

Shreshth Gandhi

CONTACT INFORMATION	Second Year M.A.Sc student, Dept. of Electrical and Computer Engineering University of Toronto	e-mail: shreshth.gandhi@mail.utoronto.ca Mobile: +1 647-936-6346
RESEARCH INTERESTS	Machine Learning, Genomic Data Science, Convex Optimization	
EDUCATION	University of Toronto <i>M.A.Sc in Electrical and Computer Engineering</i> 2015 – ongoing <i>Supervised by Prof. Brendan Frey and Prof. David Duvenaud</i> <i>Thesis in the area of machine learning in genomics</i> – Grade Point Average of 4.0	
	Indian Institute of Technology Kanpur <i>B.Tech in Electrical Engineering</i> 2011 – 2015 <i>Minor in Computer Systems</i> – <i>Cumulative Performance Index (CPI) of 9.8 (on a scale of 10)</i>	
TEACHING EXPERIENCE	Teaching Assistantship, Communication Systems(ECE316H), University of Toronto <i>Instructor : Prof. E S Sousa</i> Sept 2015 - Dec 2015 – Duties involved taking tutorials, grading assignments and quizzes, supervising labs and grading lab reports.	
	Teaching Assistantship, Analysis and Control of Stochastic Systems (ECE1639S), University of Toronto <i>Instructor : Prof. R Kwong</i> March 2016 - April 2016 – Duties involved grading problem sets.	
SCHOLASTIC ACHIEVEMENTS	<ul style="list-style-type: none">• Awarded General Proficiency Medal for being ranked first in the EE department(out of 125 students) during undergraduate studies at IIT Kanpur.• Selected for Excellence Fellowship for graduate admissions in the Masters programme at École Polytechnique Fédérale de Lausanne(EPFL).• Received Academic Excellence Award for distinctive academic performance in all years of undergraduate study at IIT Kanpur.• Selected for the Indian National Mathematics Olympiad in 2010 and 2011	
STANDARDIZED TEST SCORES	<ul style="list-style-type: none">• Obtained a score of 333/340 on the GRE. With 166/170 in Verbal and 167/170 in the quantitative section• Obtained a score of 115/120 on the TOEFL.	
RELEVANT COURSES	Mathematics Real and Complex Analysis, Linear Algebra, ODEs,PDEs, Probability and Statistics, Random Processes Control and Power Control Systems, Power systems Computer Science Machine Learning and Inference Algorithms,Data Structures and Algorithms, Advanced Algorithms, Computer Networks, Computer Organization Communication Principles of Comm. , Wireless Comm. ,Convex Optimization in SP/Comm, Information Theory	
TECHNICAL SKILLS	Programming Languages - Python, Tensorflow, C, C++, Other Tools - MATLAB and Simulink, L ^A T _E X	

Final Year Project: Source separation in Wireless Sensor Networks using Learning Algorithms

Mentor : Prof. Ketan Rajawat, IIT Kanpur

Aug 2014 - May 2015

- Studied techniques and applications of **convex optimization** in signal processing in the form of **sparse coding** and **adaptive dictionary learning**.
- Used **sparse separation** in the dictionary domain to separate a mixture of correlated sources like those obtained in a **wireless sensor network**.
- Estimated the columns of the random mixing matrix using **k -means clustering** on the scatter plot of the signals obtained at the receivers.
- Applied the framework of adaptive sparse decomposition to create an algorithm for **blind source separation** at the receiver by devising a **constrained optimization problem**. and solving it in MATLAB.
- Extended the work to incorporate a training and pre-coding phase to allow for transmission of multiple image frames as in a **video transmission** while requiring only a **single receiver node**.

Speech acquisition and enhancement in a reverberant, cocktail-party-like environment

Term paper, EE301(Digital Signal Processing), Prof. Rajesh Hegde

Jan 2014 - Apr 2014

- Analyzed the **Cocktail Party effect** and algorithms for separation of speech sources.
- Implemented **Symmetric Eigenvalue decomposition** for separating Audio sources
- Used the Audio Systems toolbox and Audio processing tools in MATLAB to perform simulations for different mixtures that agreed with theoretical and experimental data.

A survey of methods and applications of Robust Optimization

Term paper, EE609(Convex Optimization in SP/COM), Prof. Ketan Rajawat

Jan 2015 - Apr 2015

- Studied the theory of **Robust Optimization(RO)**, its aims and applications.
- Reviewed the application of RO in portfolio allocation and machine learning and performed numerical simulations to illustrate the impact of incorporating robustness.
- Studied the Robust SVM algorithm for binary classification and created a module in MATLAB to study the effect of robustness.

Spectrum Sensing, Dynamic Access and Resource Control in Cognitive Radio Networks

Term paper, EE670(Wireless Communication), Prof. Aditya Jagannatham

Jul 2014 - Nov 2014

- Explored various areas of work and current research in **Cognitive Radio**.
- Compared and outlined various **spectrum sensing** algorithms that utilize multiple dimensions of **spectrum opportunity**.
- Examined various aspects of **Optimal Resource Control** and **Adaptive Power and Modulation policies** to satisfy Quality of Service constraints.

Email Client

Course project, CS425(Computer Networks) Prof. Dheeraj Sanghi

Jul 2014 - Nov 2014

- Designed an **email client** that included features like automatic configuration for popular services, attachment support and offline mode.
- The application was designed in Python using standard modules to connect to the internet and send/receive email and was designed to support **POP/IMAP** and **SMTP** protocols.

- **Coordinator, Counselling Service** - Coordinated a **200 member team** of students and organized **campus welfare** activities like the orientation programme to ensure the emotional, academic and financial well being of the students.
- **Academic Mentor and Link Student**- Took classes and **individually mentored** academically deficient students in mathematics, physics and programming courses and worked with them to overcome their difficulties.