Sumeet Kumar Sinha

Awards, Publications and Scholarships

CONTACT INFORMATION

Senior Research Assistant
Civil Engineering Department
Institute of Technology Delhi

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website: https://www.sumeetsinha.in/
e-mail: Sumeet.kumar507@gmail.com

RESEARCH ASSISTANTSHIP

Stochastic Ground Response Seismic Analysis of earthquakes on Delhi
(Prof. G V Ramana) May 2014 – Present

The research aims at quantifying earthquake induced ground response in Delhi to verify Indian Standard (IS) codal provisions and suggest relevant changes. To achieve this I developed an AI program in C++ to interact with DeepSoil software and perform stochastic analysis with varying soil layer thickness and bed-rock depth (20-300 m). With the results obtained I am hopeful of writing a research paper by Dec, 2014. Post that I would engage my research in Liquefaction and modelling of Artificial Neural Networks (ANN) in Geotechnical Eng.

UNDERGRADUATE ASSISTANTSHIP

Basic Soil Mechanics, IIT Delhi (Independently handled soil mechanics tutorials for 120+ students)
(*Prof. G V Ramana*) Jan 2014 – May 2014

Structure Analysis I, IIT Delhi (Assisted in basic structural analysis lab theory and experiments)
(*Prof. Abhijit Ganguli*) July 2013 – Dec 2013

RESEARCH PUBLICATIONS

Kumar S., Biswas S., and Manna B. (2014). *Nonlinear Dynamic Response of Floating Piles under Vertical Vibration*. 14th International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG), 22-25 September, Kyoto, Japan, pp. 951-956.

Kumar S., Biswas S., and Manna B. (2014). *Nonlinear Characteristics of Floating Piles under Rotating Machine Induced Vertical Vibration*. Geotechnical and Geological Engineering (Springer)(under review)

ARTICLES PRESENTATIONS AND INNOVATIONS

Paper Bridge: Designed and fabricated a prototype of 1m span truss bridge using only paper (A4 Sheets), water and adhesive (approx. 2:1 mixture) with unique and innovative design concept of joints which resulted in the working strength up to 250 Kg i.e. 80 X self-weight (3.72 Kg).

Technical Paper: On the recent developments and advances of photonic switches and gates over conventional switches and its importance for laying the foundation of future advance computing i.e. Quantum Computing

HONOURS AWARDS AND SCHOLARSHIPS

Undergraduate Institute (2010-2014)	May 2014	Completed **minor in computer science engineering** with major in civil engineering with CGPA of 9.115/10
	May 2014	**Jwahar Gajri Bai Scholarship-2014:** Honoured for academic excellence in undergraduate study by IIT Delhi
	2013-2014	**UG Assistantship Award:** Honoured with Certificate of Appreciation and scholarship amount of INR 50,000 for excellent performance in assisting 2nd year students in undergraduate courses in academic year,2013-2014
	2010 - 2014	**IITD Semester Merit Award:** Received four times for being among top 7% students across IIT Delhi campus
	2010 - 2014	**Ministry Of Human Resource Development Merit Cum-Means Scholarship**: Awarded consecutively for 4 years of worth INR 248,000 for outstanding performance in undergraduate studies by Government of India
	April 2012	**Paper Truss Bridge** came out to be **most innovate and popular projects** of Open House-2012 and got published in leading newspaper Times of India and presented in innovative project list on TheBetterIndia.com
	2011-2013	**Avanti Fellowship:** One of 20 students chosen for the fellowship from IIT Delhi undergraduate 800+ students
Senior Secondary School (2008-2010)	July 2010	**Hindustan Talent Award-2010:** Felicitated by then **Chief Minister of Bihar** for excellent performance in IIT JEE 2010, AIEEE 2010, CBSE Senior Secondary Examination and ranking **1st** in school in science stream
	June 2010	**Became 1st** from my village to get admitted to India's premier Institute - Indian Institute of Technology (IIT)
	June 2010	**Ranked 3rd** in Bihar Combined Entrance Competitive Examination (BCECE)-2010 among 200,000 students
	May 2010	**Honoured** in Senior High School Years' Topper's list for securing **1st** rank in science stream of 200+ students
	2008-2010	**Honoured** as **Best boy** for **two** consecutive years for excellent overall performance among students in school
Secondary School (1996-2008)	2008	**Secured 4th** rank in school for All India Senior Secondary School Examination -2008 among 300+ students
	2002-2008	**Secured top 10** rank in class **consecutively for 6 years** & won many awards and medals to this achievement
	2005-2008	**Secured** top rank all over India in Maths Olympiad, Science Olympiad and Quizzing Competitions
	2003	Awarded **3rd** position in X11th Ambedkar **State Level Inter School Chess Tournament** in 5000+ players
	1996-2008	Awarded certificates and medals for Distinction in subjects, Full Attendance, Best Overall Performance

