consignment (eXtended Database)**

This project is to automate Teller systems to systematically charge the appropriate consignment Item (Cashier Checks, Money Orders, Travelers Checks, Gift Cards, Gift Check) fee based on whether the purchaser is a customer or not. This project improves the BOA fee capture rate for Consignment items by consistently applying the pricing and waiver policies. (‘Collecting a fair price for service provided’).

**Environment:** Java, JSF 1.2, Tortoise SVN, Rational Application Developer, DB2, SOAP Web Services

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**Project: Auto Fee Waiver (eXtended Database)**

This project is developed to create a system to maintain the fees charging for encashment of check by the non-relationship customer (NRC). This fee is charged to payees who come to the Bank’s tellers to cash a check drawn on a Bank of America business account when those payees do not have an account relationship with Bank of America. If the corporate client wishes to pay the standard fee on behalf of all their payees, the client may assume responsibility for the fee and have the fees billed to them through account analysis (in some exceptional cases this fee is waived) only in regulated states. Clients want the NRC to pay the fees by themselves in the un-regulated States.

**Environment:** Java, Struts 2.0, IBM Clearcase, Rational Application Developer, DB2, SOAP Web Services

**Responsibilities:**

* Involved in Requirements gathering and Understanding of BRD
* Created High-Level Design document
* Acquaintance with MVC Struts and JSF framework
* Configured and used the Log4j for the debugging and error information.
* Implemented Collections Framework
* Involved in SQL development
* Lead the Code Review
* Represented Project Health Check meetings
* Responsible for the overall quality of the project
* Provided support for SIT, UAT, deployment and Post Implementation Warranty (PIW)

**Project: SafeSend Online Remittance (Debit Cards)** **Jan 2005 to Feb 2008**

**Senior Developer**

The Safesend project aims to create an infrastructure where remittances are initiated from a Bank of America checking account and transferred to a partner bank in Mexico for credit to a beneficiary account. Safesend facilitates the teller to establish remitter profile, beneficiary profile and initiate remittance transaction. Disputes are initiated for the remittance created by the customer.

**Environment:** Java, Servlets, XML, SOAP, GLUE, AXIS, Web services, MS SQL Server 2000, WebSphere 5.0, Eclipse, IBM Clearcase, MS SQL 2005

**Responsibilities:**

* Involved in the analysis, design, deployment, and testing of the project.
* Involved in Low-level Design, Coding, CIT, SIT and UAT Support, Production support
* Acquaintance with Service-oriented architecture and Web services.
* Developed and accessed Web Services using Glue, Axis.
* Debugging the errors caused in the production environment
* Establish “Best Practices”, “Lessons Learnt” and plan for continuous improvement of processes
* Ensure overall quality of the project
* Developed Stored procedures in MS SQL 2000

**Roles and Location:** Developer – INDIA; Developer – Concord, CA; Senior Developer – INDIA

**CERTIFICATIONS:**

* **UNC Charlotte Commencement Bell Ringer Fall 2022**
* Secretary - BiAS (Bioinformatics Assembly of Students) at UNC-Charlotte
* Member - International Student Advisory Committee at UNC-Charlotte
* Completed Cell and Molecular Biology course in Universal Class Online
* Completed Organic Chemistry I course in University of New England Online
* On the Spot Award 2006 Tata Consultancy Services, India

For technical excellence

* Smile Award 2010 Tata Consultancy Services, India

For working as a recruitment coordinator for TCS Bank of America 500 associates within short period of time

* Sun Certified Java Programmer (SCJP) for Java 2 Platform.
* Sun Certified Web Component Developer (SCWCD).
* IBM Certified Solution Developer - InfoSphere DataStage v8.5

**VOLUNTEERING EXPERIENCE:**

* Volunteering in Fleurix- Celebrate Women+ in Technology conference Sep 2022
* Raceday setup – Charlotte Racefest Marathon Apr 2022
* Local Park and stream cleanup - Charlotte Mecklenburg Storm Water Services, Mar 2022
* Humanity of Charlotte to build houses for homeless 2012
* Gardening activity in Jacksonville to setup garden in front of the school for physically challenged kids 2008
* Involved in rescue activities in Tsunami affected areas in Chennai, India 2005

**Linked In:** [**https://www.linkedin.com/in/sangeetha-vijayam-a8247566**](https://www.linkedin.com/in/sangeetha-vijayam-a8247566)