

Curriculum Vitae

Snehamoy Chatterjee

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Department of Geological and Mining Engineering and Sciences
Michigan Technological University
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Houghton, MI – 49931; USA
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EDUCATION:

Ph.D in Mining Engineering

Indian Institute of Technology Kharagpur, India, September 2007

Masters of Engineering in Mining Engineering

Bengal Engineering and Science University, India, March 2002

Bachelor of Engineering in Mining Engineering

Bengal Engineering and Science University, India, June 2000

EXPERIENCE

Assistant Professor

Michigan Technological University

Houghton, Michigan, USA

October 2014 - present

Assistant Professor

National Institute of Technology

Rourkela, India

March 2008-September 2014

Visiting Researcher

COSMO Stochastic Mine Planning Laboratory, McGill University

Montreal, Canada

May 2013-July 2013

Post-Doctoral Research Fellow

COSMO Stochastic Mine Planning Laboratory, McGill University

Montreal, Canada

September 2008-July 2010

Post-Doctoral Research Fellow

Dept. of Mining Engineering, University of Alaska
Fairbanks, USA
October 2006-March 2008

Supporting Project Officer

Institute Research Scholar, Indian Institute of Technology Kharagpur,
India
August 2006 – September 2006

BROAD AREAS OF RESEARCH

- Multi-point and multi-scale geostatistics
- Short-term mine planning, including blast design and fragmentation analysis, operations, mining equipment selection and fleet management
- Production monitoring and automated control using digital image analysis
- Mathematical and artificial intelligence modeling in mining
- Ground water flow and solute transport for modeling environmental problems
- Mine safety and risk analysis
- Integrating multiple sources data for surface and sub-surface modeling

TEACHING

Subjects Teaching at Michigan Tech

- GE4934 - Special Topics in Mining Engineering - Geostatistics and Resource Estimation
- GE 4934- Special Topics in Mining Engineering - Strategic Mine Planning and Design

Subjects Taught at NIT Rourkela, India

- MN 301: Systems Engineering
- MN 400: Mine Planning
- MN 208: Geostatistics
- MN 304: Computer Applications in Mines
- MN 441: Mine Legislation and Safety Engineering
- MN 372: Computer Applications in Mining Laboratory
- MN 473: Simulation and Modeling of Mining Systems Laboratory
- MN 604: Advanced Mine Planning
- MN 608: Special Topic in Mining Engineering
- MN 673: Mining Engineering Laboratory I
- MN 674: Mining Engineering Laboratory II

AWARDS & HONOURS

1. Young OR (Operations Research) Professional Award by 37th International Symposium on Application of Computers and Operations Research in the Mineral Industry (APCOM 2015).

2. Editor's Best Reviewers Award 2014 by Mathematical Geosciences Journal
3. Committee member of 37th International Symposium on Application of Computers and Operations Research in the Mineral Industry (APCOM 2015), May 24^h – May 27th 2015, Fairbanks, Alaska
4. Technical Committee member of GEOSTATS2016 conference, Valencia, Spain
5. Technical Committee member of International Conference on Mining Innovation (MININ2016) conference, Chile
6. Co-convener of International Conference on Technological Challenges and Management Issues for Sustainability of Mining Industries (TMSMI 2011), 4th – 6th August 2011, NIT Rourkela, India
7. Reviewer for Mathematical Geosciences, Computer and Geosciences, Natural Resource Research, SME Transactions, Engineering Applications of Artificial Intelligence, Applied Soft Computing, Powder Technology, and more.
8. Technical committee member of 4th International Conference on Mining Innovation (MININ 2010), 23-25 June 2010, Santiago, Chile
9. Technical committee member of International Symposium on Advances in Mining Technology and Management (AIMM-05), November 30th – December 2nd 2005, IIT Kharagpur, India
10. Silver Medal awarded for 1st rank in Master of Engineering, Bengal Engineering College (D.U), India

