KAVITA SINGH

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SUMMARY

IT professional with 9+ years of experience in full-stack development, IT consulting, and research. Proven expertise in delivering scalable and secure e-Governance solutions using Angular, Node.js, and relational databases like MariaDB and Oracle. Ph.D. in Computer Science, with a research focus on metaheuristic algorithms for NP-Hard optimization problems. Combines academic rigor with hands-on technical leadership across the full software development lifecycle.

TECHNICAL SKILLS

Languages: JavaScript, TypeScript, C, PHP, R, SQL
Frontend: Angular, HTML5, CSS3, Bootstrap
Backend: Node.js, Express.js, ASP.NET, REST APIs
Databases: MariaDB, MySQL, Oracle
Tools: Git, NGINX, Linux, Visual Studio, Postman
Research & Data Analysis: Metaheuristics, R, Optimization Algorithms, Python

WORK EXPERIENCE

IT Consultant, Ernst & Young (EY), India │July 2023 - Present

- Developed a comprehensive SDG Dashboard using Angular, Node.js (Express), MariaDB, and NGINX for real-time data visualization and analytics. Leveraged RxJS for reactive data flows and charting libraries (e.g., Chart.js, ApexChart) for dynamic visual components. Designed optimized relational schemas and implemented complex SQL queries for high-performance reporting.
- Built a scalable Best Practices Portal leveraging a modular Angular architecture and RESTful API services with Node.js, ensuring maintainability and ease of feature extension. Integrated JWT-based authentication and role-based access control (RBAC) for secure access.
- Created the Viksit Chhattisgarh Portal to enhance transparency and public engagement. Developed a CMS-like dynamic content system using Angular Reactive Forms.
- Developed a multi-ministry scheme monitoring portal with secure API integrations, token-based authentication, and role-specific dashboards.
- Engineered the District Acceleration Portal to track KPIs across districts, employing advanced SQL indexing, normalized schema design, and materialized views for optimized analytical performance.

Developer, Chhattisgarh Infotech Promotion Society (CHiPS) │ 2021 – July 2023

- Delivered end-to-end web solutions for e-Governance initiatives using Angular (v12+), Node.js (Express.js), and MariaDB, deployed via NGINX on Linux-based cloud servers. Emphasized scalable architecture, a maintainable codebase, and optimized backend performance.
- Led full-stack development of the Right of Way (RoW) Portal, supporting Chhattisgarh's telecom infrastructure policy. Integrated dynamic form builders and automated PDF generation for streamlined application processing.
- Built the Yuva Mitaan Club Scheme Portal on a secure, modular framework. Developed a multi-tier architecture with Angular modular routing, JWT-based authentication, and role-based access control (RBAC).
- Directed the architecture and deployment of the CG-STATE Portal, managing version control, and ensuring robust infrastructure for stable production releases.

Project Staff (Research Associate), NIT Raipur | 2017 – 2019

- Contributed to a DST-SERB funded research project focused on solving NP-Hard combinatorial optimization problems using metaheuristic techniques such as Genetic Algorithms (GA), Ant Colony Optimization (ACO), and Artificial Bee Colony (ABC).
- Designed and implemented custom heuristic and hybrid optimization algorithms in C
- Employed R for statistical analysis.

Programmer, National Informatics Centre (NIC), Govt. of India | 2012 – 2015

- Designed, developed, and maintained e-Governance web applications using ASP.NET (Web Forms and MVC) with C#, Oracle 11g, and IIS for deployment. Ensured compliance with GIGW (Guidelines for Indian Government Websites) and accessibility standards.
- Developed the e-Bill System to automate government bill processing workflows. Implemented server-side validation, stored procedures, and Oracle PL/SQL triggers for data consistency and transactional integrity.
- Built the State Finance Commission Portal with secure role-based access, form-based authentication, and dynamic report generation using Crystal Reports and Oracle Views.
- Used AJAX, JavaScript, and jQuery to enhance user interactivity and performance. Integrated session management, exception handling, and logging mechanisms for robust and secure application behavior.

EDUCATION

- **Ph.D. in Computer Science**
  National Institute of Technology (NIT) Raipur | N/A
- **Master of Computer Applications (M.C.A.)**
  Pt. Ravishankar Shukla University, Raipur | 82.07% – Gold Medallist
- **Bachelor of Computer Applications (B.C.A.)**
  Veer Bahadur Singh Purvanchal University, Jaunpur | 79.7%

RESEARCH & PUBLICATIONS

Ph.D. Research Area: Metaheuristic algorithms for NP-Hard combinatorial optimization problems.
Key Publications:

- Two heuristics for the Dominating Tree Problem – Applied Intelligence,Springer.
- Artificial Bee Colony Algorithm with problem-specific strategies – Applied Soft Computing, Elsevier.
- Hybrid Genetic Algorithm for the Maximally Diverse Grouping Problem –IJMLC, Springer.
- Hybrid Genetic Algorithm for Min-Degree Constrained MST – EJOR, Elsevier.
- Genetic Algorithm for Degree-Constrained MST – Soft Computing, Springer.
- ABC Algorithm for Bounded Diameter MST – Soft Computing, Springer.

Conferences:

- ISMSI 2018, Phuket, Thailand
- SoCTA 2017, Jhansi, India
- ICCI 2017, IIT Kanpur, India

AWARDS & HONORS

- Post-Doctoral Fellowship – IFSTTAR Lab, Lille, France (2019)
- Junior Research Fellowship – DST-SERB, Govt. of India (2017) -
- Gold Medalist – M.C.A., Pt. Ravishankar Shukla University

PERSONAL DETAILS

- Father's Name: Krishna Kumar Singh
- Gender: Female
- Nationality: Indian
- Address: House No. 27, ShreeJi Kalptaru Colony, Amlihdih, Raipur, Chhattisgarh, India