# **Matcha Veera Venkata Basava Raju**

# **Senior Android Technical lead / Android Architect**

# **Basavarm123@gmail.com**

# **469-638-8883**

* Innovative professional with **19 Years of progressive experience** and continued success as **Senior Android Technical Lead, Android Architect, Senior Engineering Manager, Technical Lead / Development Lead and Multimedia Software Programmer / Analyst**.
* 19 Years of very good experience in design and development of embedded real-time software, standalone desktop application development, **Mobile Applications in Android**, Symbian OS.
* 13 Years of very good experience in **ANDROID APPLICATION Development** and **MULTIMEDIA SOFTWARE and MIDDLEWARE** Development.

# **Professional summary**

* More than **13 years of experience** in design, development, implementation, and testing of Android applications and Core Java with interest in further development in this area and development of great user experience for the end-user applications.
* 3 Years of very good development experience in  **Kotlin**.
* Very good experience in **Coroutines**.
* Good Knowledge in **ADB commands,** **Android Framework**, **Android System Apps,** **Android Java,** and **Core Java** etc.
* Good Experience in Android development which includes **Activities, Services, Content Providers, Broadcast Receivers, Shared Preferences, Intents, Fragments, Async Tasks, Recycler Views, Adapters, Material Design, Location services and Android framework API's**.
* Very good experience in Jetpack components like: **Databinding, Binding Adapters, View Model, Live Data** and **Room library**.
* In-depth knowledge and ​experience​ ​in​ ​using​ **Android Studio**​ ​and​ **Eclipse**​ ​with​ ADT​ ​​plugin​ ​and​ ​working​ ​with​ ​several​ versions​​ ​of **Android**​​**SDK**​ ​like **Eclair, Froyo, Gingerbread, Honeycomb, Ice Cream Sandwich, Jellybean, ​ ​KitKat, ​ ​Lollipop​, ​Marshmallow, Nougat and Oreo, Pie, Android 10, Android 11**.
* Experience in building multithreaded applications using **Threads, Runnable,** **Message Queues, Loopers and Handlers, Handler Threads**.
* ​Very ​​good​ ​at​ ​**MVC** (Model-View-Controller), ​ **MVP** (​Model-View-Presenter), **MVVM**​ (Model–View–View Model) Design Patterns​.
* Very good at **Creational, Structural and Behavioral Java Design Patterns** and​ **SOLID State Principles** of Object-Oriented Design.
* Good Experience on 3rd party libraries like **Dagger**, **RX-Java**, **RX-Kotlin**, and **RX-Android**.
* Knowledge​ ​of​ ​and very good experience in using libraries ​like​: **Retrofit, OkHttp,** ​**Room,** **GSON,**​ **Volley,** ​​ **Picasso**​**,**​​ **Butter knife,**​​**Green DAO,**​​**Flurry** and​​**Google**​​**Analytics**​​for​analytics​.
* Experience in consuming APIs to interact with other applications using **REST** and **SOAP** based Web Services.
* Experience​ ​in​ ​dealing​ ​with​ ​both​ **REST**​ ​​and​ **​SOAP**​ ​based​ ​Web​ Services​ ​​to​ ​fetch​ ​data​ ​and​ parsing​ ​​of​ **​XML**​ ​and​ **​JSON** response​ ​using different​ ​parsers.
* Experience​ ​in​ understanding the Micro Service APIs in Swagger Documents.
* Experience in the usage of **Unit testing** frameworks like: **Junit 5, Mockito,** and UI testing frameworks like: **Espresso** and **Robotium**.
* Experience​ ​in​ ​memory​ ​management, ​caching, ​imaging, ​storage​ and​​ ​ability​ ​to​ ​retrieve ​​and​ ​update information​ ​securely​ ​using​ ​Cloud​ ​APIs​ ​like​ ​Firebase.
* Expertise​ ​in​ ​integration of ​Facebook, ​Twitter, ​Google, ​Maps ​V2 and​ ​other​ ​open ​source​ ​APIs. ​
* Experience​ ​in​ ​**Gradle, ANT, ​​Jenkins ​​and​ ​Maven**​ ​build​ tools.
* Has experience in porting the algorithms developed in Cafe and Tensor Flow to other platforms like **Android**, **OpenCL**.
* Very Good in **Data Structures and Algorithms**, **problem solving skills**.
* Implemented **Google Map APIs** for displaying required data in a map view.
* Experience​ ​in​ ​Android​ ​Design​ ​Guidelines​ ​and​ ​designing​ UI/UX​ ​​layouts​ ​using various​ ​ Android Layouts, ​Android​ ​ native ​widgets​ ​and​ ​custom​ ​widgets​ ​and​ creating ​android​ ​custom ​UI components.​
* Extensively worked on **memory leaks, data offline usage, push notifications, multiple screen support**, **accounts, and sync** on Android.
* Experience in an **Agile Software Development** environment using **AGILE** methods like **SCRUM** and **Waterfall model**.
* Have hands-on experience in complete **Software Development Life Cycle** with very good **Mobile OS domain knowledge**.
* Ability to grasp and master new technologies, excellent analytical and problem-solving skills.
* Able to take initiative, work independently and as a team player and motivate the team to achieve desired targets.

