

Skills

Languages

Application Programming Interfaces

Tools

Platforms

C/C++, C#, Python, Java

Unity, STL, Boost, OpenGL, Qt, XNA

GDB, Valgrind, WinDbg, Git, Perforce, Visual Studio

Hololens, Android, iOS, Nintendo 3DS, XBOX 360

Employment

Seven+ years of experience in hands-on software development

• WordsAway

May 2016 – Present

Role: Lead Engineer**Unity/iOS Game****Technology: C#, Unity, Python**

- Worked with designers as the only engineer on team to develop the entire game from ground zero
- Implemented Event Aggregator using publisher/subscriber and generics for decoupling modules
- Implemented Trie data structure optimized for space, yielding O(1) word/prefix lookup time
- Implemented player assist for balancing the game, which may be too hard for some people
- Enabled artists to associate FX prefabs with game events by implementing generic Unity components
- Avoided object allocation during gameplay by recycling objects using object pools
- Procedurally generated letters with only one sharing material / texture atlas
- Implemented event and component based infrastructure to easily add new levels
- Each level has its own uniquely defined rules to qualify the gameplay on a 3 star rating system
- Implemented powerups functionality and the cyclic conveyor belt effect
- Designed the powerups to leverage event aggregator which makes adding them, very easy
- Implemented menu navigation (including popups) by dynamically managing multiple scenes
- Implemented swipe and tap functionality for selecting and forming words

• Cavium Inc.

Feb 2014 – Present

Role: Lead Software Engineer**SDK development****Technology: C, C++, Python, GDB, Valgrind**

- Drove the effort to open source SDK & been working on shaping the SDK from version 1
- Fixed memory leaks in the hardware simulator from 1.9Mb to 0 bytes/packet using Valgrind
- Active member of the gatekeeper team to review APIs for performance and memory leaks
- Designed and implemented network topology to simulate single unit, multiple devices to communicate with outside world and each other using TAP interfaces, python and xml config
- Designed the SDK to be device agnostic which allows for a cleaner library distribution to customers
- Implemented plug and play infrastructure for decoupled modules to subscribe to IPC select() calls
- Module owner of the parser block which is responsible for identifying the incoming network packet

• nVidia Graphics

Oct 2012 – Feb 2014

Role: Software Engineer**Graphics Driver development****Technology: C++, WinDbg**

- Implemented power management and a tool which deals with hysteresis for Windows Blue & Win8
- Implemented display context switching on the fly between native GPU and nvidia GPU
- Lead initiative to ensure both new and old features are compliant with changing hardware

• WeAreHolidays Pvt Ltd.

Jan 2012 – Sep 2012

Role: Software Engineer**Leisure Travel Web platform (Startup)****Technology: Java, JPA, Maven, Struts 2, Spring 3, MySQL, Guava**

- Developed the core API of the product, with performance and design as its key focus
- Product owner for design and implementing service layer, minimising DB hits
- Designed and implemented entity relationships with graph traversal
- Integrating external APIs for rapid prototyping new ideas
- Lead team of 3 people to deliver product with zero codebase and crazy timelines

- Defined agile processes to improve productivity and bring visibility in team performance
- **hi5 Networks, San Francisco (USA)** May 2011 – Oct 2011
Role: Software Engineer
Social gaming/commerce platform
Technology: Java, (ASP.NET) C#, WCF, SQL Server 2010
 - Developed commerce portal with a pluggable architecture integrating multiple payment providers
 - Developed end-to-end Credit Card payment system with PCI security compliance
 - Developed Analytics API which enabled game developers to publish events consumed by BI team
 - Following agile processes, consistently delivered milestones on time
- **Verizon FIOS, Texas (USA)** Nov 2010 – Apr 2011
Role: Software Engineer (**Contractor**)
Technology: C++ , Python
 - Developing framework for inserting ads in HTTP live video streaming on server side
 - Developing product to enable live Video streaming through internet across different devices
 - Prototype adaptive bitrate video streaming media player on android OS
 - Maintain legacy code and integrate it with newly developed product for backward compatibility
- **Electronic Arts, NC (USA)** July 2010 – Oct 2010
Role: Software Engineer (**Contractor**)
FIFA 3DS (Nintendo 3DS)
Technology: C++ , C#, ActionScript2, Nant Scripts, Python
 - Extended rendering primitives to support in-game User Interface elements in depth
 - Collaborated extensively with the UI designer to get Flash/ActionScript screens working in game
 - Modified asset pipeline using Nant scripts to support new game modes
 - Moderated C#/Nant scripts which dealt with compiling all the assets of the game
 - Setup compiler defines to handle build configurations in sync with other dependency packages
 - Worked closely with other team members to ensure project deliverables are completed on-schedule
- **Charlotte Visualization Center, Charlotte (USA)** July 2009 – June 2010
Role: Research Staff
Technology: C++ , OpenGL, Qt, CGAL, Boost
 - Developed software for reconstructing terrain-surface using Marching Triangle Algorithm
 - Implemented Delaunay Triangulation constraint over point cloud (LIDAR data)
 - Implemented renderer in OpenGL to view the CGAL Polyhedron model
 - Studied computational geometry concepts such as Polyhedron and half-edge data structures

Independent Projects

- **HoloHear (Hololens)** [Youtube video](#)
 - Developed app for people with hearing disabilities to translate words to sign language in realtime
 - The app won first prize amidst 20 teams at the Microsoft SF Hololens hackathon
- **Kolor (PC)** [brainydexter.github.io](https://github.com/brainydexter)
Technology: C++ , OpenGL, Qt Framework, Boost, OpenGL Mathematics
 - Designed 3D First Person Shooter with a unique game mechanic of claiming enemies by coloring
 - Developed collada-DAE importer to use 3D models into the game
 - Implemented custom Frame Transformation classes & First-Person Camera
 - Generated Collision detection Bounding Spheres hierarchy information for the imported DAE model
 - Implemented efficient hash-based collision detection/resolution for players and bullets
 - Improved rendering performance using Vertex Buffer Objects
- **High Dynamic Range Images**
Technology: Matlab
 - Implemented HDR algorithm to retrieve the original color response function for a natural scene
 - Final image result closely resembles natural scene and lighting conditions as seen with naked eye

Education

University of North Carolina, Charlotte
 MS in Computer Science (Graphics and Visualization)

May 2010
 GPA: 3.8/4.00

U.P. Technical University, Lucknow(India)
 BS in Computer Science (Software Development)

July 2006