EXTERNALLY FUNDED PROJECTS

Funding from Government Organizations

1. Project title: Multipoint geostatistical simulation algorithm for nonstationary data: A multi- scale wavelet-based approach
Funding agency: Michigan Tech Research Excellence Fund (REF),
Duration: 1 year;
Amount of fund: 11,000 USD
Role: Principal Investigator
2. Project title: Fast open pit mine production scheduling under geological uncertainties
Funding agency: Council of Scientific and Industrial Research (CSIR), Govt. of India,
Duration: 3 years;
Amount of fund: 30,000 USD
Role: Principal Investigator
3. Project title: Recoverable Reserve Estimation Using Non-Gaussian Copula Based ore body simulation along with open pit and stope optimization techniques
Funding agency: Ministry of Mines, Govt. of India,
Duration: 3 years;

Amount of fund: 43,000 USD

Role: Principal Investigator

4. Project title: Characterization and numerical simulation of brazed joint - ceramic ring of HVB (High Voltage Bushing)
Funding agency: Board of Research in Fusion Science & Technology (BRFST), Govt. of India
Duration: 3 Years;
Amount of fund: 42,000 USD
Role: Co-principal Investigator
5. Project title: Estimation and Simulation of Gas Permeability as well as Stress – Strain behaviour of Indian Coal Seam for CBM production and CO₂ Sequestration at in-situ conditions
Funding agency: Department of Science and Technology (DST), Govt. of India
Duration: 3 years;
Amount of fund: 50,000 USD
Role: Co-principal Investigator

Funding from Industry

1. Project title: Stability of the ultimate pit slope of Rajpardi Lignite mine
Funding agency: Gujarat Mineral Development Corporation (GMDC), India
Duration: 1 year;
Amount of fund: 4,000 USD
Role: Principal Investigator
2. Project title Scientific study on Slope Stability of Dragline Dump and Overburden Bench at Mungoli Opencast Mine, Wani Area, Western Coal-fields Limited, India
Funding agency: Western Coal-fields Limited, Govt. of India,
Duration: 1 and half years;
Amount of fund: 3,000 USD
Role: Co-principal Investigator
3. Project title: Scientific study on pit optimisation of Rawan limestone mine of Ambuja Cement Limited, India using economic parameters
Funding agency: Ambuja Cement Limited
Duration: 1 year:
Amount of fund: 3,000 USD
Role: Principal Investigator
4. Project title: Ultimate pit slope calculation and stability analysis of iron ore mine
Funding agency: Jain an Jain Brothers, Orissa, India
Duration: 1 year
Amount of fund: 3,000 USD

Role: Co-principal Investigator

BOOK PUBLICATION

Bandopadhyay S, **Chatterjee S**, Ghosh T, and Raj KV (2015) Application of Computers and Operations Research in the Mineral Industry, Proceeding of the 37th International Symposium (Edited Book), Society for Mining, metallurgy, and Exploration, Inc. (SME) Publishers, 1189 p.

REFEREED JOURNAL PUBLICATIONS

Published

1. **Chatterjee S**, Sethi M, and Asad, MWA. (2015) Production phase and ultimate pit limit design under commodity price uncertainty, *European Journal of Operational Research*. doi:10.1016/j.ejor.2015.07.012
2. **Chatterjee S**, Dimitrakopoulos R, and Mustafa H. (2015) Fast wavelet-based conditional simulation using training images. *Computational Geosciences*. doi: 10.1007/s10596-015-9482-y
3. Patel A. K, **Chatterjee S**, (2015) Computer vision-based limestone rock-type classification using probabilistic neural network, *Geoscience Frontiers*, doi:10.1016/j.gsf.2014.10.005
4. Karak S, **Chatterjee S**, Bandopadhyay S, (2015) Mathematical Modelling of the Physical and Mechanical Properties of Nano-Y₂O₃ Dispersed Ferritic Alloys using Evolutionary Algorithm-based Neural Network, *Powder Technology*, 274, pp. 217-226. 10.1016/j.powtec.2015.01.028
5. **Chatterjee S**, Mohanty MM (2015) Automatic cluster selection using gap statistics for pattern-based multi-point geostatistical simulation, *Arabian Journal of Geosciences*, doi: 10.1007/s12517-014-1724-0
6. **Chatterjee S**, Dash A, Bandopadhyay S, (2014) Ensemble Support Vector Machine Algorithm for Reliability Estimation of a Mining Machine, *Quality and Reliability Engineering International*, DOI: 10.1002/qre.1686
7. Mustafa, H., **Chatterjee, S.**, and Dimitrakopoulos, R., (2014) CDFSIM: Efficient Stochastic Simulation Through Decomposition of Cumulative Distribution Functions of Transformed Spatial Patterns, *Mathematical Geosciences*, Vol. 46, Issue 1, pp. 95-123.
8. **Chatterjee S** (2014) Development of uncertainty-based work injury model using Bayesian structural equation modelling, *International Journal of Injury Control and Safety promotion*, Vol. 21, Issue 4, pp. 318-27
9. Chowdhury S, **Chatterjee S**, (2013) Pit optimisation and life of mine scheduling for a tenement in central African copper belt, *Journal of Mining, Reclamation, and Environment*, Vol. 28, issue 3, 200-213.