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| **Programming Languages** | Expert in **Android** **Application Development and Android Middleware Development**.Expert in **Core Java, Android Java**.Proficient in  **Kotlin, Kotlin Coroutines**.Expert in **Java Design Patterns and SOLID-State Principles** of Object-Oriented Design.Expert in **Python** Code Development.Expert in **Perl** Code Development.Expert in **C++** and **Data Structures,**Expert in **C** and **Data Structures**,Expert in **Data Structures**, **Algorithms,** and **problem-solving skills**. |
| **Operating Systems** | Linux, UNIX, Mac OS, Win 2000 Server, Windows XP, Win3k, Windows 2008, Windows 7 / 8.1 / 10. |
| **Mobile Platforms** | Android, Symbian, Bada (Samsung Proprietary), Feature Phones. |
| **Data Exchange Formats** | HTML, XML, JSON, DOM/SAX Parsers. |
| **Scripting Languages** | HTML, Java Script, CSS, AJAX. |
| **SDLC Methodologies** | Waterfall, V-Model, Agile. |
| **Database Querying** | Oracle PL SQL, SQLITE 3, MS SQL Server, MySQL, jQuery. |
| **PYTHON IDEs** | Anaconda Navigator, Jupyter Lab, Jupyter Notebook, PyCharm, Glue viz. |
| **IDEs** | Android Studio, Eclipse, Microsoft Visual Studio 2008/2005/2003, Microsoft Visual C++ 6.0, Nokia Code Warrior, Source Insight, Cygwin. |
| **Simulators** | Android SDK, Samsung proprietary simulators. |
| **Mobile Cloud Tools** | Perfecto Mobile, Device Anywhere. |
| **Debugging Tools** | ADB, Trace view, DDMS, Microsoft Visual Studio Debugger, JTag and GDB. |
| **Testing Tools** | NUNIT, NANT and Microsoft Unit testing tools. |
| **Packet Analyzers** | Ethereal / Wire shark. |
| **Qualcomm Tools** | QXDM, QPST, QCAT. |
| **Version Control Tools** | Perforce, Clear Case, Tortoise SVN, CVS, SVN, Gerrit and Git. |
| **Quality Control Tools** | Bugzilla, Redmine, JIRA and Rational Clear Quest. |
| **Package Tools** | MS Office 97/2000 (Word, Excel, PowerPoint), Open Office. |
| **Multimedia Protocols** | MTP, RTP, RTCP and Various RTP Payload Formats, RFCs for RTP Data Tx: AMR-NB, AMR-WB, MP3, H.263, H.264, MPEG4A, MPEG4V, RTSP, HTTP1.1, SDP, SIP, VoIP. |

# **Education details:**

**National Institute of Technology (erstwhile REC), WARANGAL, INDIA.**

***Bachelor of Technology in Electronics and Communication Engineering, (1999 - 2003).***

* Percentage: 71.67%.
* Graduated in First Class with Distinction, ranking 7th in a class of 80.

