Akshay Bhatia

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Research Interests

Natural language processing, Semi-supervised learning, Computer vision, Dataless classification

Education

Jaypee Institute of Information Technology — Noida, India
B.Tech in Electronics and Communication — *Aug. 2014 – May 2018*
Project: *Real-time control of Zigbee using RFID for smart shopping system*

Work Experience

Knorex Pte. Ltd. — April 2019 - Present
Research Scientist - NLP — *Pune, India*
Supervisor: Jin Yiping

- Worked on training and evaluating text classifiers for Knorex XPO's and Knorex KAIROS's Brand Safety and Contextual targeting offerings, thereby improving the CTR on real-time feed content by upto 9%.
- Responsible for the end-to-end development cycle of Sentinel, an Active Learning platform to build text classifiers without any labeled data, integrating various sampling strategies and classification models. A working manuscript is available below.
- Explored Transformer models for task of automatically generating high quality advertising messages for Dynamic creative optimization.
- Supported ad-hoc features such as Keyword Extraction and Search Similarity for User Defined Custom Segments for Contextual Targeting within Knorex XPO.

CampK12 — May 2018 - Dec. 2018
Machine Learning Developer Intern — *Gurugram, India*
Supervisor: Anshul Bhagi

- Implemented a real-time object detection and on-device scene classification model for K12 language learning Lingolens. Trained a custom YOLO model to detect ∼150 objects with an mAP of 67%.
- Subsequently optimized the on-device detection and classification inference speeds by 19% with only 6% performance degradation compared to SoTA methods such as RetinaNet and SSD.
- Worked on an automatic question tagger system for the peer to peer question answering forum for the CampK12's Generation Blockchain 2018 Summit.
- Explored the domain of machine assisted grading and experimented with applying variations of neural language models and other embedding techniques to the task of automatic essay scoring.

Spikeway Technologies Pvt. Ltd. — May 2017 – July 2017
Machine Learning Intern — *Noida, India*
Supervisor: Praveen Kumar

- Led a team of 3 members for the development and deployment of a ML based system to classify books into their genres purely based on its title, without prior knowledge or context of author and origin.
- Directly collaborated and worked with the backend team on the prototype of news article authorship plagiarism checker.

Publications

Iterative Seed Word Selection for Weakly-Supervised Text Classification with Bayesian Error Estimation
Jin Yiping, **Akshay Bhatia**
EACL 2021(Under Review)

Manuscripts

Sentinel: In-House Active Learning Platform
Akshay Bhatia, Jin Yiping, Vishakha Kadam, Tho Nguyen
Paper(In progress), 2020

Relevant Projects

Road Network Extraction August 2018
Movehack Global Mobility Hackathon 2018

- A road network segmentation and extraction system using high resolution satellite imagery for reliable and low cost terrain monitoring and infrastructure quality assessment.
- Trained the U-Net architecture on the Mnih Massachusetts road dataset using a pretrained Resnet34 as the U-Net encoder.
- Optimized the trained model for real time applications with final inference speed of only 0.28 seconds on Tesla K80 GPU achieving a mask accuracy of 95% and a dice score of 65% on the validation set.

LingoLens Aug. 2018 - Dec. 2018
@CampK12 under Anshul Bhagi

- A multilingual language learning app for K12 students providing translations and transliterations for indoor and outdoor objects in over 20 languages.
- Implemented, trained and deployed the scene classification model as Tensorflow Lite model supported using TFServing for on-device inference and the Object Detection model as a web API on AWS for an Android app.

Book Genre Classification June 2017 - July 2017
@Spikeway Technologies Pvt. Ltd. under Praveen Kumar - Live Demo

- A system to predict the genre of the book given the title of a book.
- Improved upon the TFIDF and LR baselines by training a LSTM using pretrained word2vec embeddings resulting a P/R/F1 score of 0.63/0.66/0.64.
- Deployed the trained models as a simple Flask API in a Kubernetes K8 cluster environment for a US based client.

Cardiac Arrhythmia ML May 2017 - June 2017
Capstone Project - Machine Learning Engineer Nanodegree

- A model to predict Cardiac Arrhythmia i.e. whether a patient has "normal" or "abnormal" heartbeat from their phonocardiogram (PCG) or heartbeat recordings.
- Implemented and trained VGG16 - a Deep Convolutional Neural Network by converting each heart sound recording(PCG) to a spectrogram image.
- Achieved an accuracy score of 66% on the 2016 PhysioNet/CinC Challenge evaluation set.

TravelCamp Nov. 2016 - Dec. 2016
Submission for IMAD 2016 - Live Demo

- A social blog/profile web app developed for IMAD 2016.
- The webapp follows RESTful approach for CRUD operations and was deployed using Heroku.
- Backend frameworks used: NodeJS, ExpressJS, MongoDB, PassportJS.

Relevant Coursework

Certified MOOCs

- Machine Learning Engineer Nanodegree - Udacity
- Deep Learning Foundations Nanodegree - Udacity
- Machine Learning by Stanford University - Coursera
- Introduction to Modern Application Development - Hasura/IIT-Madras/NPTEL

Other Coursework: Object Oriented Systems and Programming, Data Analysis using R, Unix Programming, Data Structure and Algorithms

Other achievements and Extra Curricular Activities

- Awarded the Hasura product development fellowship as one of the the course toppers of IMAD 2016 by Hasura/IIT-Madras.
- Selected as a Fast.ai International Fellow 2018 for Cutting Edge Deep Learning For Coders, Part 2.
- Conducted multiple meetups and Knowledge Sharing Sessions'(KSS) for Research & Engineering teams across Knorex Pte. Ltd. on broad domains including BERT, Active Learning, Probabilistic Programming.
- Co-developed, co-designed and co-instructed CampK12's first AI & Machine Learning course over a period of 6 weeks to 15 K12 students.

- Assisted and worked with multiple clients and B2B businesses at Spikeway Technologies Pvt. Ltd. to leverage ML solutions with their products including Recommendation engines, Content Discovery, Customer Segmentation etc.
- Worked as Internshala Student Partner; hosted and managed multiple activities and workshops across college premises to inculcate internship culture thereby resulting in 70 first and second year students applying to internships through Internshala platform.

Technical Skills

Languages: Java, Python, JavaScript, R
Frameworks: PyTorch, FastAI, OpenCV, NumPy, Scikit-learn
Developer Tools: Git, AWS, Docker
Others: PyTest, NodeJS, Flask, Latex, MongoDB

References

Prof. Ravinder Ahuja
Professor, Computer Science & Engineering, Galgotias University, Noida, India(Previous: Professor, CSE, JIIT, Noida)
homepage ✉ *email*

Jin Yiping
Senior Research Scientist, Knorex Pte. Ltd., Bangkok, Thailand
homepage ✉ *email*

Anshul Bhagi
CEO & Co-Founder, CampK12, Gurugram, India
homepage ✉ *email*

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