10. **Chatterjee, S.** and Bandopadhyay, S. (2013) “Ensemble of diverse geostatistical simulation model using clustering based algorithm: An application to a placer gravel deposit”. *Marine Georesources and Geotechnology*, Vol. 31, issue 3, pp. 225-241
11. **Chatterjee, S.** (2013) Vision-based rock-type classification of limestone using multi-class support vector machine, *Applied Intelligence*, Vol. 39, issue 1, pp. 14-27.
12. Mustafa, H., **Chatterjee, S.**, Dimitrakopoulos, R., and Graf, T. (2013) Wavelet-based pattern simulation for geologic heterogeneity recognition: Implications in subsurface flow and transport simulations, *Advances in Water Resources*, Vol 54, April 2013, pp. 22–37
13. **Chatterjee, S.**, Bandopadhyay, S. (2012) Reliability estimation using a genetic algorithm-based artificial neural network: An application to a load-haul-dump machine, *Expert Systems with Applications* , Vol. 39, issue 12, pp. 10943-10951.
14. **Chatterjee, S.**, Dimitrakopoulos, R., and Mustafa, H. (2012) Dimensional reduction of pattern-based simulation using wavelet analysis, *Mathematical Geosciences*, Vol. 44, pp. 343-374
15. **Chatterjee, S.**, and Dimitrakopoulos, R. (2012) Multi-scale stochastic simulation with wavelet-based approach, *Computer and Geosciences*, Vol. 45, pp. 177-189.
16. **Chatterjee, S.** and Bandopadhyay, S. (2011) Resource estimation of a placer gold deposit with uncertainty, applying the Bayesian neural network model, *SME Transaction* Vol. 330, pp. 606-617.
17. **Chatterjee, S.** and Bandopadhyay, S. (2011) “Goodnews Bay Platinum Resource Estimation Using Least Squares Support Vector Regression with Selection of Input Space Dimension and Hyperparameters” *Natural Resource Research*, Vol. 20, issue 2, pp 117-129.
18. Mustafa, H., Dimitrakopoulos, R., and **Chatterjee, S.** (2011) “Geologic heterogeneity representation using high-order spatial cumulants for subsurface flow simulations”, *Water Resource Research*, Vol. 47, W08536, doi:10.1029/2010WR009515, 2011.
19. **Chatterjee, S.** and Bhattacharjee, A. (2011) “Genetic Algorithms for feature selection of image analysis-based quality monitoring model: An application to an Iron mine”. *Engineering Applications of Artificial Intelligence*, Vol. 24, issue 5, pp. 786-795.
20. **Chatterjee S,** Bhattacharjee A, Samanta B, and Pal S K, (2010) “Image based quality monitoring system of limestone ore grade” *Computers in Industry*, Vol. 61, No. 5, P. 391-408.
21. **Chatterjee S,** Bandopadhyay S, and Machuca D, (2010) “Ore grade prediction using genetic algorithm and clustering based ensemble neural network model” *Mathematical Geosciences*, Vol. 42, no. 3, P. 309-326.
22. Rai, Piyush, **Chatterjee, S.**, and Bandopadhyay, S., (2009) “Neural Network Based Selection of Design Parameters Governing the Shape and Powder Factor of the Blasted Muck piles – A Case Study” , *Mining Technology* , Vol.118, No.2
23. **Chatterjee S,** Bandopadhyay S, and Rai Piyush, (2008) “A genetic algorithm based neural network learning parameter selection approach for ore grade evaluation of a

limestone deposit” *Mining Technology*, Vol. 117, No. 4, pp. 178-190.

