**RISHIKA SWARNKAR**

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**Professional Summary:**

Software Developer and Data Scientist with strong interpersonal communication skills and an intrinsic love of algorithms. Looking for real life applications to leverage Business Intelligence using Deep Learning and Machine Learning algorithm to demystify data. While curating software solutions and building information pipelines for streamlined process.

**Education:**

* **Bachelor of Science in Computer Science & Data Science & Mathematics – Lindenwood University, St Charles, MO**

Aug 2018 – Current (Senior)

* **Associates of Arts and Science in Computer Science** – **St. Charles Community College, St Charles, MO**

Jan 2016 - Aug 2018; GPA 3.4

* **Southeast Missouri State University - Cape Girardeau, MO**

Aug 14 – Dec 16;Major: Computer Science

**Leadership Roles:**

* Resident Hall Representative: Tower South – Southeast Missouri State University, 2015
* Senator of College of Science and Technology, Student Government Association – Southeast Missouri State University, 2015

**Work Experience:**

* **Communication Desk Specialist, Communications Desk - Charter Communications**

**Town and Country, MO (11/2018 – Present)**

Pivot of action between 12 Regional Operation Centers, 2 Network Operational Centers, IT Service Operation Center and multiple other components of Charter Communications. Intake from various customer facing departments (80+ Call Center and Store Tools) to escalate and track issues impacting multiple customers including all Spectrum Lines of Business, internal BLUE network and external RED network tool issues.

* Creating alerts to notify company and the executives about service outages that impact large customer groups including high viewership events, fiber cuts, storm events etc. Documenting outages, updates and resolution to provide overview of the event. Threshold Impact: 5000 customers for Primary Service and 10,000 customers for Secondary Service
* Proactively monitoring utilizing dashboard tools to configure widespread trends via APIs Success Rates, error spikes over intervals, call queue, average handle time etc. and using correct escalation path to address the event.

Monitoring Tools: Queues, Quantum, and Guavas;

Escalation Tools: Remedy, ServiceNow

Deflection Tools: IRIS (BMC Software), Interactive Voice Response (IVR) Messaging, ETL Studio

* Quickly mitigating the impact of issue by locking down truck rolls, informing representatives about the event, placing IVR messaging etc.
* Prioritizing multiple ongoing issues while gathering information and escalating through correct channels under exigent circumstances.
* Geographic and forward feed understanding of Spectrum’s market, billers and scope of impact based on various head-ends, Video OnDemand Back-office, KMA (Key Management Areas) etc.
* **KR Solutions St Charles, Small Business Solution -** Software Architect (August 2018 – Present) [**rishika@krsoluntions.biz**](mailto:rishika@krsoluntions.biz)

Deciding cost efficient hosting and developmental architecture. Search Engine Optimization, streamline online advertisements, and marketing, provide database solutions and connections. Analyzing traffic and targeting audience using social media marketing.

* **IT Helpdesk Analyst, St. Charles Community College**

St Charles, MO • 08/2017 - 08/2018

* Provided concise and clear directions to students and staff members via phone tickets and walk-ins.
* Resolved unfamiliar issues by online searches, pattering up with Tier II and Tier III professionals for swift resolution.
* Performed IT projects around the campus to include updating, running and fixing patches in Software, clearing BIOS, setting up the computers for students/faculties.
* **St. Charles Community College - Computer Lab Assistant**

**St Charles, MO • 08/2017 - 08/2018**

* Supervision and guidance to students in the computer lab at the technology building with maximum capacity of 40 students
* Guided students in homework related to Python, C++, Game-maker, Adobe, MS Office Suite etc.
* Learned new software applications and debug software/hardware issues
* Helped students with unfamiliar problems by brainstorming and researching to come up with plan of action

