Akshay S. Rana

github.com/akshayrana93 | akshay.singh.rana@umontreal.ca | (+1) 438-526-6007

Energetic and passionate student at MILA working towards a Masters in Computer Science (ML) at University de Montreal with 4 years of professional experience in machine learning & software development.

EDUCATION

Master's in Computer Science, Machine Learning **2019 - Present**

MILA - University de Montreal, Quebec, Canada

• Relevant Courses – Fundamentals of Machine Learning, Data Science Course.

Bachelor of Technology, Electronics & Communication **2011 - 2015**

Punjab Technical University, Rayat & Bahra College, Mohali, India

• Relevant Courses – Calculus, Linear Algebra, Data Structures & Algorithms,
OOP concepts & Programming Languages, Operating System, Assembly Language Programming

SKILLS

Machine Learning: Feature Engineering, Regression Models, Markov models, Bayesian Net, Naive Bayes, Generative/Discriminative models, Probabilistic Graphical Models
Deep Learning: Convolution Networks, Sequence Modeling-Recurrent Nets
Data Science: Data - wrangling, cleaning, sampling, visualizing, analyzing. Predicting & summarizing.
Tools & Libs: Keras, TensorFlow, Pytorch, Scikit-learn, Spacy, Pandas, NumPy, Seaborn
Analytical Tools:Apache Spark, Elastic Search, Kibana, Apache Nifi, Apache Superset
Java Frameworks: Hibernate, Struts, Springs, Web Services - (Oracle Certified Professional – Java 8)
Databases: Oracle SQL, MySQL, Arango DB, Mongo DB, Neo4J
Languages: Python, Java, C++, R, SQL

TALKS

- Deep Learning & Convolution Neural Networks – Faculty Development Workshop
  Sri Venkateshwara College of Engineering, Bangalore, India **Jan 2019**
- Adversarial Examples: Attacks and Defenses for Deep Learning
  Accenture AI Research Lab, Accenture, Bangalore, India **Nov 2018**

ACADEMIC PROJECTS

Wireless controlled All Terrain Surveillance Robot

The Arduino 4-wheelrobot was designed to drive over any terrain for use in surveillance with a camera and a Bluetooth transceiver on it, which receives commands from a Smartphone and sends back live feed. Designed the circuit diagram by connecting the camera, transceiver, and motors in place and programmed the microcontroller to control the motors based on the signals received from joystick.

Online Cab Reservation System

Built Cab Reservation software based on Java where the customer could book a cab after filling travel details based on availability and then the driver could login and accept the booking. The front end was developed using Java Springs and the back end was maintained with MySQL and WebLogic Server.

PROFESSIONAL & RESEARCH EXPERIENCE

Team Lead - AI Engineer, *Accenture AI Research Lab, Accenture, Bangalore, India* **Sep 2017– Aug 2019**

Project: Non-Gridded Table Detection &Extraction from Noisy Invoice Documents

- Working on non-gridded table detection using faster regionalconv nets(R-CNN) which computes the region of the table and classifies them into multiple tables.
- Once the table's locationis identified, the relevant information is determined using a combination of Bi-LSTM and CRF that has shown good accuracy for such sequential data.

Project: OntBots – Ontology based chatbots

- Machine Comprehension: Answered the user's queries by keeping contextual articles as the knowledge base and experimented with Bi-Directional Attention Flow (BiDAF) network.
- Since machine comprehension gives less precision and offers less control on the intent, so supplemented it by creating an Ontology using Protégé. Natural language questions were converted into SPARQL queries and then queried in Apache Jena. RDF Triple store was used as the backend for the bot.
- Created a chatbot using Spacy (for NER) and Rasa (for reinforced dialogues). Used techniques like intent classification, entity recognition, context management and slot filling to build the dialogue manager.

Project: AI-powered Competitive Intelligence

- Screen Scraping: Used conv nets on the product flyers to extract product information from the images and categorized them into relevant categories. Also applied NLP techniques on the image description to gather more product information.
- Analytics: Used Elastic Search to index the extracted data and built statistical models on it to examine the patterns and constructed predictive models on product pricing and marketing campaigns.

AI Software Engineer, *Wipro HOLMES, Bangalore, India* **Dec 2016–Aug 2017**

Project Name: Title Insurance Cognition

- Built a document classifier using ensemble learning to distinguish between different types of documents and used topic modeling to identify semantic structures in the document to apply NLP on the relevant sections of the document.
- Extracted the entities using linear chain CRFs and identified the relationship between various entities required for business rules.
- Built a text summarizer using sentiment analysis with Word2Vec and sequence-to-sequence RNNs to fetch short descriptions of the documents.

Java Developer, *Wipro Technologies, Hyderabad, India* **Jul 2015– Nov 2016**

- Created the process flow for a BPM application to implement work distribution for Accounts Payable, deployed multiple instances of the application and gave technical assistance to the team post go live.
- Developed utilities using Java and VBA to create automatic reports and toreduce manual efforts by 80% after integrating ERP/SAP system with existing application to create invoices inthe system using email, FTP transfer, XML files etc.

INTERNSHIPS

Software Intern – *Wipro Technologies, Vizag* **Jan 2015 – Jun 2015**

- Using Java technologies and Oracle SQL, worked on development of in houseapplications of the company toenhance employee's experience.

C#.Net Trainee – *Microsoft IT Academy* **Jan 2014 – Jun 2014**

- Created a lightweight browser using C#.net that internally used IE for its main functioning.

Trainee Embedded Systems – *Centre for Development of Advanced Computing, Mohali* **May 2012 – Jul 2012**

- Worked on embedded system for programming a microcontroller to function as a file transfer device.