24. **Chatterjee S**, Bhattacharjee A, Samanta B, and Pal S K, (2008) “Rock type classification of an iron ore deposit using digital image analysis technique” *International Journal of Mining and Mineral Engineering*, Vol. 1, no. 1, 22-46
25. **Chatterjee S**, Bandopadhyay S, and Machuca D, (2008) “Ore waste classification of a lead zinc deposit using support vector machine” *SME Transaction*, Vol. 34, p 94-103
26. Samanta B, Kumar A, Bhattacharjee A, and **Chatterjee S**, (2007) “Open Pit Mine design in Presence of Uncertainty Due to Ore Grade Modeling” *Mineral Resource Engineering*, Vol. 12, No. 4, P 241-257.
27. **Chatterjee S**, and Bandopadhyay S, (2007) “Global neural network learning using genetic algorithm for ore grade prediction of iron ore deposit”, *Mineral Resource Engineering*. Vol. 12, No. 4.
28. **Chatterjee S**, Bandopadhyay S, Ganguli R, Bhattacharjee A, Samanta B, and Pal S K, (2007) “General regression neural network residual estimation for ore grade prediction of limestone deposit”, *Mining Technology*, Vol. 116, No 3, P. 89-99.
29. **Chatterjee S**, Bhattacharjee A, Samanta B and Pal S K (2006) “Ore grade estimation of a limestone deposit in India using artificial neural network”, *Applied GIS.*, Vol. 2, No.1, P. 2.1-2.20.
30. **Chatterjee S**, Bhattacharjee A, Samanta B and Pal S K (2005) “A Comparative Study of Principle Component Kriging and Ordinary Kriging in Ore Grade Estimation of a Limestone Deposit” *Minetech*, Vol. 26, No. 6, P. 29-35.
31. Maiti J, **Chatterjee S** and Bangdiwala S I (2004) “Determinants of work injuries in mines-an application of structural equation modeling” *Injury Control and Safety Promotion*, Vol 11, No 1, 29-37.

Paper under Review:

1. Kumar A, **Chatterjee S**. Open Pit Coal Mine Production Sequencing incorporating grade blending and stockpiling options: An Application from Indian Mine, *Engineering Optimization (Resubmitted)*
2. **Chatterjee S** and Sethi M. Evolutionary algorithm for constructing neural network models for metal price forecasting, *Expert Systems*
3. Verma AK, Kishore K, and **Chatterjee S**, Prediction model of longwall powered support capacity using field monitored data of a longwall panel and uncertainty-based neural network, *International Journal of Rock Mechanics and Mining Sciences*
4. Joshi D, **Chatterjee S** and Equeenuddin SM, Limestone Quarry Production Planning for Consistent Supply of Raw Materials to Cement Plant: A Case Study from Indian Cement Industry with A Captive Quarry, *Mining Science*

5. Joshi D, Chatterjee S and Equeenuddin SM, Production Scheduling of Open Pit Mine using Sequential Branch-And-Cut Algorithm: An Application from Indian Iron Mine, *Arabian Journal of Geosciences*
6. Albijanic B, **Chatterjee S**, Subasinghe N, Asad MWA. Evaluation of the contribution of surface tension of dilute alcohol solutions on liquid circulation time in a draft tube airlift reactor, *Chemical Engineering Research and Design*
7. Patel AK, Chatterjee S, Gorai AK. Development of Ore Grade Classification Model Using Support Vector Machine Algorithm, *Applied Soft Computing*