#  **Achievements:**

* Achieved **“*ToQ (Team of the Quarter Award)*”** for the quarter July-September 2008 “In recognition of showing Sasken capability by consistently delivering high quality Media Player Engine Solution, in the toughest Japanese market.” The Media Transfer Protocol Engine module was successfully delivered to the customer (NEC, JAPAN) for the Varuna models 907i and N-02A within the time frame allotted with excellent quality. Has done excellent software defect management by rigorous testing and fixing bugs prior to customer testing and minimizing the problem reports by the customer (NEC, JAPAN). Has received special appreciation in this regard from the customer (NEC, JAPAN).
* Received **“*Hall of Fame - Spot Award*”** in recognition for the commitment towards the quick ramp and the development of various audio and video Multimedia Components for RTP data transfer in the Multimedia Stack with excellent quality before the allotted time frame. Received customer appreciation in this regard (Motorola France and Motorola Italy).

## **Travel to On-Site Locations:**

* Ford Motor Company – Detroit, Michigan (May 2019 – Present).
* Sprint Nextel Corporation – Overland Park, Kansas (June 2017 – April 2019).
* SAMSUNG, Suwon, South Korea (August 2013 – February 2014).
* SAMSUNG, Hon Kong (August 2012 – May 2013).
* NEC and DoCoMo, Tokyo, JAPAN (October 2007 – September 2008).
* Analog Devices India Pvt Ltd, Hyderabad, INDIA (July 2004 – January 2005).

# **Professional Experience:**

1. **Ford Motor Company – Detroit, Michigan**

**Senior Android Technical Lead May 2019 – Present**

**Responsibilities:**

**Android Development & Enhancements**

* Determine technical feasibility and practicality of product enhancement ideas and provide Technical Solutions for all the enhancements defined in the Ford Pass Application.
* Effort Estimation and Setting expectations for the deliverables with the project managers.
* Develop the android deliverables (APKs) for different products and responsible for timely delivery of different features in the Ford Pass Application.
* Analyze impacts of any New Enhancement Change Requests.
* Conduct overall design walk-throughs with all the teams involved like UX design team, technical architect teams etc for the features requested and then propose a workable solution that fits into the architecture of Ford Pass Application.
* Ensure adherence to Ford quality processes and practices while development. Developing code using TDD approach.
* Develop sufficient Unit test cases and UX test cases for the developed code.
* Close monitoring of the deliverables and help resolve any risk items for the product deliveries.
* Plan for any potential problems and mitigate risks for delivery of the product features.
* Serve as an Android anchor point for other components on any product development involving android deliverables.
* Assist in evaluation of new technologies, new product ideas and software products to determine feasibility and desirability of deploying those features in the product.

**Research & Developmental Activities**

* Brainstorm on various product enhancements to create better versions of Ford Pass Android Application.
* Provide Technical Guidance to various innovations and enhancements in Ford Pass Android Application.
* Be abreast with all latest technical advancements in mobile device trends and solutions and propose new ideas.

**Environment:**

* Android **Java** Programming in Android Studio environment.
* Used **Rx Java** in FORD Pass Application.
* Android **Kotlin** Programming and **Kotlin** **Coroutines** in Android Studio environment.
* Used **Rx Kotlin** in FORD Pass Application.
* Used **Dagger** DependencyInjection Framework libraries and concepts in FORD Pass Application.
* User **MVVM**​ (Model–View–View Model) **Design Patterns**​. ​
* Used Jetpack components like: **Databinding, Binding Adapters, View Model, Live Data** and **Room library**.
* Used​ ​libraries ​ like​: **Retrofit, OkHttp,** ​**Room,** **GSON**​.
* Used multithreaded applications using **Threads, Runnable,** **Message Queues, Loopers and Handlers**.
1. **Sprint Nextel Corporation – Overland Park, Kansas**

**Senior Android Technical Lead June 2017 – April 2019**

**Responsibilities:**

**Android Development & Enhancements**

* Determine technical feasibility and practicality of product enhancement ideas and provide Technical Solutions for all the enhancements defined for the products.
* Ensure product architecture and implementation is maintainable and extendable to accommodate future development and maintenance (architecture documentation and architecture design review).
* Effort Estimation and Setting expectations for the deliverables with the project managers.
* Manage the development of android deliverables (APKs) for different products and responsible for timely delivery.
* Analyze change impacts for any New Enhancement Requests.
* Conduct overall design walk-throughs with all the teams involved.
* Ensure adherence to bench-mark quality processes and practices while development.
* Close monitoring of the deliverables and solve any risk items for the product deliveries.
* Plan for any potential problems and mitigate risks to product or to the team.
* Serve as focal point for other departments on any product development involving android deliverables.
* Facilitate communication upward and across project teams about product status, justifications for variances and technical information (architecture, design, and implementation objectives).
* Assist in evaluation of new technologies and software products to determine feasibility and desirability of deploying them within the Company.

