

Sugandha Singla

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RESEARCH INTEREST	Financial Economics, Macroeconomics, Markets, International Relations & Trade	
EDUCATION	Indian Institute of Technology Bombay , Mumbai, India B.Tech. in Department of Chemical Engineering	July 2010 - Apr 2014
PUBLICATIONS	Sugandha Singla, Prateek Maheshwari, Yogendra Shastri Sub Optimal Supply Chain Configuration Design by Cost effective Optimisation of Post-Harvest Production Process of Bio-Energy fuels, <i>Manuscript in preparation</i>	
RESEARCH EXPERIENCE	Resiliency & Efficiency Considerations in <i>Supply Chain Network Design</i> <i>Research Assistant</i> Department of Chemical Engineering, IIT Bombay <i>Advisor:</i> Prof. Yogendra Shastri 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 supply chain network for post harvest production of lignocellulosic biofuelIncorporated 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 disruptionsDeveloping <i>Stochastic Optimization Model</i> to incorporate disruptions costs accounting for uncertainties by adding probable eventualities in the algorithm; returns Supply Chain Design with quantized efficiency-resiliency trade-offs	
CONFERENCE	Young Change Makers Conclave <i>Patrons of Weaving-The Forgotten Ones</i>	<i>United Nations Information Centre, India</i> 2012 <ul style="list-style-type: none">Selected among the top 200 delegates all over India and Bhutan to discuss problems faced by the country in front of eminent panel like US Consulate General, UNIC India Director, Mr.Nitin Paranjpe- CEO of HUL, Ms.Masaba Gupta- Indian Fashion DesignerPresented case study 'Patrons of Weaving-The Forgotten Ones' showing the deterring state of Indian Weavers and handloom industry at local level market where as it is highly sought out at international level; results in an increasing number of suicides every yearBrought forward root causes- poverty, lack of knowledge,exploitation by Middle Men etc.Proposed solutions such as open market projects to sell the products directly to consumers, proper advertising via public interests commercial, educating weavers true value of craft
INTERNSHIPS	Equity People, Kolkata, India Quantitative Analyst, Principle Investment Division	Summer 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. Also calculated & analysed implied and historical correlations b/w index and underlying stocks.

Motilal Oswal Securities Private Ltd., Mumbai, India
 Research Analyst, Equity Research Division
Recent developments in Financial Markets & Sub Prime Mortgage crisis of 2008

Dec 2011

- 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.

ITC Ltd., Kolkata, India
 Summer Trainee, Food and Beverages Division
Improvisation of Supply Chain Management & Logistics for 'Bingo' Chips

Summer 2013

- Benchmarked current supply chain process for '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*, used to predict and keep tracks of shortages occurring at heuristics level through-out the supply chain management

RELEVANT PROJECTS

Optimisation of fantasy football team
Guide: Prof. Yogendra Shastri

Jan-Apr, 2014
Dynamic Programming

- Modeled optimum team selection problem for fantasy premier league as a modified Knap-sack problem in MATLAB by using a dynamic programming algorithm with additional constraints related to a proper football team.
- 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
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
Guide: Prof. Sanjay Mahajani

2011-2012

- 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 gain *economics & sustainability* understanding 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**

COMPUTER SKILLS

Programming: C/C++, Python, MATLAB
Modelling: GAMS- 'General Algebraic Modelling System'

SELECTED COURSES

Optimisation	Economics Principle	Applied Multivariate Statistics
Linear Algebra	Numerical Analysis	Game Theory ¹
Data Analysis & Interpretation	Computer Programming	Financial Markets ¹

¹on coursera

AWARDS AND ACHIEVEMENTS	<ul style="list-style-type: none"> • Ranked in the top 0.2% of over 474000 students in the IIT entrance examination 2010 • Awarded Certificate of Achievement by President, DAV College Managing Committee for exceptional performance in Academics at high school level 2007 • All India Rank 171 in National Science Olympiad & 301 in Interactive Mathematics Olympiad
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
COMMUNITY INVOLVEMENT	<p>Sparsh-Touching Innocent Hearts Make a Wish and Mood Indigo 2011</p> <p><i>Sparsh is the social Cause launched by Mood Indigo with Make A Difference NGO, for betterment of underprivileged children through campaigns and awareness drives.</i></p> <ul style="list-style-type: none"> • Voluntarily conducted workshops in various fine arts genres for 800 under-privileged kids in 3 orphanages and Slums in Mumbai, India • Carried out slum awareness drive with support from 6000 signatures
EXTRA CURRICULAR ACTIVITIES	<ul style="list-style-type: none"> • Won 3-D Modeling Competition at Chaos, The Cultural Festival of Indian Institute of Management, Ahmedabad'12 • Designed Mood Indigo Wall-The Cultural Festival of IIT Bombay which served as a Major Highlight of the Festival with viewership of 70,000+ & 1000+ photos circulated on Facebook • Conceptualized and executed 5 Fine Art competitions & workshops in Mood Indigo'11 attracting, 500+ participants from all colleges across the country