# Agniva Sengupta

## Personal Data


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|---|---|
| Address: | Bangalore, India |
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| | *Personal:* i.agniva@gmail.com |
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| StackOverflow: | stackoverflow.com/users/2041826/metsburg |


## Technical Skills

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|---|---|
| *Computer Vision and SFM* | Multiview Geometry, SFM, Visual SLAM<br>Bundle Adjustment, ICP, EKF based MonoSLAM<br>---<br>Worked on: PTAM, LSD SLAM, ORB SLAM,<br>OKVIS, MSCKF, IMU + LSD-SLAM/ORB-SLAM fusion with EKF,<br>Porting multiple Sensor Fusion suits for MAVs<br>into mobile devices<br>Minimization Techniques: Steepest Gradient,<br>Gauss-Newton, Weighted Gauss-Newton, Levenberg-Marquardt<br>Fundamental Maths: Linear Algebras, Probability +<br>Statistics, Lie groups & algebras of GL(n), SL(n), SO(3), SE(3), Sim(3) |
| *Robotics* | Path Planning: A*,<br>D* Lite, Field D*, IDA*,Theta *, Dijkstra's Algorithm,<br>Visibility Graph, Virtual Stretched String<br>---<br>State Space Estimation: Particle Filter,<br>Kalman Filter, EKF<br>---<br>Platforms: Pioneer 3DX,<br>Arducopter / Ardupilot Mega 2.6 (Arduino),<br>PixHawk, A R Drone 2.0, SCORBOT,<br>Parallax Boe-Bot, Lego Mindstorms Kit,<br>*ROS* |
| *Image Processing* | Sweep and 360 panoramas, Thresholding, Segmentation,<br>Morphology,Feature Recognition, Probability Density Function,<br>Inpainting algorithms, Computational Photography,<br>Background/Foreground modeling<br>---<br>Libraries: OpenCV, NumPy/SciPy, Matplotlib, PCL |
| *Machine Learning* | PCA, SVD, Neural Network, CNN, Boosting and Bagging strategy,<br>SVM, Linear and Logistic Regression, Polynomial Classifier,<br>Decision Tree, Bayesian Classifier, Markov Chain |
| *Programming Languages* | C/C++, Python, MATLAB, R |

## Education

**July 2012** Master of Technology in Mechantronics, IIEST, Shibpur, India
*summa cum laude* | Master's Theses in *Path planning for Mobile Robots*
Advisor: Dr. S. N. Shome, Dr. Ranjit Ray, Prof. Subhasis Bhaumik
GPA: 1606/2200 | Detailed List of Exams

**August 2008** Bachelor of Technology in Information Technology
*summa cum laude*, West Bengal University of Technology, India
| Detailed List of Exams

## Publication

- Sengupta, Agniva, and E. Shafeeq. "New feature detection mechanism for extended Kalman filter based monocular SLAM with 1-point RANSAC" *Lecture Notes in Artificial Intelligence, Springer*. Mining Intelligence and Knowledge Exploration, 2015.
- Sengupta, Agniva, Ranjit Ray, and S. N. Shome. "Virtual Stretched String: An Optimal Path Planning Technique over Polygonal Obstacles" *Proceedings of Conference on Advances In Robotics*. ACM, 2013.
- Sengupta, Agniva. "Obstacle Avoidant Path Planning Using Probabilistic Genetic Algorithm With Adaptive Performance Optimization" *Recent Advancement in Mechatronics Automation. BESUS, Shibpur, Howrah : s.n., 2011.*

## Work Experience

**Dec 2016 to present** | PhD Student at INRIA, Rennes, France
*Localization and characterization of deformable objects with unknown shapes*

**Nov 2015 to Dec 2016** | Computer Vision Research Engineer at Whodat Tech Pvt. Ltd., Bangalore, India
*Working on Visual SLAM, camera localization and SFM for Markerless Augmented Reality applications*

**Aug 2014 to Nov 2015** | Senior Design Engineer at KritiKal Solutions Pvt. Ltd., Bangalore
*Working for Continental Automotives in Advanced Driver Assist Systems*
Machine Learning and Image Processing for Sign Recognition Systems

**May-Aug 2014** | Hybrid Data Analyst at Ayata, Calcutta, India
*Descriptive Analytics and Machine Learning*
Analysis and classification of video and seismic data from Oil and Gas industry

**Feb 2013 - May 2014** | Engineer at Tech BLA Solutions Pvt. Ltd., Calcutta, India
Computer Vision for mobile devices, control system for quadrotors.

**Jul 2009 - Aug 2010** | Software Engineer at Accenture Services Pvt. Ltd., *Bangalore, India*
Data Analysis of Network Traffic