**Research & Developmental Activities**

* Brainstorm on various product enhancements to create better versions of existing Pervacio products.
* Provide Technical Guidance to various innovations in all products at Pervacio.
* Be abreast with all latest technical advancements in mobile device trends and solutions and propose new ideas for product development at Pervacio.
* Innovate and Create Next generation of Mobile Device Management solutions for Pervacio.

**Environment:** AndroidJava Programming in Android Studio environment.

1. **Pervacio India (All Pervacio Customers)**

**Senior Android Engineering Manager January 2015 – May 2017**

**Responsibilities:**

**Product Development & Enhancements**

* Determine technical feasibility and practicality of product enhancement ideas and provide Technical Solutions for all the enhancements defined for the products.
* Direct the development and design of software modules that provide all the desired functionalities and performance parameters desired by the indenters of Change Requests viz. the Program Managers, Field Service Engineers and Product Managers of all the solutions of Pervacio.
* Ensure product architecture and implementation is maintainable and extendable to accommodate future development and maintenance (architecture documentation and architecture design review).
* Effort Estimation and Setting expectations for the deliverables with the project managers.
* Manage the development of android deliverables (APKs) for different products and responsible for timely delivery.
* Analyze change impacts for any New Enhancement Requests.
* Conduct overall design walk-throughs with all the teams involved.
* Ensure adherence to bench-mark quality processes and practices while development.
* Close monitoring of the deliverables and solve any risk items for the product deliveries.
* Plan for any potential problems and mitigate risks to product or to the team.
* Disseminate information, in a timely manner, to all stake holders on any roadblocks or potential delays in the product deliveries.
* Constantly work to increase retention within the team, analyze causes for attrition and manage attrition in line with organizational norms.
* Evaluate and implement suggestions put forward by the team members and co-ordinate with other teams across the organization to evaluate / implement cross-team / pan-organizational suggestions.
* Serve as focal point for other departments on any product development involving android deliverables.
* Facilitate communication upward and across project teams about product status, justifications for variances and technical information (architecture, design and implementation objectives).
* Assist in evaluation of new technologies and software products to determine feasibility and desirability of deploying them within the Company.

**Research & Developmental Activities**

* Brainstorm on various product enhancements to create better versions of existing Pervacio products.
* Provide Technical Guidance to various innovations in all products at Pervacio.
* Be abreast with all latest technical advancements in mobile device trends and solutions and propose new ideas for product development at Pervacio.
* Innovate and Create Next generation of Mobile Device Management solutions for Pervacio.

**Environment:** AndroidJava Programming in Android Studio environment.

1. **Samsung R&D Institute India, Bengaluru**

**Technical Lead October 2009 – December 2014**

1. **S-Voice Client application for SAMSUNG GALAXY – S6 handsets.**

**Responsibilities:**

As per requirements for this S-Voice Client Project developed code for the domains: Alarm, Calender, Navigation, POI, News, Music, Settings modules. Has integrated this into the common framework of S-Voice Client and has been responsible for the complete software delivery of this feature, which includes the following responsibilities.

* Has done coding for the implementation of the domains: Alarm, Calender, Navigation, POI, News, Music, Settings modules.
* Has done changes in common S-Voice Client framework and integrates the above domains into it.
* Has done improvement of the db querying of these domains with the databases of the native applications.
* Has tested the complete S-Voice Client solution in the live setup network.
* Technically groomed 3 engineers over these modules and guided them in support for development, bug fixing of these modules.
* Handled the issues raised on development of these modules.
* Has done necessary Project Planning and Project Tracking for successful delivery of this feature.

