PRATEEK KUMAR

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EDUCATIONAL BACKGROUND

Examination	Institute	Year	CGPA / %
B.Tech, Computer Science	IIT (ISM),Dhanbad	2013-2017	8.76/10
Intermediate I.S.C	St. Joseph's Inter College, Gorakhpur	2012	88%
Matriculation I.C.S.E	St. Joseph's Inter College, Gorakhpur	2010	90%

PROFESSIONAL EXPERIENCE

Software Engineer – Samsung Research and Development Institute Bangalore June 2017 – Present

- **Samsung Smartthings**: developed the Notification System, service API, Phone and Tablet UI. Developed lightweight, power efficient and fast Client side Notification framework for Smartthings that sends and receives notification to other devices and also collects past notifications from server based on predefined and custom filters. Was awarded **SAMSUNG SPOT AWARD** for the same. Also worked on Native layer of Iotivity common in both Android and IOS.
- **Research Paper on Android Lint Tool optimisation:** Algorithms that finds unused Resource like unused PNG, JPG XMLs etc and dead code in 30% less time than Android official Lint tool. Removing dead code and unused resource helps decrease application size. Awarded **SAMSUNG CITIZEN AWARD** and **SAMSUNG SPOT AWARD** for this optimisation. This also helped Samsung Official Smartthings application raise its play store ratings **from 3.5 to 4.8**. Also worked on suggesting various practices which increases application size. Worked closely with architecture design team to suggest ways so that plug-in in Smartthings takes lesser space, when downloaded.
- **RTSP/RTP plug-in:** for Smartthings android. The plug-in helps stream audio from a smart-device to any other smart devices nearby. The project required audio latency less than 50ms and audio sync amongst multiple-receiving-smart-devices. Market available plug-in don't support multiple clients. Research was required to analyse habitual pattern of users across 15 countries to help develop caches' parameters. Was awarded **SAMSUNG SPOT AWARD** for the inputs.
- **Congets Framework**: from scratch for Smartthings which helps 3rd party developers interact with Smart-Devices via Smartthings application. Also various native applications like Camera app and Call app can control lights and devices' volume based on "device-proximity" feature of framework which searches for all devices which are near to user's Smartphone. This feature is a part of Samsung Flagship phones like Galaxy S20 and Note20.
- **Smartthings Continuity Recommendation:** module to smartly suggest which nearby audio speaker user can use to transfer audio when listening on Spotify, based on location, past preference, music choice etc.

INTERNSHIP AND CERTIFICATION

Development Of College MIS (Management Information System) May 2016 – July 2016

- Worked as Intern in IIT Dhanbad. Aim of the project is to develop Management Information Application to support Office Automation for College's internal works. This system helps in tracking and maintaining various records and also provide platform for information exchange within the institute. Created **Venue Booking System** which takes booking info for a venue within IIT Dhanbad, and provides a workflow of approval, with payment gateways.

Neural Networks Training

- Certificate courses on Building Neural Nets and Aggressive performance improvement strategies. Various methods of how to hone a neural network and how to prevent systems from overtraining.

ACHIEVMENTS

- **PAPER: Android Lint Tool optimisation** – Paper review pending, suggested new algorithms to reduce application size.
- **PATENT:** Automated position and latch locking control mechanism using mobile apps 2016(Appl. No.201631007292).
- **PATENT (GRADE – A1):** intelligent Room Identification in IOT Environment using Device Type Watermarks (2020).
- **SAMSUNG SPOT AWARD 2K17**: for work on IOT client app Smartthings (2017).
- **SAMSUNG SPOT AWARD 2k18:** RTSP streaming framework, enhance it for maximum streams and minimum latency(2018)
- **SAMSUNG SPOT AWARD 2k20:** developing single fetch strategy algorithm to refine memory optimisation techniques.
- **SAMSUNG CITIZEN AWARD 2k19:** Research in developing methods to reduce Android apk size from 150MB to 90MB.

OTHER PROJECTS

- ***ACADEMIC***
  - **Word recognition based on Neural Nets** - Analog Audio wave (raw) manipulation and signal differentiator, using Neural Networks, with defined word domains. Various signal processing algorithms were applied to remove background noise and normalise the input audio vector so that audio from different speakers resembles. Then learning algorithms were applied with to train neural nets to recognise various defined set of words.
  - **Lab View/Arduino Bridge** - Created Application that helps asynchronous Serial based I/O between Arduino and x86 based Lab View (Dataflow programming software - software for applications that require test, measurement, and control with rapid access to hardware and data insights) systems.
  - **Boxing Game: -** A 3d boxing game in OpenGL **without UNITY**, modelling done on **Blender.** Vector parsers were created in java which caches vertices and edges and renders only 210**°** angle view efficiently.
- ***NON ACADEMIC***
  - **Matrox** (Robotics) - Fully automated real world chess, an attempt to put artificial intelligence work with coordination with hardware and play real time chess with actual human. A 2d robotic arm was fed two dimensional vectors to place chess pieces around a chess board. Magnetic sensors were used to determine chess movements made by human player. Then response was calculated by a chess algorithm and fed again to 2D arm to move the chess piece around.
  - Voice Recognition Algorithm designed to **receive, analyze and recognize** voice chunks in RAW/AAC (mpeg4) formats.

TECHNICAL SKILLS

- **Languages** : Languages: C, C++, Java(Advanced), Python(Basic), Kotlin(Basic)
- **Database Management**: MySQL.
- **Web Technologies and Frameworks**: HTML, CSS, Javascipt, Bootstrap, PHP, CodeIgniter.
- **Others**: Android Studio, GIT, Perforce, Source Insight, OpenGL, OpenGL-ES.
- **Neural Libraries**: Python tensor flow and numPy

AREA OF INTEREST

- Android Framework
- Neural Networks
- Deep Learning