

Akshay Bhatia

 [akshaybhatia10](#) |  akshay.bhatia@knorex.com |  [akshaybhatia10.github.io](#) |  [akshay-bhatia-5283abab/](#) |

RESEARCH INTERESTS

Natural Language Processing, Semi-supervised Learning, Text Generation, Text Style Transfer, Natural Language Inference

EDUCATION

Jaypee Institute of Information Technology

B.Tech, Electronics & Communication Engineering

Noida, India

July, 2014 – June 2018

Thesis: Real-time control of Zigbee for Smart Shopping System using RFID

Advisor: Prof. Bhartendu Chaturvedi

WORK EXPERIENCE

Knorex Pte. Ltd.

Research Scientist - NLP

April 2019 - Present

Pune, India

Supervisor: Jin Yiping

- Worked on training and evaluating text classification and generation models for Knorex KAIROS's Brand Safety and Contextual targeting offerings. Improved overall CTR on an average advertising campaign by 12%.
- Responsible for the end-to-end development cycle of Sentinel, an Active Learning platform to build text classifiers without any labeled data. A working manuscript is available below.
- Applied Transformer models with guided decoding for the task of automatically generating high quality advertising slogans for Dynamic creative optimization, surpassing previous benchmark results by 33%.
- Supported several production ad-hoc features such as Keyword Extraction and Search Similarity for User-Defined Custom Segments for Contextual Targeting.

CampK12

Machine Learning Developer Intern

May 2018 - Dec. 2018

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.
- Devised embedding and attribute-aware similarity models for the 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 Assignment 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.

Machine Learning Intern

May 2017 – July 2017

Noida, India

Supervisor: Praveen Kumar

- Led a 3 member team for the development and deployment of a ML-based Book Genre Classification system to classify books into their genres, based entirely on its title, without knowledge of author and origin.
- Extended trained models through containers and pods in production and directly collaborated with the backend team on the prototype of a News Article Authorship Plagiarism Checker.

PUBLICATIONS

Iterative Seed Word Selection for Weakly-Supervised Text Classification with Bayesian Error Estimation

Jin Yiping, Akshay Bhatia, Dittaya Wanvarie

EACL 2021 (Under Review) — Pre-print

Generating Coherent and Diverse Slogans with Sequence-to-Sequence Transformer

Jin Yiping, Akshay Bhatia, Dittaya Wanvarie, Phu T. V. Le

Natural Language Engineering, 2021 (Under Review) — arXiv/Pre-print

MANUSCRIPTS

Sentinel: In-House Active Learning Platform

Akshay Bhatia, Vishakha Kadam, Jin Yiping, Tho Nguyen

In progress, 2021 — Paper

RELEVANT PROJECTS

Road Network Extraction

July 2018 - Aug. 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.
- Implemented and trained the U-Net architecture on the [Mnih Massachusetts](#) road dataset.
- 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 with 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.

Book Genre Classification

June 2017 - July 2017

@Spikeway Technologies Pvt. Ltd. with 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 pre-trained 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

@Udacity Machine Learning Engineer Nanodegree - Capstone Project

- A model to predict Cardiac Arrhythmia i.e. whether a patient has a “normal” or a “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 web app 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 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, 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

Assistant Professor, Computer Science & Engineering, Galgotias University, Noida, India(Previous: Professor, CSE, IIIT)

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Jin Yiping

Senior Research Scientist, Knorex Pte. Ltd., Bangkok, Thailand

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Anshul Bhagi

CEO & Co-Founder, CampK12, Gurugram, India

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