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RESEARCH INTERESTS

Computational Geomechanics; Soil-Structure Interaction; Geotechnical Earthquake Engineering

EDUCATION

Research Assistantship
Geotechnical & Geo-environmental Engineering, IIT Delhi May 2014 – present

Bachelor of Technology in Civil Engineering
Indian Institute of Technology, Delhi July 2010 –May 2014

- **Minor Area Specialization In Computer Science Engineering**
- Overall Cumulative Grade Point Average: 9.115 (4/4 WES Evaluation)
- Core Civil Cumulative Grade Point Average : 9.4

Gyan Niketan, Khagaul Road, Patna, Bihar April 2010
Class XII, Central Board of Secondary Education, India
Percentage: 92.20%

St. Karen's Secondary School, Khagaul Road, Patna, Bihar April 2008
Class X, Central Board of Secondary Education, India
Percentage: 90.67%

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(*Prof. Abhijit Ganguli*) July 2013 – Dec 2013

UNDERGRADUATE THESIS

Non-Linear Dynamic Response of Floating Piles under machine induced vibrations
(Prof. Bappaditya Manna) Jan 2013 – May 2014
Developed a series of MATLAB programs based on continuum approach by *Novak and Aboul-Ella (1978)* for a linear [*Novak (1978)*] and two non-linear [*Novak and Sheta (1980)and Han(1997)*] soil-stiffness models to evaluate stiffness and damping parameters of floating piles subject to strong vertical, coupled and torsional vibrations. Dynamic forced vibration tests were performed in the field to verify the results of proposed model

RESEARCH PUBLICATIONS

Kumar S., Biswas S., and Manna B. (2014). *Nonlinear Dynamic Response of Floating Piles under Vertical Vibration*. 14th International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG), 22-25 September, Kyoto, Japan, pp. 951-956.

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HONOURS AND AWARDS

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*Complete Description about projects/internship with reports/files are available on website: www.sumeetsinha.in

Internships

Design Of High Rise Buildings
Civtech Consultants Pvt. Ltd, Noida, Delhi, India May 2013 - July 2013
Designed a 25+ storey residential structure (DLF Sec-79) in STAAD/ETABS and performed VBA modelling in excel to obtain COR (Centre of Rigidity) of buildings to optimize the steel requirements from effects of torsion. Prepared and delivered presentations on the importance of quality checks and safety at construction sites

Delhi Metro Underground Construction (Phase III extension)
Delhi Metro Railway Corporation (DMRC), New Delhi, India May 2012 - July 2012
Supervised, performed quality checks on concreting, water proofing, piling and construction of diaphragm wall and launching/receiving shaft at Janpath. Got unique opportunity to work with Tunnel Boring Machines (TBM) and learned about ring erection, segment handling and tunnel design. Gave valuable suggestions on integration plan of Metro Stations and visited Batch Mixing Plant and India's largest casting yard in Mundaka

Civil Engineering Projects

Design Of Industrial Steel Structure (Prof. Vasant Matsagar) Jan, 2013 – May, 2013
Designed gantry girder, purlins, truss members, lateral braces, columns, foundation and roof sheeting of an Industrial Steel building in Stadd Pro for all load combinations as per Indian Standard (IS) Codal provisions

