

DEBDIPTO GHOSHAL

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Website www.debdipto.com • Projects <http://www.systems.debdipto.com/#projects>

CHIEF TECHNOLOGY OFFICER at BplugD

AREAS OF EXPERTISE

Cloud Based Software Development & Analytics • Back End Automation • Data Warehousing
• Distributed Systems • IoT • Embedded Systems Programming • Web Services
• Computer Architecture • QA • Iterative Releases • Ubiquitous Computing Latitudinal & Predictive Analytics • Continuous Integration • NetSuite • ServiceNow • Salesforce • Intel 8085 / Nehalem • MIPS • Animation • 3D Studio Max

TECHNOLOGY COMPETENCIES

Software: NetBeans, Eclipse, Spring, Xamarin, MySQL, Amazon Redshift, Apache, IIS, Apache Tomcat, PHPMyAdmin, Android Studio, Android in Eclipse, WinRT in Visual Studio, JUnit, TestNG, ATU, .Net, Ajax, JSON, XML, Git, Amazon EC2 & Web Services, Talend, Studio, LINQ, Hibernate

Hardware: Arduino, Raspberry Pi worked with Arduino C and Raspbian based Java.

Languages: C#, Java (J2SE, J2EE, Android), HTML5, CSS3, JavaScript, PHP, JSP, ASP, C, C++, PL/SQL, VB6 (ActiveX, COM), VC++, Selenium, MySQL, WPF, Shell Script, Haskell, Python

Other: OOP, SQL, NUnit, SQL Server, TSQL, Crystal Reports, ASP.Net MVC, Web API

EDUCATION

Master of Science with Honours in Advanced Computing Science (2012)

University of Nottingham, Nottingham, UK

Received High Achievers' Postgraduate Taught International Scholarship.

Master of Science in Computer Science (2011)

St. Xavier's College, Kolkata, India

Bachelor of Science in Computer Science (2009)

Scottish Church College, Kolkata, India

WORK IN PROGRESS

Gauntlet: A glove based home automation framework: A glove based home automation system that uses a self-made home automation framework (**Evergreen framework**) and allows the user to select home appliances by pointing at them with a laser and in communicating that choice to the server which pushes control methods to the glove. *I am currently working on a research paper on this topic.* (2015)

Page File Cache – Department of Computer Science, St. Xavier's College, Kolkata, India: Developed multi-level dynamic memory unit to insert between main memory and hard disk in memory hierarchy, decreasing overall access time of missed pages without consuming space on the hard disk – Indian patent pending. *I am currently working on a research paper on an advanced version of this project.* (2015)

ACADEMIC PROJECTS

Masters Thesis: Comparing Inter-Process Communication Latencies in Multi-Core Systems and Comparing Performance Differences Between Random Process Allocations to Ripple-Wave Allocation – School of Computer Science, University of Nottingham, UK: Analysed flaws in process allocation in Xen Hypervisor and produced 3 algorithms to overcome problems, with C#-built simulation environment of image / lists producing results showing an improvement in inter-process communication performance. (2012)

Tri-G Architecture – Department of Computer Science, St. Xavier’s College, Kolkata, India: Autonomously incorporated frequency division multiplexed bus concept to custom theoretical computer architecture model using network-on-chip to route different packets to / from multiple cores, with buffers linked to frequency multiplexers and multi-bank memory design to respond to multiple parallel accesses; and designed protocols to resolve contention. (2010-2011)

PERSONAL AND COLLABORATIVE PROJECTS

Complete list of projects available at: <http://www.systems.debdipto.com/#projects>

- **Evergreen framework:** Designed and implemented a lightweight, scalable, secure raw socket TCP/IP based server for ETL, chatting, file transfer and for home automation. A number of clients in Java, C#, Javascript and C have been developed that connect to the Evergreen server and interchange messages and files. The Evergreen has an advanced log file reader and several sentinel threads to monitor client disconnection. Using this message passing framework and a central data warehouse, the user may control different appliances using a browser, a cell phone app and PC clients written in both Java and C#. The appliances may communicate back to the user and the server can run automated algorithms and run analytics on the data. This server may be used seamlessly over a LAN or the AWS and has been tuned for speed and minimal latency. The associated Git repositories are as follows:
Amaranthine Server: <https://github.com/debdipto/Amaranthine-Server.git>
Desktop Reporter: <https://github.com/debdipto/Desktop-Reporter.git>
Master Remote: <https://github.com/debdipto/Master-Remote.git>
Chat Client: <https://github.com/debdipto/Chat-Client.git>
Raspberry Pi Client: <https://github.com/debdipto/Raspberry-Pi-Client.git>
Watcher: <https://github.com/debdipto/Watcher.git>
- **Pensieve:** Secure software designed to act as a personal diary. Each entry is AES encrypted using a key file which the user can store separately. The Pensieve may connect to the Oculus Server for securely storing the encrypted text and keys. This also allows text retrieval from other Pensieve clients. The Pensieve has a sync option that synchronizes the current content with that of the cloud and can carry out a merge operation.
Pensieve: <https://github.com/debdipto/Pensieve.git>

