Venkatesh M   Email   : venki.madisetty@gmail.com
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Professional Summary:

Software Developer

- Software Developer with 5+ years of experience in the development of verification and validation tools like Static Analysis Tools, Test Data Generators, Code Obfuscators, IR(Intermediate Representation of source code) Model Validators.
- Have good experience in Microservices development using Spring Boot.
- Good experience in C, C++, Java & Spring Boot technologies
- Good analytical and debugging skills, adaptable and a quick learner of latest technologies
- Technically efficient in programming with good testing and quick defect fixing capabilities

Work Experience

IT Analyst
Tata Research Development and Design centre, Pune   (June 2014 - Aug 2019)

Associate IT Consultant
ITC InfoTech   (Sep 2019 – present)

Research:

1. **Improving Precision of Static Analysis Tools**
   - ➢ **Brief Description:** Static Analysis is a method of analysing programs without actually executing it and seek out all possible coding flaws, malicious codes etc... Static analysis is very effective in finding common programmer errors but produces a large number of false positives. Model Checking on the other hand is very precise but does not scale up.

   - ➢ **Responsibilities:**
     - o My research work is to combine both techniques and also implement a loop abstraction to improve precision & scalability of static analysis tools and model checkers respectively,
     - o I have developed a tool-chain that combines several static analysis tools and model checkers
     - o Developed a loop abstraction technique that replaces loops of unknown or large bounds with respective loops of smaller bounds
     - o Compared precision of this technique with abstract interpretation in which this technique produces better results and scalability that the later.

   - ➢ **Company/Client**   : Tata Research Development and Design Centre

   - ➢ **Tools Used:**
     - o **Static Analysis Tool** : TCS Embedded Code Analyzer
     - o **Model Checker**   : C Bounded Model Checker (CBMC)

Projects

Project 1: Microservices development for Walmart Supplier Cost Negotiation Tool

- ➢ **Company**   ITC Infotech
- ➢ **Client**   Walmart US Inc
- ➢ **Team Size**   1
- ➢ **MVC Framework :**   Spring MVC
- ➢ **Architectural Style :** Microservices using Spring Boot and Spring Cloud
- ➢ **ORM Framework :**   Hibernate 3.0
- ➢ **Database :**   Sql Server, Click House
- ➢ **Project Duration**   Sep 2019- present
- ➢ **Brief Description**   Walmart wants a medium (Supplier Cost Negotiation Tool) for communication between Supplier and Merchant which enables better negotiations to happen and as a result Supplier ca propose for cost changes which can be either Accepted/Rejected by the Merchant. It also helps Walmart to identify the position of Supplier as either (Strong/Neutral/Weak) in relative to its total revenue generated and based on this Walmart proposes for a margin/share percentage of the costs of goods sold (COGS) by supplier using its medium either offline/online.
- ➢ **Roles & Responsibilities:**
  - Working as a backend developer, developing rest apis using Spring Boot

Project 2: GUI and Backend for Test Data Generation Tool

- ➢ **Company/Client**   Tata Research Development and Design Centre
- ➢ **Team Size**   1
- ➢ **MVC Framework :**   Spring MVC
- ➢ **Architectural Style :.** Microservices using Spring Boot and Spring Cloud
- ➢ **ORM Framework :**   Hibernate
- ➢ **Database :**   Oracle 11g
- ➢ **Project Duration**   April 2018 – Aug 2019
- ➢ **Brief Description**   AutoGen – Automated Test Data Generation Tool generates test data for a given C program. AutoGen accepts coverage criteria, file path of a C program to which test date has to be generated and outputs test data, coverage percentage. Developed a GUI for AutoGen Tool to accept input parameters from the user and backend database for storage of C Programs and its test data, coverage percentage.
- ➢ **Roles & Responsibilities:**
  - Into different roles worked as developer & tester
  - Integrated AutoGen Tool with GUI.
  - Successfully ran & tested the tool on regression test suites generated by AutoGen and also resolved the bugs for the same.

