

# GUNSHI GUPTA

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## EDUCATION

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### DELHI TECHNOLOGICAL UNIVERSITY

*Bachelor of Technology, Mathematics and Computing*

- Aggregate CGPA: 8.04 (First Class Division)

New Delhi, India

2012-2016

## PROFESSIONAL EXPERIENCE

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### ROBOTICS RESEARCH CENTER, IIIT HYDERABAD

*Graduate Research Assistant*

Hyderabad, India

February 2017 – Present

- CAIR Project, DRDO (Defense Research and Development Orgn.) : worked on development of Multi Robot-SLAM framework facilitating: Incremental/Batch Optimization, Centralized/Distributed map merging, Robot Encounters, using Visual Odometry front-end. Tested on Husky UGV Robot Platform (C++, ROS, libviso2, GTSAM, g2o)
- Viewpoint Invariant Junction Recognition using Deep Network Ensembles (Submitted for WACV 2018). Currently exploring generative models for localization.

### MICROSOFT CORPORATION

*Software Developer*

Hyderabad, India

June 2016 – January 2017

- Full Stack Development on Rewards/Feedback Management Applications (SQL, Javascript, C#)
- Conducted sessions on 'MATH behind ML' in Machine Learning workshops held for HRCELA division (~100 members). Prepared course material and assignments
- Used NLP to build modules to predict employee performance scores, summarize feedback, and recommend and extract salient keyphrases at the time of writing feedback (R, Python, Azure ML Studio)
- Developed Proof Of Concept for Feedback Application-Reinvent with Accessibility Compliant Design
- Hackathon: built a TextToGraphics generator using learnt representations for spatial semantics trained over MS-COCO, and component image retrieval through Microsoft's Computer Vision APIs

### NAYI DISHA STUDIOS

*Computer Vision Intern*

New Delhi, India

December 2015 – January 2016

- Trained gesture/activity recognition models in Caffe, integrated with Unity3d games for Android and iOS
- Optical-Flow based motion segmentation, Player detection and tracking (OpenCV)

### GRAPHICS RESEARCH GROUP, IIIT DELHI

*Research Intern*

New Delhi, India

September 2015 – October 2015

- Developed optimised C++ implementation of MATLAB pipeline from [3D surface reconstruction of objects from planar cross sections](#) (OpenGL, Blender, CGAL), based on extra constraints satisfied by object geometry

### MICROSOFT CORPORATION

*Software Development Intern*

Hyderabad, India

June 2015 – July 2015

- Created windows application & hosted WebAPIs to monitor & configure usage metrics of Azure resources
- Hackathon: IR sensor based smart parking application for Microsoft campus

### FRESHMONK- 91 DESIGN LABS

*Machine Learning and Image Processing Intern*

New Delhi, India

December 2014 – January 2014

- Kernel-based clustering in LAB color spaces to convert graphics to stencil screens for screen printing
- Automatic Vectorisation & gap sealing between layers using Bezier Spline processing in SVG (OpenCV, Numpy, Scipy)

## PERSONAL PROJECTS

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- Maximal Clique Finding, Incidence and Co-Coloring on graphs, Graph Theoretic Formulations
- Multi-View Geometry: Implementing Iterative Reconstruction from multiple sequential views

## PLATFORMS AND LANGUAGES

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- C, C++, Python(+computing packages), MATLAB, C#, Javascript, SQL, HTML
- OpenCV, R, Tensorflow, GTSAM, Unity3d, ROS, PCL, OpenGL, Caffe, Cmake, Git, Microsoft Azure

## RESEARCH INTERESTS

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- Computational Geometry, Multi-View Geometry, 3D reconstruction
- Multi Robot SLAM, Visual Place Recognition
- Generative Adversarial Networks, Unsupervised Approaches for Learning, Deep Reinforcement Learning

## COURSES

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- B.Tech : Data Structures,, Probability and Statistics, Theory of computation, Algorithm Design and Analysis, Computer Graphics, Software Engineering, Discrete Mathematics, Linear Algebra, Scientific Computing, Matrix Computations, Computer Architecture, Stochastic Processes, Optimization Techniques, Mathematical Modeling & Simulation, Real Analysis, Differential Equations, Modern Algebra, Fuzzy Sets and Logic, Applied Graph Theory, Operations Research
- MOOCS : Natural Language Processing, Computer Vision, Deep Learning, Digital Signal Processing, Computational Photography, Mathematical Modeling, Artificial Intelligence for Robotics, Convex Optimization