**Environment:** AndroidJava Programming in Eclipse environment.

1. **Implementation of Flute Protocol and Raptor and RaptorQ FEC Schemes in eMBMS solution**

**Responsibilities:**

* Has done coding for the implementation of FLUTE and FEC modules.
* Has done changes in eMBMS framework and integrates the FLUTE and FEC modules.
* Has done Keyed Vector pair implementation of the FLUTE module to speed up the access to a specified block.
* Has tested the complete eMBMS solution in anritsu and live setup network present in HQ.
* Technically groomed 2 engineers over these multimedia modules and guided them in support for development,

bug fixing of these modules.

* Handled the issues raised on development of the FLUTE and FEC modules.
* Has done necessary Project Planning and Project Tracking for successful delivery of this feature.

**Environment:** AndroidJava Programming in Eclipse environment.

1. **Implementation of Transcoding feature in Gallery application for next SAMSUNG GALAXY - J handsets.**

**Responsibilities:**

* Created the 3-tier technical architecture of the complete feature of transcoding.
* Has done coding for the parameter calculation module, transcoding specific feature implementation.
* Has done changes in Gallery module required to integrate the transcoding feature.
* Integrated the transcoding module with the under lying transcoding library.
* Integrated the intermediate transcoding feature with the Gallery application and MMS application.
* Developed design document for this complete development.
* Technically groomed 1 engineer over these multimedia modules and guided them in support for development,

bug fixing of these modules.

* Handled the issues raised on development of the transcoding feature.
* Has done necessary Project Planning and Project Tracking for successful delivery of this feature.
* Has done android version migrations of this feature to other SAMSUNG devices too.

**Environment:** AndroidJava Programming in Eclipse environment.

1. **Android OS Up gradation of multimedia modules like Music Player, Video Player, Voice Recorder, Gallery and Myfiles for BENNETT, RANT-3, VINO-E, VITAL-2, GAUDI and GALAXY S-2 and S-3 handsets.**

**Responsibilities:**

* Has done Operator specific feature implementation.
* Has done Commercialization of various these Samsung Android based handsets.
* Has done android version migrations for these handsets.
* Developed operator specific features in Music Player like Shop functionality implementation, Visualization, Equalizer, Sound effects after gathering requirements from customer.
* Developed design document for Music Player, Video Player and Voice Recorder applications.
* Technically groomed 4 engineers over these multimedia modules and guided them in support for development,

bug fixing of these modules.

* Handled the issues raised on these software modules during various sets of releases.
* Has done necessary Project Planning and Project Tracking for successful delivery of this project.

**Environment:** AndroidJava Programming in Eclipse environment.

1. **Addition of Music Player, Video Player and Voice Recorder modules in Android on ATLAS, GARNETT and Stealth-V handsets.**

**Responsibilities:**

* Has done the Analysis for the Requirements of these modules and conducted the required technical study.
* Has done the Effort estimation for the delivery of these software modules.
* Designed the GUI and control flow at the application level for all these three modules.
* Coded for the implementation of these modules.
* Has designed and executed the Initial developer UNIT Test cases for testing these software modules.
* Handled the issues raised on these software modules during various sets of releases.
* Technically groomed 5 engineers over these multimedia modules and guided them in support for development, bug fixing of these modules.
* Has done necessary Project Planning and Project Tracking for successful delivery of this project.

**Environment:** AndroidJava Programming in Eclipse environment.

1. **Implementation of Dream Shot Feature in Camera module on BTQ Handsets in WPP Platform.**

**Responsibilities and Contribution:**

* Has done the Analysis of the Requirements of these modules and conducted the required technical study.
* Has done the Effort estimation for the delivery of these software modules.
* Has done necessary Project Planning and Project Tracking for successful delivery of this project.
* Understand the code flow of the existing Camera module present in the BTQ handsets and designed for the addition of the Dream Shot feature within.
* Has done Coding for the implementation of this feature in the Camera module.
* Technically groomed 2 engineers over the feature that has to be added to the Camera application and guide them for delivery of the requisites.
* Handled the issues raised for refinement of this feature.
* Has been doing necessary Project Planning and Project Tracking for smooth delivery of this feature.

