AAKASH AGARWAL

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PROFESSIONAL SUMMARY

A dedicated professional with 18+months experience in NLP, Data Science. Specialises in developing new algorithms based on the data trends. Now seeking to be an integral part of an organisation where i can exploit myself in the field of Data Science.

SKILLS

Data Mining/Analysis	Design Verification
Natural Language Processing	System Verilog
Chat Bot Technology	Java
Graph Databases	Python
Scikit-learn	PHP
Gensim/CoreNLP/NLTK	SQL

WORK HISTORY

07/2017 to Current **AI-NLP Lead and Product Manager**

Payjo – *Bangalore*

- Payjo is a AI powered Banking Platform enabling customer to query Bank related information 24/7. We have build products for banks like SBI, Yes Bank, RBl Bank, Bank of Hawaii and few others in the pipeline.
- Developed ML-NLP code for intent detection and entity recognition for banking domain.
- Developed unsupervised clustering algorithm to group unmatched queries to be analysed by bank rep.
- Developed sentiment analysis algorithm to provide unstructured feedback to clients.

- Designed the Payjo Platform to enable Data Analysis and recommendation to help clients build the information fast.

01/2016 to 06/2017 **AI Lead**

Emotix – *Mumbai*

- Emotix is a Robotics Company where we developed Companion Robot (Miko) for children which could interact with children, play with them, teach them new things and various other features.
- Developed Architecture of Miko (Companion Robot) backend based on the feature requirements. Implemented end-to-end AI code.
- Developed ML-NLP code to understand User intent and respond according to it.
- Developed Recommendation Engine to assist user while interacting with Miko. It also generates suggestions for the not-used features so that user gets to know the full scope of Miko.
- Constantly improving algorithms by data mining and analysis of the User Input.
- Developed End-to-End encryption while interacting with Miko.
- Developed Entity Detection model using CRF for various new entities supported by Miko.

06/2013 to 01/2016 **Design Verification Engineer**

Qualcomm – *Bangalore*

- Worked on several MDM, MSM chipset verification environment and developed new test cases for design modules at core level verification and chip level verification
- Developed verification environment from scratch for newly added design modules and identified and documented detailed use cases.
- Developed drivers for Qualcomm's Robotics Processor Dragonboard.

05/2012 to 07/2012 **Research Assistant**

Siemens Corporate Research and Technologies – *Bangalore*

- Developed Gesture Recognition System from Seismic Sensors. Applied this System on

various applications like Auto-Theft detection, Intrusion detection, Controlled Appliances of a Room

- Patent is filed for the Gesture Recognition System with Siemens

06/2011 to 07/2011 **Summer Intern**

ISRO – *Jodhpur*

- Satellite Image Processing to detect water bodies from a 7-band Satellite Image obtained from LANDSAT satellite and develop a MATLAB GUI for it.

08/2011 to 05/2013 **Teaching Assistant**

IIIT-Hyderabad – *Hyderabad*

- Teaching Assistant for 4 courses - Digital Logic and Processors, Intro to VLSI, CMOS RFIC Design and Embedded Hardware.
- Responsibility to teach basics of the courses and help them implement it in the lab.

EDUCATION

2013 **BTech (Hons.)**: **Electronics and Communications**

IIIT-Hyderabad - *Hyderabad*

- 8.26 CGPA

OTHER PROJECTS

- Developed **Intent Detection** code using NLP algorithms. Aim of the project is to take User Input and detect the intent of the input and reply to user based on that. After using several algorithm for feature selection and classification, achieved accuracy of 90%+ with real time detection.
- Developed **Entity Detection** model for various new entities supported by Miko (Companion Robot). It is implemented using CRF with 40+ feature vectors selected based on trial and error.
- Developed **Recommendation Engine** to increase user activity. Aim of the project is to provide user with the closest valid question in case of invalid question or grammatically incorrect question.

Also to present User with the full scope of the product by storing feedback and many other applications.

- Designed **AI backend architecture** of Miko integrating Intent Detection, Entity Detection, Recommendation Engine, End-to-End encryption, graph database and other modules to support various features of Miko.

- Developed **End-to-End encryption** for conversation with Miko. Aim of the project is to secure the communication data between the user and the robot. Symmetric key is used for message communication, asymmetric key to transfer the symmetric key.

- Recurrent **Data Mining/Analysis** to improve the algorithm and data addition for better performance.

