

# Shubham Dokania

SOFTWARE DEVELOPER · DATA SCIENTIST

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## Education

### Delhi Technological University (Formerly DCE)

B.TECH. IN MATHEMATICS AND COMPUTING ENGINEERING

New Delhi, India

Aug. 2013 - PRESENT

### North Delhi Public School

AISSCE (ALL INDIA SENIOR SCHOOL CERTIFICATE EXAMINATION)

New Delhi, India

Apr. 2011- May. 2013

## Skills

**Programming** Python, C++, C, JavaScript, MySQL, Java, MATLAB,  $\text{\LaTeX}$ , HTML5

**Frameworks & Libraries** Django, Flask, Node.js, Theano, OpenCV, Keras, TensorFlow, Scipy

**Familiar** Lasagne, Android, MongoDB, Unity3D, Lua, Apache Spark

## Experience

### Coding Blocks

INSTRUCTOR

New Delhi, India

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

UNDERGRADUATE RESEARCH HEAD

New Delhi, India

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

MENTOR

New Delhi, India

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

CO-FOUNDER & FULL STACK DEVELOPER

New Delhi, India

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 [under review]

Research Publication

UNDERGRADUATE RESEARCH STUDENT

Apr. 2016 - Nov. 2016

- Modified an evolutionary optimization algorithm to achieve better accuracy for multi-dimensional objective functions, and achieved promising results for the complex problem of Dynamic Travelling Salesman Problem.
- Transcript under review at IEEE CISS 2017

### Motor Coretx inspired Evolutionary Optimization Algorithm for Convex Global Optimization [submitted]

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.
- Transcript under review at IEEE CEC 2017.

## Projects

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### Semantic Segmentation and Feature Representation

New Delhi, India

MACHINE LEARNING, DEEP LEARNING, UNSUPERVISED, SEMANTIC SEGMENTATION, AUTOENCODERS

July 2016 - PRESENT

- 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

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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

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#### Mathematics

Linear Algebra, Probability and Statistics, Stochastic Processes, Numerical Optimization, Operation Research

#### 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