Neeraj Gangwar

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Research Interests

Mathematical language processing, mathematical reasoning and understanding, natural language processing, interpretability, deep learning.

Education

University of Illinois, Urbana-Champaign, IL, USA — 2021 - Present
Ph.D. in Electrical and Computer Engineering

Indian Institute of Technology Roorkee, Uttarakhand, India — 2009 - 2014
B.Tech. in Electronics and Communication Engineering
M.Tech. in Wireless Communication

Employment

University of Illinois, Urbana-Champaign, IL, USA
Graduate Research Assistant — 2021 - Present

I am studying ways to effectively represent mathematical equations in a continuous vector space (similar to word2vec for natural text) under the supervision of Prof. Nickvash Kani.

Myntra, Bengaluru, KA, India
Technical Lead — 2019 - 2021

I led a team of three people that managed the inventory systems of Myntra. I was responsible for maintaining and supporting the inventory systems as well as software architecture and design of new features. I was also responsible for building the technical roadmap for the team. The projects included scaling inventory systems to support 1000x traffic and salvaging the orphan inventory in Myntra warehouses.

Senior Software Engineer — 2017 - 2019

I worked in the tech team for warehouse management. The main projects included last-mile consolidation and multi-tenancy to enable multiple tenants on the existing systems. I also led a team of four people to overhaul the design and architecture of the stock transfer workflow. I acquired skills in system design and architecture, asynchronous frameworks, and team management.

AIANash/Shoplane, Bengaluru, KA, India
Co-founder — 2015 - 2017

I worked in a team of three on creating a platform to improve online customer experience by predicting user intent. The initial idea was to develop a smart shopping experience employing artificial intelligence. It later shifted to creating a B2B artificial intelligence-driven analytics platform.

Commonfloor, Bengaluru, KA, India
Software Development Engineer 1 — 2014 - 2015

I was part of the revenue team in the real-estate vertical. I worked on lead sharing and pricing modules. I also developed a JavaScript plugin to track and analyze the impressions to find the ad performance on the product pages.

Internships

IBM India Software Labs, Bengaluru, KA, India
Extreme Blue Internship Program — 2013

I worked on the timing analysis of digital circuits and created core data models for GLSM that were modular and multi-threadable.

Defence Research and Development Organisation, Bengaluru, KA, India
Summer Intern — 2012

I analyzed the helix slow-wave structure (SWS) and compared the results with HFSS results.

Relevant Coursework	Pattern Recognition, Mathematical Models of Language, Deep Learning for Computer Vision, Computer Vision, Probability Theory, Information and Communication Theory, Adaptive Filter Theory, Data Structures and Algorithms, Computer Networks.

Publications

Preprints

1. Semantic Representations of Mathematical Expressions in a Continuous Vector Space
   Neeraj Gangwar, Nickvash Kani
   arXiv preprint 2211.08142 (2022)

Teaching

EC-362: Communication Systems Lab, IIT Roorkee
Teaching Assistant with Prof. Debashis Ghosh

Extra-Curricular Activities

Mentor, DIYA Research (diya-research.org)	2022
Member of SDSLabs (sdslabs.co), IIT Roorkee	2010 - 2014
Coordinator of the Linux Group, IIT Roorkee	2011 - 2012
Member of the National Service Scheme (NSS), IIT Roorkee	2009 - 2010

Open Source

Contributed the following to `scikit-learn`:

1. Repeated cross-validators (PR #8120).
2. Enhance the documentation for coverage error (PR #7915).