Anusha Dharmasena

Software Engineer

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Address:	Oakleigh East, VIC 3166
Resident status:	Permanent

SKILLS

Software Engineering | Programming in C, C++, C# | ReactJS web apps | Agile Scrum | Software Version Control (SVN, Perforce, git) | Continuous Integration with Jenkins | Japanese Language

EXPERIENCE

Square One Laboratories Pty Ltd., Melbourne (website) – *Embedded Software Engineer/ReactJS developer*

FEBRUARY 2016 - TODATE

(Exposure: MFC, C++, SQLite, FreePascal, React.js, JavaScript, Restful API design, Semantic UI, Express.js)

- Development of a React.js/Reflux.js web app for interfacing with the next generation irrigation controllers. (Ongoing and constantly evolving)
    - Primarily working on the monitoring and controlling modules, and expanding the system designer module.
    - Designed a RESTful interface for communicating with the test server which was built using Node.js/Express.js.
- Designed ‘Sensor log visualiser’ tool to visualise the sensor and event log data from an irrigation controller (version 1.0 released recently)
    - A prototype was required within three days; hence Lazarus IDE was for rapid application development, despite lacking any past experience with this IDE nor FreePascal.
    - Added new features such as saving current state, ability to load multiple logs in tabs, ability to reload the view when receiving new data and a user friendly navigator.
    - Optimised algorithms to speedup launching of the application and drawing of the charts, by intelligently skipping redundant operations.
- Refactored the source code of an existing firmware management software for better maintainability.

Metatechno Inc., Japan (website) – *Systems Engineer*

APRIL 2012 - DECEMBER 2015

(Exposure: C, C++, C#, Agile Scrum, Jenkins, Version control with Perforce, Visual Studio, Multithreading, Hotspot analysis, Debugging)

- Transformed the Canon Windows V4 printer driver to be able to replace the aging V3 driver.
    - Ported features from the V3 driver including polygon fill path optimisation, halftoning with 10-bit dither & error diffusion and toner utilisation reduction.
    - Upon the conclusion of Phase 1, achieved output identical to that of the V3 driver with 94% of test data; and performance exceeding the V3 driver in 61% of the times.

  - Analysed potential issues caused by eliminating the intermediate rasterization process to improve performance, and prototyped alpha simulation to resolve them.
  - Wrote scripts to be executed by the Jenkins server to automate tests.
  - Analysed the differences between the output of the V3 drivers and the V4 driver reported by the QA team and collaborated with the Form Manager team to resolve them.
  - Mentored a young engineer about efficient programming and common practices.

- Resolved bugs in the Fill Path Simplification Algorithm which was ported to the V4 driver from the V3 driver at an earlier stage.
  - Analysed ancient source code which lacked concise documentation, created flow-charts for the entire process and shared knowledge within the team by verbally and by updating the internal team Wiki with additional illustrations for future reference.

- Designed an SVG filter for the Canon corporate cloud printing service to preview PDF files that were stored on a remote server, quickly & efficiently on iOS and Android devices.
  - Created a detailed specification document explaining the relationship between input PDF commands and the output SVG commands.
  - Designed and implemented all the command conversion modules (Images, Fill Paths and Stroke Paths) except the font conversion module.
  - Designed multiple SVG file layouts to compare rendering speeds on tablets, analysed their effect on performance and combined them to achieve the best results.
  - The SVG files that were generated by the filter opened faster than the original PDF files in 77% of the test cases, while matching or exceeding the accuracy of the output offered by commercial PDF to SVG converters such as Adobe Illustrator in 93% of the cases.

- Enhanced the print quality in situations where objects with different attributes such as Images, Graphics & Text were unnecessarily combined together as a single image.
  - Engineered two solutions to split & transmit the objects and expressed pros and cons of each for decision making.
  - Implemented the 2nd solution in both the XPS printer driver and the corporate cloud printing service.

- Designed an automation test tool to conduct performance tests of the XPS and V4 drivers, by modernizing and combining two existing MFC test tools.
  - The resulting tests could be performed six times faster, which permitted us to increase the data set to improve the accuracy of results.

- Designed a tool to analyse and filter images uploaded to Canon PhotoPresso service, where automatic image enhancements could result in white areas turning light pink or light blue.

- Refactored the source code of the module which generates drawing commands for the printer in the V4 driver, which exceeded 7500 lines.
  - Carried it out autonomously and concluded it in half the time that was allocated for it.

    - Regression tests nor the review team were able discover bugs in the refactored code.

- Debugged several memory-related errors in the Font Engine of the next generation Inkjet printers without any prior experience in working with its source code.

Metatechno Inc., Japan – *Software Engineer*
MAY 2010 - MARCH 2012

(Exposure: C, C++, VS2005/2008, Subversion, Object Oriented Design, Optimisation, MFC, WDK PREfast, VTune)

- Unified the source code of the module which generates drawing commands for the printer in the XPS driver and the Canon corporate cloud printing service, in order to start development of the V4 driver.
    - Converted the source code from semi-procedural code to fully object-oriented code.
- Expanded feature support of existing test tools.
    - Added halftone support and ability to load different classes of rendering modules in the V3 driver's Test Harness application.
    - Added edge smoothing and toner aligning support for the test tool of the renderer.
- Analysed and resolved the performance degradation issues of the XPS printer driver
    - Used both Intel VTune and commands log to analyse abnormalities.
    - Optimised performance by omitting transmission of redundant commands.
- Designed a prototype to resolve a print failure due to insufficient memory, when poster-sized documents were printed from the Canon PosterArtist application.
    - Compressed, in memory, the large image objects received from the interpreter, to lower the memory consumption until the final rendered image was generated.
- Performed PREfast checks on code and fixed reported errors & warnings which could potentially cause unexpected runtime behaviours in the printer driver.

Metatechno Lanka Company (Private) Ltd, Sri Lanka (website)- *Software Engineer*
MAY 2008 - MAY 2010

(Exposure: HTML, CSS, PHP, JavaScript, AJAX, SQL)

- Developed the company's internal web applications, including the Management Information System using PHP, JavaScript and SQL.
- Tested client specific and company's internal web applications.
    - The test cases written by me caught many of the data input bugs in the UI that escaped the pre-alpha evaluation stages.
- Studied Japanese to communicate effectively after being transferred to the mother company, Metatechno Inc, in Japan.

Anusha Dharmasena

Software Engineer

EDUCATION

University of Colombo - School of Computing, Sri Lanka - *Bachelor of IT*

JANUARY 2006 - DECEMBER 2009 (Effective from 1 JANUARY 2010)

University of Moratuwa, Sri Lanka - *Bachelor of Science (Honours Degree in Electronic & Telecommunication Engineering)*

APRIL 2004 - FEBRUARY 2008 (Effective from 1 JULY 2008)

OTHERS

- Represented Sri Lanka at the 44th International Mathematics Olympiad held in Tokyo in 2003.
- Attended a training session on Agile Scrum at Val Research Institute, Japan.
- Have completed MOOCs (Massive Open Online Courses) related to Algorithms, Cryptography, Machine Learning, Game Theory and Hardware/Software Interface offered on Coursera.org.