Shubham **Dokania**

Software Developer · Data Scientist

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Education

Delhi Technological University(Formerely DCE) — *New Delhi, India*

B.Tech. in Mathematics and Computing Engineering — *Aug. 2013 - PRESENT*

North Delhi Public School — *New Delhi, India*

AISSCE (All India Senior School Certificate Examination) — *Apr. 2011- May. 2013*

Skills

Programming	Python, C++, C, JavaScript, MySQL, MATLAB, LaTeX, HTML5
Frameworks & Libraries	Django, Flask, Node.js, Theano, OpenCV, Keras, TensorFlow, Numpy
Familiar	Lasagne, Android, MongoDB, Unity3D, Lua, Apache Spark

Experience

Coding Blocks — *New Delhi, India*

Instructor — *June 2016 - PRESENT*

- Teaching and Mentoring students about programming and development practices.
- Teaching Machine Learning, Web Development and frameworks such as Flask, Django, Node.js.

Vision and Artificial Intelligence Research (VAIR) Group, DTU — *New Delhi, India*

Undergraduate Research Head — *Apr. 2016 - PRESENT*

- Study on various domains of Machine Learning and evolving field of representational learning.
- Implementation of robust, unsupervised feature descriptors, and research on various Deep Learning problems.

Codementor — *New Delhi, India*

Mentor — *Dec. 2015 - Present*

- Expert Mentor on Codementor for help in Python, Machine Learning, Django, and general programming.
- Teaching people around the world and helping the developer community to grow.

Greplr — *New Delhi, India*

Co-Founder & Full Stack Developer — *May. 2015 - Feb. 2016*

- Developed a hyper-local discovery platform and service aggregation application with a scalable architecture.
- Exposed REST APIs to support android application using Flask(Python Framework) and Parse for Database backend and analytics.

Publications

Opportunistic Self-Organizing Migrating Algorithm on Real-Time Dynamic Travelling Salesman Problem — *Research Publication*

Undergraduate Research Student — *Apr. 2016 - Nov. 2016*

- Modified an evolutionary optimization algorithm to achieve better accuracy for multi-dimensional objective funtions, and achieved promising results for the complex problem of Dynamic Travelling Salesman Problem.
- Accepted for presentation at 51st Conference on Information Sciences and Systems (IEEE CISS) 2017

Hierarchy Influenced Differential Evolution: A Motor Operation Inspired Approach — *Research Publication*

Undergraduate Research Student — *Oct. 2016 - Dec. 2016*

- Designed a novel motor function based evolutionary optimization algorithm inspired from the motor cycle in human beings and the co-operation through neural pathways. (https://arxiv.org/abs/1702.05308)
- Transcript under review at GECCO 2017.

Projects

Reinforcement Learning for generic Evolutionary Optimization
New Delhi, India

Machine Learning, Unsupervised, Evolutionary Computation, Reinforcement Learning — *Feb. 2017 - PRESENT*

- Working to build a novel RL model for generic Evolutionary optimization.
- Prototype model shall optimize an optimizer using Reinforcement learning to achieve desired results.

Semantic Segmentation and Feature Representation
New Delhi, India

Machine Learning, Deep Learning, Unsupervised, Semantic Segmentation, Autoencoders — *July 2016 - Sep. 2016*

- Achieved Impressive performance on the task of semantic segmentation using various auto-encoders.
- Working on improvements to achieve better manifold representation for embedding representational vectors.

Deep Q-Learning and Reinforcement Learning
New Delhi, India

Machine Learning, Deep Learning, Unsupervised, Reinforcement Learning, OpenAI — *May 2016 - Jun. 2016*

- Built Neural Network model based on RNNs and CNNs to learn various states of a game, given only input frames and rewards.
- Achieved a goal of optimizing an agent to play the games on OpenAI gym simulator and achieve human-like accuracy.

Tracking using multi-camera environment
New Delhi, India

Machine Learning, Computer Vision, Database — *Mar. 2016*

- Designed a tracking interface using multiple cameras for face detection and recognition from database to know trajectory followed by a person.
- Built for surveillance tasks at public places. Prototype was presented at Code for India hackathon, at Rashtrapati Bhawan, India

Library for Evolutionary Optimization Techniques
New Delhi, India

Evolutionary Algorithms, Game Theory, Neural Networks, Optimization Techniques — *Dec. 2015 - Mar. 2016*

- Built an Evolutionary Optimization Library for APIs for algorithms such as Genetic Algorithm, Particle Swarm Optimization, Differential Evolution etc.
- Designed a virtual bot to play board games while optimizing the outcomes to achieve a win (Link, Link)

Food Requirement Simulation and Prediction
New Delhi, India

Data Science, Server — *Oct. 2015*

- Developed a web dashboard to display data and predictions for food consumption and wastage for the NGO Akshaya Patra.
- Exposed APIs for data and Predictions using Django. The prototype won the Grand Prize award at CodeForIndia 2015 Hackathon.

Autonomous Robot Navigation System Using Kinect
New Delhi, India

Computer Vision, Embedded Systems — *Mar. 2015 - May 2015*

- Built an autonomous robot and designed it's obstacle avoidance and navigation system using OpenCV Python library.
- Analyzed performance on various development boards (Raspberry Pi, BeagleBone Black etc.) by running and optimizing the scripts.
- Used Depth maps and pixel intensity calibrations to compute distance of multiple obstacles and calculate a feasible path.

Honors & Awards

Oct. 2015	**Grand Prize Winner**, Code For India Hackathon	*New Delhi, India*
July 2015	**Grand Prize Winner**, HackIndia 2015	*Bangalore, India*
Apr. 2015	**1st in Track**, PolicyHacks by EPoD, Harvard University	*New Delhi, India*
Mar. 2015	**3rd Position**, </geekfest> 2015 by 91SpringBoards and IBM Bluemix	*New Delhi, India*
Mar. 2015	**Special Mention**, Byldathon at IIIT Delhi	*New Delhi, India*
Oct. 2013	**Best Student Award**, The Times of India(TOI)	*New Delhi, India*
Aug. 2010	**2nd in State**, National Science Talent Search Examination	*New Delhi, India*

Relevant Coursework

Mathematics	Linear Algebra, Probability and Statistics, Stochastic Processes, Numerical Optimization
Computer Science	Algorithms and Data Structures, Theory of Computation, Applied Graph Theory, Fuzzy Logic
Additional	Financial Engineering, Computer Vision and Digital Image Processing, Computer Graphics