Rajendra Choudhary

Indian Institute of Technology Indore
Simrol, Indore, Madhya Pradesh, India
Pin Code: 453552

rajendracse46@gmail.com, phd1301201004@iiti.ac.in
+91-810-906-6213
`www.iiti.ac.in/people/~kahuja/group.html`

Currently, I am a *Ph.D. Candidate* in Computer Science & Engineering at IIT Indore (India), working under the supervision of Dr. Kapil Ahuja. Earlier, I completed my M.Tech. (in Robotics) under the supervision of Prof. Ramji lal and Dr. Pavan Chakraborty from IIIT Allahabad (India).

Research Interests

I work at intersection of Computer Science and Mathematics to solve engineering problems. Specifically, I have research interests as follows: Theory of computation, Algorithms, Optimization, Numerical linear algebra, Group Theory.

Current Research Problems

- Backward Stability Analysis.

- Bi-Linear Dynamical Systems.

- Model Order Reduction.

Education

Jan 2014 - Dec 2018 (Expected)	**Doctor of Philosophy (Ph.D.), Computer Science & Engineering** Indian Institute of Technology Indore, Indore, India CPI: 8.50 / 10.00 Advisor: Dr. Kapil Ahuja Dissertation: Iterative Linear Solves for Bi-Linear Model Reduction
July 2011 – July 2013	**Master of Technology (M.Tech.), IT(ROBOTICS)** Indian Institute of Information Technology, Allahabad, India CGPI: 7.60 / 10.00 Advisor: Prof. Ramji Lal & Dr. Pavan Chakraborty Thesis: Theoretical Aspect of Transformation Using Group Theory
July 2006 – Jun 2010	**Bachelor of Engineering (B.E.), Computer Science & Engineering** Shri Vaishnav Institute of Technology & Science, Indore, India (RGPV University) Percentage: 63.16 / 100.00 Advisor: Dr. Rajesh Chakraborty Project: Text Based Image Retrieval System.

Professional Experience

Jan 2014 - Dec 2018 (Expected)	**Graduate Research/Teaching Assistant** *Department of Computer Science & Engineering, IIT Indore, India* • Researched on Stability Analysis of Inexact Linear Solves for Bilinear Model Reduction. • Studied both Non-Parametric and Parametric Systems. • TA for four courses in five consecutive semesters.
Sept 2016 - Oct 2016	**Research Internship** *Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany* • Worked on a project title "Model Reduction of (Quadratic-)Bilinear Systems" under the supervision of Prof. Peter Benner.
July 2011 – July 2013	**Graduate Research/Teaching Assistant** *Department of Information Technology, IIIT Allahabad, India* • Researched on transformation theory of robotics arm and its manipulator at AI & ROBOTICS Lab, IIIT Allahabad. • TA for four courses in four consecutive semesters.

Technical Skills:

Programming Languages	C, C++, JAVA,.NET, PYTHON.
Tools	IBM DB2, IBM RAD, Net Beams, Matlab, Octave.

Refereed Journal Publication

- **R. Choudhary** and K. Ahuja, Stability Analysis of Bilinear Iterative Rational Krylov Algorithm. *Linear Algebra and its Applications (Elsevier Journal)*, vol. 538, pp. 56–88, 2018.

Manuscript to be Submitted

- **R. Choudhary** and K. Ahuja, Stability of Linear Solves in Multipoint Volterra Series Interpolatory Bilinear Model Reduction. To be submitted to *SIAM Journal on Matrix Analysis and Applications*, August 2018.

- **R. Choudhary** and K. Ahuja, Inexact solves in Parametric Linear Model Reduction Algorithms. To be submitted to *short journal/ letter*, September 2018.

Research Talks

- Stability Analysis of Bilinear Iterative Rational Krylov Algorithm. *Reduced Basis Summer School-2016*, Hedersleben, Germany, Oct 4-7, 2016,

  and

  International Conference on Mathematical Modelling, Differential Equations, Scientific Computing & Applications (ICMMDESCA-2016), IAMMS, IIT Kanpur, India, Mar 27-29, 2016.