**Programming Skills:**

* OOP: C++, C#, Java
* Front-end: CSS, HTML, XML
* REST API: MEAN stack -MongoDB, Express.JS, Angular.JS, Node.JS
* Database: MYSQL, MongoDB
* IDE*:* Jupyter Notebook, Google Colab, Visual StudioPackages: Pip, CONDA, Android Studio, Eclipse, GitHub, NPM (Node Package Manager), Node, PhpMyAdmin
* Data Science: Google Colab – TPU and GPU Processor Support, R, Python libraries - *Matplotlib, Pandas, Numpy, SKlearn, Keras, TensorFlow*
* **Data Analytics: SQL Server Data Tools, SQL Server Integration Service**, SQL Server Reporting Service, SQL Server Management Service
* Search Engine Optimization: Google Analytics, Mailchimp (Email Marketing)
* Deep Learning Library: Keras, TensorFlow; Google Colab – TPU and GPU Support, Neural Network for classification and Regression task, Computer Vision (Convnets), Visualizing Filter Activations, Recurrent Network, Sequence / Natural language Encoder (Long Short Term Memory Network), Time Series Prediction, DeepDream
* Machine Learning: Logistic Regression, Linear Regression, Decision Trees, Random Forest, K- Means Clustering, Hierarchical Clustering, Support Vector Machines, Dimensionality Reduction, Principle Component Analysis, Ensemble and Resampling Methods.
* Statistic - Excel for Professionals; Excel: Analysis of Variance (ANOVA) and Descriptive Statics. Probability, descriptive and inferential statics using confidence interval, formulating null hypothesis and hypothesis testing. Time Series, Linear Regression and Multiple Regression models to predict response variable from explanatory variable.

**Other Skills:**

Avid Reader, Bilingual, Meticulous Note-taker

Well-versed Book (2019): “Deep Learning with Python” by Chollet, 1st Edition; “Hands-On Machine Learning with Scikit-Learn & TensorFlow” by Geron, 1st Edition

Languages: Hindi, English, Sanskrit, Spanish (Intermediate)

**Data Camp Certificates:**

* Intro to SQL for Data Science: MySQL, Oracle, SQL Server, and PostgreSQL
* Joining Data in SQL: Join multiple tables together into one, combine tables using set theory, and work with subqueries in PostgreSQL
* Reporting in SQL
* Introduction to Python: Computing large arrays using Numpy
* Intermediate Python for Data Science: Visualizations using matplotlib and manipulating dataframes with Pandas
* Python Data Science Toolbox – Scoping and Error Handling
* Deep Learning in Python: Deep Learning Models using Keras 2.0
* Convolution Neural Networks for Image Processing
* Advanced Deep Learning with Keras in Python: Multiple input and multiple output deep learning models using Keras.

**Major Classes:**

* Neural Network - Special Topics |DSCI -39001-11 - Spring 2019
* Machine Learning | DSCI – 35600-11 -Spring 2019
* Statistics | MTH - 24100-22 - Spring 2019
* Data Structures and Algorithm | CS360
* System Analysis and Design | CS200
* Android Application Development| CS160
* Computer science II: Data Structure
* Data structures | CS260
* Social Media Marketing CPM 230
* Calculus II

**Projects**

**Neural Network**

**An Artificial Neural Network is computational model inspired by biological working of neurons. TensorFlow and Keras are largest deep learning libraries that power industries like Airbnb, Google etc. for Artificial Intelligence.**

* **Neural Network Classification Model from Scratch**
* The network performs supervsied learning tasks using labelled training data (X- Feature Array, Y- labels). The model has dense layers and activation functions as parameters. It supports arbitary number of inputs, hidden layers, nodes per layer, and classes. The model returns an estimated probabilities of the observation being in the classes, predicted class for each observation and a score function that returns model’s loss and accuracy.
* **Training the Neural Network**
* Training the weights in the model by back propagating from output layer using gradient decent algorithm. The loss function is decreased as we propagate through the dense layers in each epoch (one epoch is one complete cycle of training entire data set while calculating loss and accuracy on each step).
* **Convolution Neural Network,** Dataset: CIFAR – 10 Training set: 50,000 images belonging to 100 classes; Validation Set: 10,000 images belonging to 200 classes.

