

# SWAROOP B.M.

Assistant Professor - Artificial Intelligence & Machine Learning (AIML)  
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## PROFESSIONAL SUMMARY

Assistant Professor in the Department of Artificial Intelligence & Machine Learning at B.M.S. College of Engineering (BMSCE), Bengaluru, with a Master's in Computer Science from the University of Texas at Arlington (Silver Star Scholarship). Combines academic research spanning LLMs, RAG, multimodal AI, bioinformatics, and data mining with hands-on full-stack and machine-learning development experience. Currently leads funded consultancy and R&D projects, has authored peer-reviewed publications, and holds active industry certifications.

## ACADEMIC & PROFESSIONAL EXPERIENCE

### Assistant Professor, Dept. of Artificial Intelligence & Machine Learning B.M.S. College of Engineering (BMSCE)

March 2024 - Present  
Bengaluru, India

- Teach and mentor undergraduate students in AI/ML, with research interests spanning Operating Systems, Machine Learning, Data Mining, Data Analysis & Modelling, Bioinformatics, Multimodal AI, Agentic AI, LLMs, and RAG.
- Principal Investigator on a **\$3,000 (₹2,85,775) R&D project sanctioned by Optimly AI, Inc. (Seattle, USA)** under its Intern Program, building an **AI Brand Directory with Data Model Engineering and LLM-based Brand Intelligence**, with Dr. N Sandeep Varma as Co-Principal Investigator.
- Co-Project Lead on a **₹5,50,000 AI product development consultancy for Qval Consulting, applying LLMs and RAG to predict Root Cause Analysis of batch rejections in pharmaceutical manufacturing**, alongside Dr. N Sandeep Varma and Dr. Hadagali Ashoka.
- Total externally funded projects to date: **₹8,35,775/-**.
- Hackathon Mentor for "RepoGenesis," a 24-hour national-level hackathon organized by BMSCE IEEE Computer Society (Nov 2025).
- Invited Resource Person, Dept. of CSE, RV Institute of Technology and Management where I led a hands-on session on modern front-end tools (HTML5, CSS3, Bootstrap, JavaScript) for 94 fourth-semester students (Mar 2026).

### Java Full Stack Developer

Baanyan Software Inc in association with AT&T.

Mar 2023 – Sep 2023  
New Jersey, USA

- Worked on Core Java, Git, Hibernate, and an introduction to Microservices.

### Software Development Intern

Verzeo

Jan 2020 – Feb 2020  
Bengaluru, India

- Designed and developed mobile-responsive landing pages for the company.
- Collaborated with senior management to strategize web development and UI design.
- Delivered web development work for Verzeo subsidiary groups Mvaro, SMOWL, and Zebo.AI.

## EDUCATION

### Doctor of Philosophy (Ph.D.)

B.M.S. College of Engineering (BMSCE)

Jan 2026 – Present

- Research Supervisor: Dr. Sandeep Varma N, Assoc. Professor, BMSCE
- Research Area: Security in LLMs.

### Master of Science in Computer Science

University of Texas at Arlington, USA

Aug 2021 – May 2023

- Awarded the Silver Star Scholarship in recognition of academic merit.

### Bachelor of Engineering in Computer Science

Visveswaraya Technological University, Belagavi, Karnataka, India

Aug 2016 – Sep 2020

## RESEARCH PUBLICATION

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**Srinivasa H.P., Kamalesh V.N., Swaroop B.M., Varshini M.N.**

- *International Journal of Advanced Trends in Computer Science and Engineering*, Vol. 12, No. 2, March–April 2023. DOI: 10.30534/ijatcse/2023/031222023

## TECHNICAL SKILLS

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- Programming Languages: C, Java, Python, PHP, HTML5, CSS3, JavaScript, C#, R
- Technologies: Bootstrap, jQuery, React.js, Node.js, Android, Machine Learning, LLMs & RAG, Agentic AI
- Databases & Tools: MySQL, MariaDB, PostgreSQL, MongoDB, Cassandra, Firebase, phpMyAdmin, Weka

## PROFESSIONAL PROJECTS

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### **Kanasu – Desktop Virtual Assistant (Python)**

- Built a voice-driven assistant using pyttsx3 and speech recognition for seamless activation and command.
- Enabled tasks including opening applications, webcam photo capture, timers, music playback, IP lookup, Wikipedia search, browser launch, and YouTube streaming.

### **Breast Cancer Slide Analysis using Variational Autoencoders (PyTorch Lightning)**

- Applied deep learning to pathology slides from the NCI GDC Data Portal to support precision-medicine genomic research.
- Developed and fine-tuned a VAE for image compression and reconstruction; used TensorBoard to visualize training, loss, and latent-space reconstruction.

### **Large File Transfer over UDP (Python)**

- Used multithreading, monitors, and synchronization to reliably transfer ~2GB files over an inherently unreliable UDP protocol.

### **Dream Eyes – Accessibility App for the Visually Impaired (Java, Android)**

- Captured images, extracted text via OCR, and converted it to speech using the Google Text-to-Speech API.
- Designed a swipe-only interface for ease of use across age groups.

### **Classic ML Algorithm Implementations**

- Implemented Naïve Bayes, K-Nearest Neighbor, Apriori, FP-Growth, K-Means, and Agglomerative Clustering, achieving >90% accuracy across all datasets as part of a data mining course.

### **Blood Management, Hotel Management & Arlington Art Gallery Systems**

- Built database-driven applications using MariaDB, MySQLi, HTML5, CSS3, JavaScript, Bootstrap, jQuery, and phpMyAdmin.

### **Mini Genome-Wide Association Study (GWAS) (Python)**

- Analyzed 1,000 SNPs across 50 case and 100 control patients to evaluate genetic associations with a complex trait.

## HONORS, AWARDS & CERTIFICATIONS

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- Microsoft Certified: Python Developer
- Microsoft Certified: JavaScript Developer
- Certified Industrial Internet of Things Expert — Government Tool Room & Training Centre, Govt. of Karnataka
- HackerRank Certifications: Problem Solving, Java, Python, Node, CSS
- Programming in C Certification — Government of Karnataka
- Professional Memberships: IEEE (#102196859), IEEE Computer Society (#102196859)