- Development of a UVM based test bench for **LMH core level verification:** Limits Management Hardware (LMH) is a controller which de-accelerates processor clock in Snapdragon chipsets. The idea is to reduce the clock edges by swallowing them when the temp or the current flowing is above a threshold level and stabilize the temp and current. This LMh module is connected to the performance processor in order to throttle it whenever needed. The verification involves enhancing test bench for the new features, test plan development, formal verification of the ahb slave and all the other functional blocks.

- Development of a UVM based test bench for **Memory Sub-System core level verification:** Memory sub-system consists of RAM, ROM. Cache controller and SPI controller to access external flash memory. This memory sub-system was new IP as part of the IoT chipset. The verification involves developing test bench from scratch, scoreboard development for Cache Controller, SPI controller, test plan development and formal verification of all the ahb master/slave and other functional blocks.
- **Chlorophyll Based Battery** (Siemen Intern Tech Challenge Project 2012) The idea is to find a stable method by selecting catalysts to perform artificial photosynthesis of water for producing electric charge which can be used. The by-products are oxygen which can be used for making oxygen cylinders and Hydrogen which can be stored and later use as hydrogen fuel. Concept of self-sustainable home.

- Developed drivers for micro-controller attached to Dragonboard: Dragonboard is Qualcomm's Robotics processor like Rasberry Pie. So we attached a micro-controller to dragonboard and developed drivers for many sensors as a part of developing new Robotics platform. This was a hobby

work apart from the regular work. The new prototype will be launched soon.

- **Third Eye** for TI Analog Contest-2011 This project aims at developing a low cost portable real time image processing based Navigation Device For Blind people enabled with directional assistance through speech. This system involves processing a live feedback from a webcam in an OMAP based Beagle Board.

- LPASS Verification at SOC level: Low power Audio Sub-System consists of MI2S, PCM and I2C protocols. Verification involves test plan development, scoreboard development for new features and protocol verification in various modes of the interfaces.

- FPGA Implementation of **Neuro Fuzzy Processor with Adaptive Learning**
(Under guidance of Dr Shubhajit Roy Chowdhary, IIIT Hyderabad; Course: Honour's Project) The idea is to build a processor based on artificial neural network and fuzzy logic. This system is based on a custom neural device which can implement either Multi-Layer Perceptrons or Fuzzy Paradigms. This system is implemented on Cyclone II based Altera FPGA Board.

- Developed and Integrated UVM_REG flow in SoC: The UVM register model provides a way of tracking the register content of a DUT and a convenience layer for accessing register and memory locations within the DUT and thus used for all kind of register por, read/writes, aliasing verification. This register model env is connected to the one of the processors in chipset and used to read/write register from all the other blocks and verify them

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ACHIEVEMENTS

- Awarded 7 Qualstars for project work and organising various events in Qualcomm in my 2 years tenure.
- Awarded 1st Prize(By Audience) and 2nd Prize(By Judges) in Siemens Intern Tech Challenge 2012 for the Project “Chlorophyll Based Battery”
- Awarded Merit of Outstanding Performance for ISRO Project
- Enlisted in the Dean's list for excellence in academic performance for the Monsoon 2011 and Monsoon 2012 semester

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EXPERTISE

- 15+ months experience in NLP, Data Mining and Analysis

- NLP Tools: Stanford CoreNLP, NLTk, Gensim, Scikit-learn, Pandas.
- Skilled in Python, Java, PHP, SQL, System Verilog, Assembly C, Basic Nodejs.
- 30+ months Industry Work Experience in ASIC design verification, writing test case and running regressions.

- Expertise in ASIC/VLSI design flow, functional simulation at Core Level and SoC.
- Verification Methodologies: UVM.
- Simulation tools: ModelSim, VCS, Novas for waveform loading and debugging.
- Scripts: Perl, Bash.
- Excellent troubleshooting and debugging skills.

Personal Information

DOB: 25 years, 13th July 1991

Management Experience

- Leading a small team in Emotix responsible for Miko Backend development and enhancement.
- Finance Head and Member of Technical Team of Robocamp 2011. Robocamp is a 6 day National Level Robotics Workshop conducted by IIIT-H Robotics Club.
- Member of team responsible for organising various Technical Events like King of Breadboard, etc , as part of Felicity 2011 and 2010(annual cultural festival)
- Core Team Member of Design Team which is responsible for organising KALASHETRA, as part of Felicity 2011 and 2010(annual cultural festival).
- Member of Design Team and Organiser of Research and Development (Rnd) Showcase 2010.