The convolution neural network model is compiled with learning rate of 0.001. After 120 epochs the model reaches an accuracy of 97 % on training and 39 % on validation data on version one. The model reports the *confusion matrix and classification report* of predicted validation set. A running graph of training and validation accuracy and loss is displayed with each epoch. The trained model is saved as cifar100\_v1\_model.h5

* **Vehicle Classification,** Dataset: 600 vehicle images into 12 classes
* A ConvNet Model with **i**mage preprocessing to be training on vehicle data set to classify the data into 12 vehicle classes like ‘convertible’, ‘go-cart’, etc. mentioned in classes.txt. The model reaches an accuracy of 100% on training and 55.5% on validation sets. The graph of model’s loss and accuracy per epoch is displayed. The model reports the *confusion matrix and classification report* of predicted validation set.
* **Transfer Learning**, Dataset - CIFAR 100: Training set: 100,000 images belonging to 200 classes; Validation Set: 10,000 images belonging to 200 classes.

Designing a ConvNet Architecture by transferring learning from VGG16 model on ImagNet. 15 million parameters are trained for this model. A Bar Graph displays top 5 classes that are correctly classified and the probabilities of being correctly classified by the model. The model also displays loss and accuracy graph per epoch.

* **Breast Cancer Dataset**: Designing a neural network to train on Breast cancer dataset with 30 features as input to output the probability of tumor being ‘Benign’ or ‘malignant’. 93.4 % validation accuracy is achieved on this model.
* **Convolution Filters**: Designing a convolution filter to detect various features in the images like straight lines, curves, red channels, blue channels, greens channels etc.

**Machine learning:** Designing models that performs a specific task effectively without using explicit instructions, relying on patterns and inference instead.

* **Building Logistic Regression Model from Scratch in Python** It supports an arbitrary number of features inputs and will accept un-encoded class labels. The predict method has a threshold for classification, which decides the predicted class, based on estimated probabilities of each observation. The log- likelihood and accuracy of this model is calculated. We also calculate the precision and recall value for each class.
* **Tuning Model Hyper-parameters:** The model has 6 feature array (4 numerical variables and 2 categorical variables) and 4 labelled classes. The features are scaled and encoded. The data is modelled for Linear Regression, K nearest neighbor, Decision tress and Random Forest algorithms with a validation accuracy of 29 %, 89.6 %, 86% and 93.7 % respectively for tuned parameters.
* **Decision Tree Classifier from Scratch:** Gini score is used as impurity matrix**.**
* **Random Forest Classifier:** An ensemble of decision trees.

**Data Structures (C++):**

* Mailbox List Update: C++, **Linked List**
* Infix to Postfix and Evaluation: C++, **Stacks using Pointers**
* Customer Processing Line: C++, **Queues**
* Sorting Inventory: C++, **Exchange Sort, Shell Sort, Quick Sort**
* Store and Print Inventory: C++, **Binary Search tree [In order Traversals]**

**Android applications:**

* **Ski Trip Reservation**: Android Studio: Java + XML
* **Financial Calculator**: Android Studio: Java + XML
* **Autumn Playlist**: Android Studio: Java + XML

**Full Stack Software – Inventory Management Solution:**

* Inventory Management Solution: **PHP, HTML, MySQL**
* TO- DO List Web Application : **Node Package Manager & MEAN stack**

**SQL Server Integration Service**

Designed and implemented a data warehouse to Extract, Transform data and Load data to configure and deploy SSIS solutions to build data quality solutions. Implemented a package with Flat File Connection manager, OLE DB Connection Manager, Data Flow Task, configured the flat file source and the lookup transformations. Looping, Logging, Error Flow Redirection for the package. Used parameters with the Project Deployment Model. Prepared and deployed the Bundle.

**SQL Server Reporting Service**

Learned how to create a drillthrough report with parameters and a filter using the ReportViewer control.