Paper Bridge (paper, adhesive and water)(Prof. Abhijit Ganguli) Jul, 2012 – Dec, 2012
Designed and fabricated a 1 m span prototype of a paper truss bridge with unique and innovative design concept of joints which resulted in the working strength up to 250 Kg i.e. 80 times its self-weight (3.72 Kg)

Plane frame Analyzer (Prof. Suresh Bhalla) Jul, 2012 – Dec, 2012
Developed a GUI application in JAVA to analyse a general Plane Frame having 'm' number of bays and 'n' number of storeys subjected to application of non-uniform lateral loads using Finite Element Method (FEM)

Computer Science Engineering Projects

Artificial Intelligent (AI) Bots (Prof. Mausam Mausam) Jan, 2014 – May, 2014
Developed strategy for Blackjack in C++ using Monte Carlo Probabilistic Model and created an AI-Bot for K-Connect game of varying rows, columns and connects using Mini-Max search with Alpha-Beta pruning

SimpleRisc Emulator and Processor (Prof. S. R. Sarangi) Jul, 2013 – Dec, 2013
Built a processor for SimpleRisc (21 instruction set with –u and –h modifiers) in Logisim using basic AND, OR and NOT gates; programmed its Assembly lang. emulator in Java and implemented Karatsuba algorithm

Travel & Go Planner (www.travelngo.in) (Prof. Maya Ramanath) Jan, 2013 – May, 2013
Crawled data using Google API through a JAVA program; created a database of 11,000 cities, hotels and 125,000 tourist destination in India and designed an intelligence based itinerary generation system for tourists

Other Projects

Photonic switches and gates (Prof. G. S. Visweswaran)
Electrical Engineering Department, IIT Delhi Jul, 2013 – Dec, 2013
Wrote a term paper on recent developments and advances of photonic switches and gates over conventional switches and its importance for laying the foundation of future advance computing i.e. Quantum Computing

Socio-economic employee life in unorganized sectors (Prof. J. J. Thomas)
Humanities and Social Science, IIT Delhi Jul, 2011 – Dec, 2011
Surveyed 100 people covering different unorganised sectors in Delhi and performed econometric analysis using R (Statistical) software for savings-income behaviour and its effect on education, health and investment

Technical Skills

Softwares
GEOSTUDIO, PLAXIS, DEEPSOIL, ROCSCIENCE, STAAD, ETABS, SAFE, SAP2000, AUTOCAD, ABAQUS, ARCGIS, MATLAB

Programming Languages
JAVA, C/C++, PYTHON, FORTRAN, VISUAL BASIC/MACRO, OCAML, PROLOG, PHP, SQL, JAVASCRIPT, HTML

Position of Responsibility

Manager, Society for Advancement of Research in Arts and Science Dec,2012-May,2014
Collaborated with NSS IIT Delhi and local NGO Swayam Seva Sansthan to carry out Audio-Visual Educational System (AVES) and E-Kiosk Information System enhancing primary education and rural networking in two villages of Bihar directly benefiting 200 rural kids and a population over 2000 rural people. Partnered with Tryst, IIT Delhi in 2013 and 2014 to conduct online events on concerning social issues in India

Member, Friends of Bihar and Jharkhand (FOB&J) Dec,2013-present
Organized funds for the acquisition of land to establish the main headquarters of the NGO for its operations

Leadership Positions, IIT Delhi July,2010-May,2014
Exhibited dynamic leadership qualities as a coordinator, activity head and volunteer in organising events and activities in cultural fest like RENDEZVOUS, SPIC MACAY, SPARENZA and technical fests like TRYST, OPEN HOUSE

Other Interests

Teaching (Assisted in assignments of Civil Engineering at TransWeb Tutors online Education Project)
Chess (3rd in XIIth Ambedkar State Level Chess); Badminton (won inter-hostel competition in 2010-2011)
Listening to music, traveling and want to learn acting, dance and a music instrument

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