PROFESSIONAL EXPERIENCE

BPLUGD LLP, Bangalore, India 2016-Current **Chief Technology Officer**

BplugD manufactures a smart bag designed for fast charging multiple electronic gadgets. The smart bag contains a Bluetooth module and a GSM module along with anti-theft detection, GPS and cloud based tracking. The smart bag can be tracked via a smartphone app using the cloud as well as via Bluetooth. A buzzer and the anti-theft mechanism inside it can be triggered via both Bluetooth and server. In the event of a theft, the app receives asynchronous Bluetooth or cloud based push notifications regarding the bag’s movement and its current GPS location. The App shows a map which is asynchronously updated by the server every time the bag updates the server with its current location. The cloud server manages 20,000 simultaneous connections over an amazon micro-instance, supporting 10,000 bags and 10,000 app logins per instance. The hardware system simultaneously handles communications with the cloud as well as via Bluetooth and seamlessly transitions between the cloud and the Bluetooth based on availability.

Accomplishments:

- Developed and adapted the Amaranthine server (Version 5.2) to scale to 20,000 connections with APIs specifically tailored to cater to the bag and the app’s features.

- Coordinated and supervised the hardware team to build the hardware module that connected to the Amaranthine Server. The final hardware module could asynchronously send the bag status automatically or when requested and could respond to orders given via the Bluetooth channel or via the server.
- Coordinated with UI/UX teams and developed the smartphone app with the apps dev team using the Ionic Framework to communicate with the server using TCP raw sockets and with the bag Bluetooth. Drove the effort to make a set of APIs that the bag can use to update the UI for relevant events. Coordinated the API standards between the Apps and the Hardware team and updated the server iteratively as per design requirements.
- Carried out quality analysis and performance, scalability and reliability tests on the server, app and the hardware.
- Optimized the communication APIs to work under a 10 KBps network with an overall login latency of 370ms and an average instant message push latency of 250ms.

NUMERIFY INCORPORATED, Bangalore, India & Cupertino, USA • 2013-2016

Numerify 360 cloud-native platform delivering system-of-record business analytics applications.

Senior Software Test Engineer

Build back end automation for running test suites with platform team. Develop test cases for new features and bug fixes, deploying on Jenkins for nightly run on new builds, generating ATU reports. Write pipeline of Talend-based automation for ETL implementation. Build automation apps to resolve web service user errors for QA, development, and app teams. Manage platforms from extraction to data warehousing, resolving production level issues and setting up or repairing ETL pipelines. Resolve issues based on error logs for multiple VMs, consulting with developers for bug fixes or preventative enhancements. Set up software frameworks on Linux and Windows VMs for QA / Apps.

Accomplishments:

- Built the entire backend QA test automation framework from scratch along with all version controlled helper libraries.
- In charge of all peripheral automation test case generation, evaluation and implementation.
- Identify flaws in runtime and design testing tools in Java.
- Verify Talend-based ETL functionality, stability, re-startability, and user friendliness.
- Appointed Automation Lead; Requested as Testing & Automation Lead for future feature release.
- Promoted to Senior Software Engineer after 1 year tenure.

PARK GUPTA GOMEZ LLC, Kolkata, India & New Haven, USA • 2013-2013

Cloud-based analytics company developing and managing OpTix enterprise product.

Software Developer, Movie Tickets Ticket Pricing & User Behaviour Analysis Project

Built ETL engine from scratch using C#. Created and maintained back end data warehouse in MySQL and MS Access. Built adapter, database management modules, and multiple monitoring services to track benchmarks and health of system. Developed clients for data uploads in Java and C# with analytics algorithm patented jointly with CTO.

Accomplishments:

- Built profile to analyse user behaviour using multiple data mining using US patented algorithm.
- Designed client side database provisioner in C# and Java.
- Hold patent 62064097 – Movie Tickets, Ticket Pricing and User Behaviour Analysis.

BLACKBOX, Nottingham, UK & New Haven, USA • 2012-2013

Project fulfilled by team of 5 from US (Yale), UK (Nottingham), and Israel.

Lead Software Developer for Blackbox Automatic Backup System Project

Built flash drive software from scratch employing Agile model for data backup and restoration using VC# .Net 4.0. Synchronised folder content, with automated monitoring for changes upon plug-in with 1-second delay.

Developed and implemented GUI, log files, device presence / absence threads, authentication, and installer / uninstaller actual archiving logic. Gathered requirements, coordinated clients and QA, and generated weekly status reports for management.

Accomplishments:

- Recruited by Blackbox team to build initial product.
- Built USB-based archiving software, adapting to continuously shifting requirements.
- Developed automated installer / uninstaller for host PC using InstallShield Wizard and Visual Studio Setup Manager.
- Allowed simultaneous access and anytime flash drive removal, picking up at stop on re-insertion.
- Placed check to ensure one at a time per client spec, with multiple drives added to later versions.
- Routinely delivered latest version for Blackbox and Whitebox testing to QA Engineers.
- Built entire application from scratch for production as sole developer.