Website: https://akashzcoder.github.io

# AKASH SINGH

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## ACADEMIC QUALIFICATION

**McGill University** **September 2016 – September 2018**
Master of Science: Computer Science
**Dr. A.P.J. Abdul Kalam Technical University** **August 2010 – May 2014**
Bachelor of Technology: Computer Science and Engineering

## TECHNICAL SKILLS

- Programming Language: Java, Python, JavaScript, MongoDB, MySQL, RAML.
- Web technologies: Angular4, NodeJS, Docker, RESTful API, J2EE (Hibernate framework)
- Others: Git based version control with CICD, Agile modelling, keen interest in data structures and design algorithms, blockchain.
- Knowledge Domain: Application of machine learning in games, Human Computation, and Digital Integration.

## WORK EXPERIENCE

**McGill University, Montreal** **September 2016 – September 2018**
Designation: Graduate Research Assistant
Technology used: Python, MEAN stack, MongoDB
Domain: Human-Computer Interaction, Machine learning
Projects: Phylo, Open-Phylo

**McGill University, Montreal**
Designation: Teaching Assistant
Course: **COMP307 Principles of Web development** **September 2017 – December 2017**
Course: **COMP303 Software Engineering** **January 2018 – April 2018, May 2018 – August 2018**

**Cognizant Technology Solutions, Chennai** **June 2014 – July 2016**
Designation: Programmer Analyst
Technology used: Java, Web Services and APIs
Domain: Insurance

**Variable xTractor**: extract variables from Calligo script using pattern recognition algorithms
**xDashboard**: thick client application built using web-services for safer batch transactions
**QCidRoaster**: To track all the Change Requests (CRs)

## ACADEMIC PROJECTS

**Title: Phylo (January 2017 – December 2017) and Open-Phylo (January 2017 – August 2018)**
I developed the backend of the game Phylo. Essentially, I developed RESTful APIs for machine learning components like: difficulty prediction of puzzles, extraction of interesting puzzles from the multiple DNA/RNA sequences (MSA) using CNN models, routing of puzzles and dynamic change in difficulty of puzzles in the game. Extraction of segments of MSA means identifying regions that are not perfectly aligned via machine. Via Phylo, we managed to achieve this with an accuracy of 84.6% which is 9% more than the existing state-of-art. Stack used for this includes: Nodejs, Python, and MongoDB. The game is now deployed in **Science and Technology Museum, Ottawa**. This is a game with a purpose and is used to solve the sequence alignment problem of DNA/RNA. Complete end-to-end development of OpenPhylo is done by me.

**Title: Chinese Dialogue Corpus (September 2017 – October 2017) – NLP project**
A Chinese corpus suitable for goal based data-driven learning of dialogue systems. This corpus is

constructed using human-human conversations on topics related to economics and economy from Baidu Tieba.

**Title: Letter based language classifier (October 2017 – November 2017) – NLP project**

We evaluate different machine learning techniques to compare and contrast their suitability for the task of letter based language classification. We performed this classification operation using Centroid-based text classification and term frequency-inverse conversation frequency (tf-tdf) approach. The project explains the feature engineering methodologies used and their outputs.

**Title: ICLR reproducibility challenge (September 2017 – December 2017) – DNN project**

The goal of this project is to investigate the reproducibility of empirical results submitted to the International Conference on Learning Representations, 2018 for the paper: "CONVOLVING DNA USING TWO-DIMENSIONAL HILBERT CURVE REPRESENTATIONS".

**Other projects:**

1. **Title: Decentralizing Human Computation data over a blockchain** [McGill Univesity]
2. **Title: Reverse Engineering of WSO2 IoTServer** [McGill University]
3. **Title: Aggregation of MSA** [McGill University]
4. **Title: Reverse Engineering Hibernate framework** [McGill University]
5. **Title: Training and Placement Portal of IPEC** (August 2012 – March 2013) [IPEC]

## CONFERENCE PAPERS google scholar LINK

**AAAI:** Lessons from an online massive genomics computer game (accepted) – to be published

**HCOMP (WIP paper):** A Human-Computation Platform for Multi-Scale Genome Analysis

**IEEE:** Debit/ATM card security based on chaos function and QR code (April 2014)

## JOURNAL PAPER

**IJEDR:** Chaos based Cryptosystem (June 2014)

## INTERNSHIPS/TRAINING

**Cognizant Technology Solutions, Chennai (June 2014 – August 2014)**

- Issue and Complaint Management System. End-to-end development with a team of 3 people.

**Sopra India Pvt. Ltd., Delhi (August 2012 – March 2013) – Merit based internship**

- A team of top 6 students from IPEC and new recruits from Sopra India Pvt. Ltd collaborating in the same project: Student Information Management System (SIMS) going through different phases of Agile model.

**Sahara Q – shop, Mumbai (June 2013 – July 2013)**

- Web development for retail business. I learnt how to develop scalable web-products.

## CERTIFICATIONS

- Level 1 ethical hacking certified, November 2012.
- Secured an 'A' in Advanced Java Diploma at Pacific Networks, Mumbai in July, 2012.
- Cognizant Certified Professional in C and MySQL, September 2014.

## AWARDS AND ACHIEVEMENTS

**Scholastic Achievement**

- Member of McGill AI society, 2018.
- Digital Superstar of Cognizant for three-quarters in 2015.
- Gold Award in Project Management Strategy organized in Cognizant, December 2014.
- Highest Scorer from IPEC in ACM-ICPC, September 2012.
- Branch topper of IPEC in B-Tech first year, July 2010 - June 2011.
- Highest AMCAT scores in IPEC, (National Percentiles) [id: 10019851223103] with an average percentile of over 99.

## EXTRACURRCIUALR ACTIVITIES

- Member of International buddy program at McGill University, 2016, 2017, and 2018.
- Presented in ALARNA McGill, AAAI conference, poster presentation at HCOMP, 2017.
- Lead blogger in Cognizant Academy, June - August 2014.
- Team Lead in organizing the event "Blind Coding" for ACM Tech-Sennight, September 2013.
- Member of the Association for Computing Machinery (ACM), August 2012 - July 2013.