A-107, SNS Arcade,
Konena Agrahara, Bangalore 17

NEERAJ BAJI

(+91) 8884764494
aneebaji@gmail.com

EMPLOYMENT

Senior Engineer, Mobile Acoustics — **Ittiam Systems** — **FEB 2012 – till date**

ClearRecord – market application reboot

- Developed noise reduction algorithms for audio recordings in different use cases like meetings, traffic , cafes, music concerts, etc.
- Developed custom UI elements for audio rendering and audio editing.
- Took complete product ownership right from competition analysis, deciding on new app features (UI and IP), application architecture, user experience design, actual implementation as well as eventual digital marketing.
- Leading a team of two developers, meeting aggressive deadlines on multiple platforms with an Agile development methodology.
- Expected market release (IOS & Android) – May 2015

Noise robust ASR (pocketSphinx)

- Developed an android app that integrates pocketSphinx and Ittiam's noise reduction to demonstrate improvement in recognition accuracy.
- Use case specific language model adaptation/tuning and creation of contextual grammars.
- Use case specific MAP & MLLR adaptation of acoustic models.

Beamforming on mobile devices

- Developed Ittiam Audio Focus, an Android camcorder app that uses multi mic beamforming to capture noise free videos and allows users to focus on a specific speech source post video capture.
- Developed a multi mic VAD specifically for low SNR use-cases observed with far field mobile device audio capture.
- Improved direction of arrival estimation and devised a modified RGSC structure for optimal noise reduction performance on flagship devices like Samsung Galaxy S4 and Sony Xperia Z.

WebRTC based mobile Acoustics

- Developed IttiamAcoustics, an android based VOIP client based on the WebRTC media engine integrated with Ittiam's echo and noise reduction.
- Tuned Echo cancellation and suppression specifically to handle variances in front end latency on Android devices as well as non-linearity in the audio front end on commercial devices like Nexus7 and Galaxy S4.

Linear mic array beamforming

- Developed a Windows based beamforming POC using Microsoft Kinnect and Windows Audio session API.
- Extended the demo to a TI OMAP4 based system.
- Improved beam rejection and beam switching performance.
- Integrated with Ittiam proprietary media engine. Demoed at CES 2013 with TI.

Misc

- Improved single channel noise estimation performance in fixed point.
- Implemented modified Wiener filter based gain curves for noise and echo suppression resulting in perceptible quality improvement.
- Good knowledge of the Android audio path including AudioRecord, AudioTrack, AudioFlinger(Java), OpenSLES (native) as well as device specific HAL.

Software Engineer — **Robert Bosch** — **JUL 2011 – JAN 2012**

- Customize signal conditioning strategies for various sensors feeding inputs to the Engine Control Units (ECU)

according to customer (GM-North America) requirements.

Assistant Systems Engineer **Tata Consultancy Services** **DEC 2009 – JUN 2011**

TDSCDMA physical layer

- Implemented Physical layer modules in fixed point on TI TMS320C64x DSP cores according to 3GPP specs.
- Implemented Tx modules like **Rate matching** algorithm for multiple transport channels, **Reed Muller** encoder decoder for TFCI bits, **subframe segmentation**, **scrambling code generation**, **physical channel mapping**, user specific **midamble code generation.**

Qualcomm Four Week Build Plan

- Developed a web application allowing Qualcomm engineers, chip designers & product managers to collaborate and track procurement requests for chip components.
- Designed UI pages using **JSF 1.1** and client side functionality using **JQuery.**
- Implemented history functionality, weekly generation of Excel reports using Apache POI and role based edit permissions.

Qualcomm – Portable Hybrid Eectric Vehicle

- Developed a web application that interacts with Qualcomm vehicle parameter loggers mounted on Toyota vehicles allowing Toyota engineers to analyze the logged vehicle parameters.
- Developed a Java object to XML conversion module using XStream.
- Interfaced the application with QPIM, the Qualcomm user authentication web service.

EDUCATION

Vadodara, Gujarat **Maharaja Sayajirao University of Baroda** **Aug 2005 – April 2009**

- B.E. in Electronics Engineering with Minor in Mathematics, April 2009. GPA: 3.95/4.0.
- Undergraduate Coursework: Digital signal Processing, Analog and Digital Communications, Mobile Communication Systems, Embedded Systems, Digital Design, Analog Electronics.

TECHNICAL PROJECTS

Projects

- **Automatic Speech Recognition and Home Automation System** (2009) – Final year undergrad project. Home automation system directed at the differently abled, controlled via speech commands. Implemented in C on a Silabs C8051F120 DSP.
- **Android Push notifications** (2010) - Developed an Android application based on **IBM's MQTT protocol** that implements push notifications for Android versions older than 2.1 before Android C2DM framework was introduced.
- **Stereo Echo Cancellation** (2014) **-** Guided an intern to develop a Matlab based demonstration of Stereo AEC. Implemented a floating point real time version. Developed algorithms to optimally decorrelate signals to achieve required level of convergence.

ADDITIONAL EXPERIENCE AND AWARDS

- **Co-ordinator (2006 – 2009):** Organized a state level event called Prerna for the differently abled for three consecutive years.
- **Technical Excellence Award(2013):** Companywide technical excellence award for contribution to Ittiam's multi mic beamforming demo with TI at CES 2013.

Languages and Technologies

- C; Java; Python; Matlab; R; Objective-C; Spring; Hibernate; JSF;JSON
- Visual Studio; Eclipse; XCode; Git; CVS; SVN
- Android; IOS; Linux; Windows