Project 3: AutoGen – Automatic Test Data Generation Tool

- ➢ **Company/Client**   Tata Research Development and Design Centre
- ➢ **Team Size**   1
- ➢ **Platform/ Tools**   Developed in Java
- ➢ **Project Duration**   July 2016 – March 2018
- ➢ **Brief Description**   Preparation of test data is cost expensive and effort intensive. AutoGen tool reduces this effort by automatically generating test date for C code. AutoGen

takes C code and a coverage criterion such as statement coverage, decision coverage, modified condition/decision coverage and generates non-redundant test data that satisfies the specified criterion.

- ➢ **Roles & Responsibilities:**
  - Into different roles, worked as Designer, Developer and Tester
  - AutoGen Tool was already developed in C language and my work is to understand the existing source code, re-design and re-develop the tool in Java language in order to integrate with TCS developed static analysis tool in Java.
  - As a part of the testing team, have ran and tested successfully on large scale Industrial applications.
  - Tested on more than 15 Industrial code sets each of minimum 40 KLOC.

Project 4:   Code Obfuscator

- ➢ **Company/Client**   Tata Research Development and Design Centre
- ➢ **Team Size**   2
- ➢ **Platform/ Tools**   Developed in Java
- ➢ **Project Duration**   Nov 2015 – May 2016
- ➢ **Brief Description**   IT industry loses billions of dollars annually from security attacks such as tampering and malicious reverse engineering. This code obfuscation tool counters such attacks by constructing code patterns called as non trivial code clones for code fragments that need protection. A clone for a particular code snippet C is another code snippet C' that is semantically equivalent to C such that both programs produces same output for all inputs. Based on this concept this tool dynamically selects a different code clone for a particular code fragment for each execution of a program thus making it difficult for reverse engineering.
- ➢ **Roles & Responsibilities:**
  - Into different roles worked as developer & tester
  - Involved in the development & testing of Code obfuscator tool and its GUI in Java.
  - Integrated code obfuscator tool with AutoGen for generating regression test suite.
  - Successfully ran & tested the tool on regression test suites generated by AutoGen and also resolved the bugs for the same.

Project 5:   IR ModelValidator

- ➢ **Company/Client**   Tata Research Development and Design Centre
- ➢ **Team Size**   2
- ➢ **Platform/ Tools**   Developed in Java
- ➢ **Project Duration**   Feb 2015 – Aug 2015
- ➢ **Brief Description**   Model Validator validates the IR (Intermediate Representation) of C/C++ programs generated by TCS developed C/C++ compiler.
  Tool validates the IR of a given program and outputs if any symbol table entries, association between symbols in Abstract Syntax Tree are missing.
- ➢ **Roles & Responsibilities:**
  - Into different roles worked as Developer & Tester
  - Developed an API in java to parse Symbol Table, Abstract Syntax Tree files generated by compiler in byte code format.
  - Followed appropriate design patterns in developing ModelValidator tool
  - As a part of development team I have been involved in interacting with design team,
  - understanding given specifications.

- As a part of testing team I have been involved in validating functional requirements with technical design and checking performance of tool when tested on large code sets.

Qualification

B.Tech, Computer Science and Engineering | Sree Vidyanikethan Engineering College | CGPA: 8.5/10

Areas of Interest

Data Structures, Operating Systems, Algorithms, Programming

Technical Skill Set

Programming Languages	: C, C++ and Java, Servlets, JSP, Spring Framework 4.0
Front-End Programming Languages	: Angular 4, HTML, CSS, Javascript ES6
Server Side Programming Languages	: Node.js
DBMS	: Oracle 11g
Programming Environments	: Eclipse, Visual Studio

Key Achievements:

- Understood AutoGen source code written in C language which is more than 7KLOC and re-designed and re-developed the same in Java with performance being comparable, maximum time difference being Java version slower than C version by 15 minutes when ran on large industrial code base of size more than 50KLOC.
- Awarded as Star Performer of batch during TCS training
- Received Award of Excellence by Domain Head at TCS
- Awarded with Service and Commitment award by TCS

Personal Details:

Name	:	Venkatesh M
Father's Name	:	Mr. Rajagopal M
Date of Birth	:	29th June, 1992
Nationality	:	Indian
Languages Known	:	English, Telugu and Kannada
Address	:	Adithya Residency,Hanumesh nagar,Guntakal 515801

Declaration:

I, hereby declare that the information furnished above is true up to the best of my knowledge.

Date: Thursday, November 28, 2019

Place: Bangalore   **[VENKATESH M]**