

## Skills

### Languages

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

### Application Programming Interfaces

Unity, STL, Boost, OpenGL, Qt, XNA

### Tools

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

### Platforms

Hololens, iOS, Nintendo 3DS, XBOX 360

## Employment

7+ years of experience in hands-on software development

### • WordsAway

May 2016 – Present

**Role:** Lead Engineer[brainydexter.github.io](http://brainydexter.github.io)

#### Unity/iOS Game

#### Technology: C#, Unity, Python

- Collaborated with designers as the only engineer on team to develop the entire game from scratch
- Architected 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
- Developed a level editor for designers to adjust the game play & build new levels
- 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 optimized to use only one sharing material / texture atlas
- Implemented event and component based infrastructure to easily add new levels
- Designed & implemented special powerups based on event aggregator module
- Implemented menu navigation (including popups) by dynamically loading different scenes
- Dynamically updating letters using shaders to reflect score multipliers / selected state

### • 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**
  - Implemented rendering primitives to support in-game User Interface elements in depth
  - Collaborated extensively with the UI designer to get menu system working in game
  - Managed the build process to support asset pipeline & multiple build configurations
  - 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 renderer in OpenGL/C++ to reconstruct terrain from LIDAR data
  - Implemented Marching Triangle algorithm and Delaunay Triangulation constraint over LIDAR data

## Independent Projects

- HoloHear (Hololens)** [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](http://brainydexter.github.io)  
**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** May 2010  
 MS in Computer Science (Graphics and Visualization) GPA: 3.8/4.00

**U.P. Technical University, Lucknow(India)** July 2006  
 BS in Computer Science (Software Development)