

Sugandha Singla

CONTACT INFORMATION	N209, Hostel 10 Indian Institute of Technology, Bombay Mumbai 400 076, India	Phone: +91 96196 39892 E-mail: sugandhasingla7@gmail.com Web: http://sugandhasingla.github.io/
RESEARCH INTEREST	Public Economics and Policy Making, International Relations, Applied Mathematics	
EDUCATION	Indian Institute of Technology Bombay , Mumbai, India Bachelor of Technology in Department of Chemical Engineering	July 2010 -April 2014
PUBLICATIONS	Sugandha Singla, Prateek Maheshwari, Yogendra Shastri Resiliency Considerations in Biomass to Biofuel Supply Chain Optimisation, <i>Manuscript in preparation</i>	
CONFERENCE	Young Change Makers Conclave <i>Organised by United Nations Information Center & Consulate General of United States, India</i> <ul style="list-style-type: none">Selected among top 200 Young Entrepreneurs, Professionals, Students, Diplomats and Media from all over India and Bhutan for dialogues and discussions with leaders like US Consulate General, UNIC India Director to inspire the youth	April 2012
RESEARCH EXPERIENCE	Resiliency Considerations in Biofuel Supply Chain Design Optimization <i>Research Assistant</i> <i>Advisor:</i> Prof. Yogendra Shastri	Department of Chemical Engineering, IIT Bombay July 2014 - Present <ul style="list-style-type: none">Developed <i>Deterministic Optimization Model</i> using <i>Mixed Integer Linear Programming</i> in <i>GAMS</i>; provides post harvest supply chain network configuration for lignocellulosic biofuels produced in 13 county region of Southern Illinois, USIncorporated the theoretical concept of Regional Biomass Processing Depots (RBPDs) to quantitatively analyse and show their importance in reducing transport costs, acting as efficient storage locations and in turn, mitigating losses incurred due to disruptionsDeveloped <i>Stochastic Optimization Model</i> to incorporate disruptions costs accounting for uncertainties by adding probable eventualities in the model; returns supply chain design network with quantized efficiency-resiliency trade-offsComparisons made between robustness of supply chains obtained from consideration and non-consideration of expected disruptions shows that substantial improvements in reliability can be made with marginal rise in operating cost without decreasing efficiency very much
COMPUTER SKILLS	<i>Programming:</i> C/C++, Python, MATLAB, HTML <i>Modelling:</i> GAMS- 'General Algebraic Modelling System', MS-Excel <i>Publishing:</i> L ^A T _E X	
SELECTED COURSES	Fundamentals of Computing ¹ Applied Multivariate Statistics Differential Equations i& ii Data Analysis & Interpretation	Challenges in Global Affairs ¹ Optimization Numerical Analysis Complex Analysis Data Mining ¹ Data Science ¹ Economics Linear Algebra

¹currently pursuing on Coursera, [coursera.org](https://www.coursera.org)