**Environment:** AndroidJava Programming in Eclipse environment.

1. **Sasken Communications Technologies Ltd**

**Senior Software Engineer April 2004 – September 2009**

1. **Addition of Device Stage 7 feature (MTP Device Services) for Sasken Media Transfer Protocol Engine to be compatible with Windows 7 OS.**

**Responsibilities:**

* Study and Experiment with MTP Device Simulator.
* Study of Device Stage 7 feature extension in MTP Device Services specification.
* Develop Device Metadata package for the OMAP2430 (H5) board for it to be identified by the Device Stage initiator in Windows 7 OS.
* Understand all the new MTP commands, MTP data flow and MTP responses supported for supporting Device Services.
* Design the data structures for holding the metadata of the device services for the MTP device.
* Code for the implementation of holding these metadata of the device services for the MTP device.
* Technically groom an engineer over the existing MTP Engine and the new feature MTP device services and guide her in coding some of the new commands supported in this Device Stage 7.
* Has been doing necessary Project Planning and Project Tracking.

**Environment:** C Programming in Visual Studio 2008 environment and C Programming in Linux environment.

1. **Upgradation of Sasken Media Transfer Protocol Engine.**
2. **Development and Testing for the support for Album Art in MTP Engine.**
3. **Improvement in the Deinitialization time of the MTP Engine.**

**Responsibilities:**

* Understood the requirement for the development and modifications to be done in the existing MTP Engine and the MTP Database module for the support of object format Abstract Audio Album (0xba03).
* Designed and Coded for the development and modifications to be done to the existing MTP Engine and the MTP Database module for the support of object format Abstract Audio Album (0xba03) and to store all the properties of it’s properties.
* Has done UNIT testing of the developed support for the three formats added in MTP Service and the modifications done in the existing MTP Engine.
* Has done SYSTEM level testing on the Varuna phone 907i and N-02A at NEC, JAPAN.
* Has interacted with the customer (NEC, JAPAN) in all the technical discussions over the developed support for the three formats added in the MTP Service and the modifications done in the existing MTP Engine.
* Has done bug fixing for the bugs risen in the rigorous testing done at the Tamagawa Plant of NEC, JAPAN.
* Has done necessary Project Planning and Project Tracking and produced necessary Project status reports and provided to the customer (NEC, JAPAN) on a weekly basis.
* Has interacted with the customer in all Technical Discussions and Project Status Review Meetings while in JAPAN.

**Environment:** C Programming in Visual Studio 2008 environment and C Programming in Linux environment.

1. **Development and Testing of Database module for storing all the properties of all the object formats supported by MTP Engine.**

**Responsibilities:**

* Understood the requirement for the development of database module in MTP Engine.
* Designed and Coded for the implementation of database module to maintain and store the properties of MTP objects in MTP Engine.
* Has done UNIT testing of the developed database module in MTP Engine.
* Has done H5 testing on OMAPLINUX board of the developed database module in MTP Engine.
* Has done SYSTEM level testing on the phone FOMA N906i at NEC, JAPAN.
* Has interacted with the customer (NEC, JAPAN) in the technical discussions over the developed MTP Engine and the developed add on database module.
* Has done bug fixing for the bugs raised in the rigorous testing done at the Tamagawa Plant of NEC, JAPAN.

Has interacted with the customer in all Technical Discussions and Project Status Review Meetings while in JAPAN.

**Environment:** C Programming in Visual Studio 2008 environment and C Programming in Linux environment.

1. **Development of Multimedia components for packing and unpacking of video payloads H.263, H.264 and audio payloads AMR-NB, AMR-WB.**

**Responsibilities:**

* Understood the requirements for the generation of H.263, H.264, AMR-NB and AMR-WB RTP payloads.
* Understood the corresponding RFCs for RTP Payload Format for H.263, H.264, AMR-NB and AMR-WB.
* Designed and Coded for the implementation of packing and unpacking of RTP Packets consisting of H.263, H.264, AMR-NB and AMR-WB payload for various modes.
* Has tested the functionality of the coded modules completely by writing various unit test cases and generated unit test reports.
* Has integrated all the developed multimedia component modules with Sasken RTP engine and has done System Testing successfully with valid input data and generated system test reports.

Has done Bug-fixing and Bug-tracking within the stipulated time frame with good quality.

