

EDUCATION

- **Birla Institute of Technology** Ranchi, India
Bachelor of Engineering in Electrical and Electronics; GPA: 8.06 *Aug. 2012 – May. 2016*
- **Atomic Energy Central School, Jaduguda** Jamshedpur, Jharkhand
Senior Secondary; Percentage: 90.8, top 1% rank in AIEEE *April 2010 – May. 2012*

EXPERIENCE

- **Visteon Corporation** Pune, Maharashtra
Embedded Software Engineer *Oct 2018 - Present*
 - **Imaging Radar:** Development of object detection algorithms and C++ implementation for high-resolution imaging radars. This included getting the target (vehicle) positions and their velocity vectors. Also developed the Ethernet interface for the prototype radar hardware.
 - **Online camera extrinsic estimation using CNN and HD Map:** Camera pitch, height and yaw estimation by correlating CNN lane detections with the HD map. Formulated the non-linear least-squares minimization problem and implemented the same using the Ceres-solver library to find a set of extrinsic parameters to align the vision lanes to the HD Map. This was useful for GNSS-Camera cross calibration. The estimated camera pitch and height was useful to nullify the effect of pitch movements which affected the lane geometry.
 - **Lane Fusion KPI generation with HD map as the ground truth:** A C++ node for evaluating the Lane Detection pipeline by using an offline HD map as a ground truth. It calculates the precision, recall and the confusion matrix for lane types and color and the mean absolute error for lane geometries.
 - **Lane Geometry and curvature reconstructor from ADASIS HD map data:** A C++ library that implemented the ADASIS specification, in which a map provider ECU sends out map data as UDP packets. The map information is very sparse, disconnected and covers a large area. The reconstructor parses these packets and caches them into an internal data structure which lets us do fast lookup the relevant map information around the ego-vehicle at regular time intervals.
 - **Variable sized matrix implementation in C:** As a part of a porting effort, I proposed a variable-sized matrix container in C. All the memory for the 2D matrices were allocated on the stack programmatically, without having to use the heap.
- **Coursera** Mountain View, CA
Senior Software Engineer *Jan 2014 - Oct 2016*
 - **Notifications:** Service for sending email, push and in-app notifications. Involved in features such as delivery time optimization, tracking, queuing and A/B testing. Built an internal app to run batch campaigns for marketing etc.
 - **Nostos:** Bulk data processing and injection service from Hadoop to Cassandra and provides a thin REST layer on top for serving offline computed data online.
 - **Workflows:** Dataduct an open source workflow framework to create and manage data pipelines leveraging reusable patterns to expedite developer productivity.
 - **Data Collection:** Designed the internal survey and crowd sourcing platform which allowed for creating various tasks for crowd sourcing or embedding surveys across the Coursera platform.
 - **Dev Environment:** Analytics environment based on docker and AWS, standardized the python and R dependencies. Wrote the core libraries that are shared by all data scientists.
 - **Data Warehousing:** Setup, schema design and management of Amazon Redshift. Built an internal app for access to the data using a web interface. Dataduct integration for daily ETL injection into Redshift.
 - **Recommendations:** Core service for all recommendation systems at Coursera, currently used on the homepage and throughout the content discovery process. Worked on both offline training and online serving.
 - **Content Discovery:** Improved content discovery by building a new onboarding experience on coursera. Using this to personalize the search and browse experience. Also worked on ranking and indexing improvements.
 - **Course Dashboards:** Instructor dashboards and learner surveying tools, which helped instructors run their class better by providing data on Assignments and Learner Activity.
- **Lucena Research** Atlanta, GA
Data Scientist *Summer 2012 and 2013*

- **Portfolio Management:** Created models for portfolio hedging, portfolio optimization and price forecasting. Also creating a strategy backtesting engine used for simulating and backtesting strategies.
- **QuantDesk:** Python backend for a web application used by hedge fund managers for portfolio management.
- **Georgia Institute of Technology** Atlanta, GA
Research and Teaching Assistant *Jan 2012 - Dec 2013*
 - **Research Assistant - Machine Learning:** Research on machine learning for portfolio hedging and replication algorithms. Modeling low-risk & continuous-return strategies. Developed the python library QSTK.
 - **Teaching Assistant - Computational Investing:** The online course on Coursera, had more than 100,000 students enrolled. It was featured on the 11 Alive News and the Atlanta Journal Constitution. Involved in creating assignment, exams and conducting recitation sessions. Also taught the on-campus version of the course.

PROJECTS

- **QuantSoftware Toolkit:** Open source python library for financial data analysis and machine learning for finance.
- **Github Visualization:** Data Visualization of Git Log data using D3 to analyze project trends over time.
- **Recommendation System:** Music and Movie recommender systems using collaborative filtering on public datasets.
- **Mac Setup:** Book that gives step by step instructions on setting up developer environment on Mac OS.