INTERNSHIPS	ITC Ltd., Kolkata, India Summer Trainee, Food and Beverages Division <i>Improvisation of Supply Chain Management & Logistics for 'Bingo'- Potato Chips</i>	May-July 2013
	<ul style="list-style-type: none"> Benchmarked current supply chain process for potato chips 'Bingo' against the process practised for 'Frito Lays'- biggest market competitor in sector and proposed key changes at both heuristic and deployment levels Researched markets at retail and wholesale distribution level by interacting with owners and distributors to understand the market dynamics of both Built 'Manual Demand Order' and 'Estimate Fidelity errors' structure and incorporated them in 'Shortage Tool', the diagnostic tool for identifying the reasons for shortage between order quantity and the actual deliveries at the WSP to WDs 	
	Equity People, Kolkata, India Quantitative Analyst, Principle Investment Division	June-July 2012
	<ul style="list-style-type: none"> Developed trading strategies using volatility arbitrage on options by building a excel-based model which yielded an average returns upto 40% with Sharpe Ratio of 2 to 2.2. The devised startegies are currently being used by the firm Developed linear regression models to correlate equity derivatives in specific sectors; Calculated and analysed correlations b/w index and underlying stocks 	
	Motilal Oswal Securities Private Ltd., Mumbai, India Research Analyst, Equity Research Division <i>Recent developments in Financial Markets & Sub Prime Mortgage crisis of 2008</i>	December 2011
	<ul style="list-style-type: none"> Studied different types of derivatives-naked, covered, strangle and straddle strategies for both call and put options. Developed a derivative portfolio for a client investing 5 lacs in a set of combination of call and put options on both the buyer and seller side Studied and analysed the impact of sub prime mortgage crisis of 2008 on Indian Markets. Analysed inflow of FII's in the indian economy before and after the release of TARP and trend of growth in indian economy over the last two decades 	
PROJECTS	Optimisation of fantasy football team <i>Guide: Prof. Yogendra Shastri</i>	April 2014 <i>Dynamic Programming</i>
	<ul style="list-style-type: none"> Modeled optimum team selection problem for fantasy premier league as a modified Knapsack problem in MATLAB by using a dynamic programming algorithm Performed multivariate sensitivity analysis on the optimal output to generate different solutions and determine the impact parameters and variables, has on the optimal solution 	
	Biodiesel Production from waste vegetable oil <i>Part of 9 member core team to install the first-ever Student's Biodiesel Production Pilot Plant with a capacity of 250l at an Institute level in India</i> <i>Guide: Prof. Sanjay Mahajani</i>	June 2011- April 2012
	<ul style="list-style-type: none"> Coordinated with major project stakeholders to successfully commission plant within 2 months subsequently to produce 520 litres of Biodiesel in a year Analyzed the life cycle of biodiesel to characterize <i>economics & sustainability</i> of biodiesel which helped in reducing dependence of IIT Bombay on diesel by 5% through diesel substitution in generator sets One amongst the 50 companies and colleges to be invited across the globe to showcase project in Industrial Green Chemistry World Symposium'11 	

AWARDS AND ACHIEVEMENTS	<ul style="list-style-type: none"> ● Secured All India Rank 750 out of 474 000 students appeared for Engineering Undergraduate Entrance Exam for Indian Institute of Technology 2010 ● Awarded Certificate of Achievement by President, DAV College Managing Committee for exceptional performance in Academics at high school level 2007 ● Secured All India Rank 172 in National Science Olympiad and All India Rank 301 in Inter-active Maths Olympiad 2007
POSITIONS OF RESPONSIBILITY	<p>Manager- Publicity, Azeotropy 2013</p> <p>Azeotropy is the Annual Symposium of Chemical Engineering Department, IIT Bombay <i>Built & led a 2-tier team of 100 students to conceptualize and execute the entire Publicity Campaign across 250 Engineering Colleges all over the India</i></p> <ul style="list-style-type: none"> ● Revitalized publicity by launching new mascot, logos, videos, several new events & competitions resulting in 50% growth in footfall & online social media outreach ● Established network of 100 ambassadors across nation to reach out to new colleges and ensure the efficient outreach of Azeotropy across the nation ● Pioneered deals with printing and courier partners to reduce expenditure by 20% <p>Convener, Rang & Pixels 2011</p> <p><i>Rang and Pixels is the Fine Arts and Photography Club respectively of IIT Bombay to provide a platform for 10 000 students to nurture themselves</i></p> <ul style="list-style-type: none"> ● Pioneered 1st Fine Arts Classes and Digital Photography Lectures, Photowalks & 'Photographer of Week' ventures in campus to inspire students leading to 50% increase in activities ● Organized the 9th edition of Kaladarshan, the Annual Photography & Fine Arts Exhibition, showcasing work of more than 100 artists and 150 photographers to 5000 visitors ● Continuous efforts led IIT Bombay to win several inter college festivals across the nation
EXTRA CURRICULAR ACTIVITIES	<ul style="list-style-type: none"> ● Secured 3-D Modeling Competition at Chaos, The Cultural Festival of Indian Institute of Management, Ahmedabad 2012 ● Designed Mood Indigo Wall 2011-The Cultural Festival of IIT Bombay which received major viewership and popularity on social media (Facebook) ● Conceptualized and executed 5 Fine Art competitions & workshops in Mood Indigo 2011 attracting, 500+ participants from all colleges across the country