**Environment:** C Programming in Visual Studio 2008 environment and C Programming in Linux environment.

1. **Development of VoIP application on Magneto Platform**

**Responsibilities:**

* Understood the Wave APIs required for capturing and playing audio data.
* Coded for capturing the audio data, encode it using G711 codec and pack it properly into the RTP packets.
* In the receiving thread able to receive RTP packets and unpacketize them properly and able to extract the audio data from the RTP packets.
* Able to decode the encoded G711 data and deliver it properly to the audio driver.
* Has done very good basic design and coded for capturing recording and receiving and play threads.
* Has integrated the whole RTP module with the SIP module and developed VoIP demo application.
* Has tested the VoIP demo application between two IMATE phones (SP5 and SP5-m) and delivered the developed modules successfully.

**Environment:** C Programming in Visual Studio 2008 environment and C Programming in Linux environment.

1. **Audio Streaming between two x86 boxes.**

**Responsibilities:**

* Understand the OSS device.
* Program the OSS Device to continuously get the PCM data from audio input.
* Packetize the PCM data into RTP Packets and continuously stream over the network.
* On the client side receive the RTP Packets and unpacketize them and extract the PCM data and write to the OSS audio device.
* Session Description Parameters are set for the current session in one x86 machines and are transmitted to another x86 machine. On the other side able to extract SDP data and set the parameters for the RTP data transfer.
* Implemented the RTSP Streaming protocol and able to communicate and transmit audio data to a remote VLC Media Player on another x86 box.

**Environment:** C Programming in Visual Studio 2008 environment and C Programming in Linux environment.

1. **Implementation of Multimedia components for packing of RTP payload for H.263 and RTP Payload for Comfort Noise (CN) required for the RTP data transfer. {RFCs 2190 and RFCs 3389}.**

**Responsibilities:**

* Study and understand the corresponding RFCs 2190 and 3389.
* Understood the Code flow of the Ingenient’s Multimedia Stack.
* Designed and coded for the implementation of the RFCs 2190 and 3389.
* Has tested the functionality of the coded modules completely by writing various unit test cases.
* Real Time testing of the istreamer and ireceiver code bases with input from RTSP streaming servers.
* Has also done Bug-fixing and Bug-tracking.

**Environment:** C Programming in Visual Studio 2008 environment and C Programming in Linux environment.

1. **Implementation of Basic VoIP chain on Blackfin Processor (ADSP BF - 533).**

**Responsibilities and Contribution:**

* Study & understand the functionality of Voice over IP.
* Design the DSP code flow for the overall VoIP chain.
* Code the DSP modules for G711, Tone Generation and VAD-CNG.
* Design the test vectors and do simulation tests for the DSP modules G711, Tone Generation and VAD-CNG.
* Real Time testing of the developed DSP modules G711, Tone Generation and VAD-CNG on the ADSP BF – 533 stand board.
* Integrating the developed DSP modules to achieve the basic functionality of VoIP chain.
* Design and Code for the SLIC module.
* Design and code for the SIP User application on libosip-2.2.1 to establish a SIP call between two linux machines.

Integrating the SIP User application with the VoIP assembly code, AD1836 Driver code and generate ringtones on activation by another SIP User application.

**Environment:** Black Fin – 533 Assembly Level Programming and C Programming in Visual DSP 3.5 environment.

1. **Parameterization and Up gradation of the VoIP chain on ADSP – 2185 Processor to Visual DSP 3.5 tool.**

**Responsibilities and Contribution:**

* Understand the code flow for the VoIP chain and identify the variables to be parameterized and parameterize them.
* Sectionalize the DSP code according to the modules present within.
* Upgrade each of the files in the VDSP 2.0 project to VDSP 3.5 project.
* Convert each of the modules of the VoIP chain into libraries.
* Do simulation level testing for the modules G711, G723, G168 and VAD-CNG.
* Design the Command Line Interface in the Host code for the intake of the values from the user, pack them sufficiently and send it to the DSP, which will be unpacketized and the input values are assigned to the corresponding variables accordingly.
* Modify the Linker Description File according to the changes done while sectionalizing the DSP code.
* Generate the .s and .bin files and do real time testing on VOX – 200 and Path Finder boards.
* Upgrade each of the files in the VDSP 2.0 project to VDSP 3.5 project.
* Update the Memory chart details for the modified code base.

**Environment:** ADSP – 2185 and ADSP – 2187 Assembly Level Programming and C Programming in Visual DSP 2.0 & 3.5 environment.