

Akshay Bhatia

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RESEARCH INTERESTS

Natural Language Processing, Statistical Modelling, Computer Vision, Algorithms and Optimization Techniques

EDUCATION

University of California, Merced

Master's of Science in Electrical Engineering and Computer Science(EECS)

Advisor: [Shawn Newsam](#)

Merced, CA, USA

Aug. 2021 – May 2023(Expected)

Jaypee Institute of Information Technology

B.Tech, Electronics & Communication Engineering(ECE)

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

Noida, UP, India

Aug. 2014 – June 2018

WORK EXPERIENCE

Computer Vision Lab, UC Merced

Research Member

Supervisor: [Shawn Newsam](#)

January 2022 - Present

Merced, USA

- Working on devising semi-supervised learning algorithms for Image Captioning and Visual Question Answering for Geospatial and Remote Sensing Imagery data.

Knorex Pte. Ltd.

Research Scientist I - NLP

Supervisor: [Jin Yiping](#)

April 2019 - July 2021

Pune, India

- Worked on training and evaluating text classification and text generation algorithms for [Knorex KAIROS](#), improving overall CTR on an average advertising campaign by 12%. Work published at [NAACL SRW 2021](#).
- Built Sentinel: Intelligence-as-a-Service Platform for Content Moderation at Scale, an Active Learning platform to build text classifiers without labeled data - a research grant project supported by [Enterprise Singapore](#).
- Improved existing Transformer models with delexicalisation and entity masking for automatically generating high quality advertising slogans for Dynamic creative optimization, surpassing previous benchmark results by 33%. Work published at [Natural Language Engineering - Cambridge University Press 2021](#)

CampK12

Machine Learning Developer Intern

Supervisor: [Anshul Bhagi](#)

May 2018 - Dec. 2018

Gurugram, India

- Worked on LingoLens, a K12 language learning mobile app powered by a real-time on-device custom YOLO object detection model to detect ~150 objects with an mAP of 67% and deployed using the TensorFlow Lite engine.
- Subsequently optimized the on-device detection and classification inference speeds by 19% by porting the detection model to a C++ backend.
- Implemented 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](#).
- Co-designed and co-instructed CampK12's first [Machine Learning & AI course 2018](#).

Spikeway Technologies Pvt. Ltd.

Machine Learning Intern

Supervisor: [Praveen Kumar](#)

May 2017 – July 2017

Noida, India

- 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. Deployed the trained models with Kubernetes' containers and pods in production.
- Collaborated with the backend team on the prototype of a News Article Authorship Plagiarism Checker using a word embedding vector similarity approach.

PUBLICATIONS

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

Jin Yiping, **Akshay Bhatia**, Dittaya Wanvarie

NAACL SRW 2021 — arXiv / Paper

Toward Improving Coherence and Diversity of Slogan Generation

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

Natural Language Engineering, Cambridge University Press 2021 — arXiv

MANUSCRIPTS

Sentinel: In-House Active Learning Platform

Akshay Bhatia, Vishakha Kadam, Jin Yiping, Tho Nguyen

In progress, 2021 — Paper

TEACHING EXPERIENCE

CSE 005 - Intro to Computer Applications

Graduate Teaching Assistant, University of California Merced, Spring 2022

Jan. 2022 - May. 2022

CSE 120 - Software Engineering

Graduate Teaching Assistant, University of California Merced, Fall 2021

Aug. 2021 - Dec. 2021

CSE 031 - Computer Organization

Graduate Teaching Assistant, University of California Merced, Fall 2021

Aug. 2021 - Dec. 2021

RELEVANT PROJECTS

Drone Fault Detection Based on ROS Topics

Course Project for EECS 283: Advanced Topics in Intelligent Systems with [Azin Shamshirgaran](#)

Aug. 2021 - Dec. 2021

- Explored the domain of external and internal fault detection systems for autonomous UAVs and drones. Main contributions included gathering and labeling of sensory data using a Parrot Bebop 2 drone and experimenting with variations of ordering techniques to enhance CNN models for 1D sensory data.
- Improved vanilla CNNs using upsampled ordering for sensory data with inclusion of novel features, outperforming classical machine learning and existing heuristics' based algorithms with an AUC-ROC score of 94.3%.

Road Network Extraction

Movehack Global Mobility Hackathon 2018

July 2018 - Aug. 2018

- Road network segmentation and extraction system using high resolution satellite imagery for low cost terrain monitoring and infrastructure assessment. Implemented the U-Net model using Python and FastAI on the [Mnih Massachusetts](#) 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.

TravelCamp

Submission for IMAD 2016 - [Live Demo](#)

Nov. 2016 - Dec. 2016

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

RELEVANT COURSEWORK

Object Oriented Systems and Programming, Data Analysis using R, Unix Programming, Data Structure and Algorithms, Algorithm Analysis and Design, Modern Applied Statistics, Advanced Topics in Intelligent Systems, Cloud Computing

TECHNICAL SKILLS

Languages: C++, Java, Python, R

Frameworks/Databases: Tensorflow, PyTorch, Pandas, OpenCV, NumPy, Scikit-learn, NodeJS, Flask, MongoDB, MySQL

Developer Tools: Git, AWS, Docker, Latex, Kubernetes

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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