Posters

- Recycling Krylov Subspaces for Model Reduction on GPUs, *International Undergraduate Research Symposium (IURS-10)*, Wilmington College, USA, May 14-20, 2017 (presented by Mr. Ruchir Garg, an undergraduate student).

- Stability of Linear Solves in Multipoint Volterra Series Interpolatory Bilinear Model Reduction, *Industry Academia Conclave-2016 (IAC-2016)*, IIT Indore, Feb 18-20, 2016,

  and

  Ramanujan Conclave-2015, IIT Indore, Dec 22-23, 2015.

Teaching Assistant @ IIT Indore

1st semester	Embedded Systems (CS 420 / CS 620)
2nd semester	Discrete Mathematical Structures (CS 201)
3rd semester	Numerical Simulation (CS 422 / CS 622)
4th semester	Discrete Mathematical Structures (CS 201)
5th semester	Automata Theory and Logic (CS 202)

Teaching Assistant @ IIIT Allahabad

1st semester	Introduction to Programming (ITP 102)
2nd semester	Data Structures (DST 232)
3rd semester	Design and Analysis of Algorithms (DAA 432)
4th semester	Graphics & Visual Computing (GVC 532)

Certification

2009	IBM DB-2, IBM RAD, IBM Rational Rose Certified.
2008	Got the 4th position in "The Great Mind Challenge - IBM Academic Initiative" at SVITS Indore.

Service

Conferences and Workshop

2017	Volunteer for *Second IIT Indore-TU9 Research Workshop*, hosted by IIT Indore.
2017	Volunteer for *French Admissions Tour* organized by French Embassy, hosted by IIT Indore.
2016	Volunteer for course under GIAN Scheme of Ministry of Human Resources and Development (MHRD) titled *Linear and Nonlinear Systems, and Opt. with Appl. in Medical Imaging, Optimal Design, and Graphics* (given by Prof. Eric de Sturler at IIT Indore).
2013	Volunteer for *Lecture Workshop of Three National Science Academies of India on Galois Theory, Finite Fields and Cryptography* organized by IIIT Allahabad.
2011	Creating Documentation for *Seventh IEEE Conference on Wireless Communication and Sensor Networks (WCSN-2011)* organized by IIIT Allahabad in collaboration with WII Dehradun, NMDC Panna, and MP State Forest Department.
2011	Volunteer for *Fourth Science Conclave and INSPIRE Internship Program 2011: A Congregation of Nobel Laureates, Eminent Academicians and Scientists* organized by IIIT Allahabad.

IIT Indore

2015 – 2016	Chief Election Officer.
2014 – 2015	Member of the Election committee.

IIIT Allahabad

2012 – 2013	Head of the mess committee.
2011 – 2012	Member of the mess committee.

Honors and Awards

Academics

2010, 2011, 2012, 2013	GATE qualified (every time achieved a rank in top two percent of 200,000 test subjects). Graduate Aptitude Test in Engineering (GATE) is an examination for postgraduate admissions to various IITs.

Sports

2012	Winner of the Intra-IIIT Volleyball (Also, the Captain of PG's Volleyball team).
2009	Successfully Passed NCC-'C' Certificate examination under the authority of Ministry of Defence, India. NCC is an Indian military cadet corps.
2008	Successfully Passed NCC-'B' Certificate examination under the authority of Ministry of Defence, India.
2007	Successfully Attended the Combined Annual Training Camp conducted by No. 1(M.P.) Air Sqn NCC, Indore.
2005	Runner up in District level senior Volleyball competition.
2003	Runner up in State level junior Volleyball competition.

References

- **Dr. Kapil Ahuja**
  Associate Professor in Comp. Sci. & Engg.
  Dean of International Affairs
  IIT Indore
  Khandwa Road, Simrol, Indore
  MP (453552), India
  Tel: +91-732-4306-502
  Email: kahuja@iiti.ac.in

- **Dr. Aruna Tiwari**
  Associate Professor in Comp. Sci. & Engg.
  IIT Indore
  Khandwa Road, Simrol, Indore
  MP (453552), India
  Tel: +91-732-4306-529
  Email: artiwari@iiti.ac.in