SANGAM SHRESTHA

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Pinole, California - 94564, USA

RESEARCH INTERESTS

Formal methods, programming languages, program analysis, compiler optimization, and verification of AI/LLM-generated code.

OBJECTIVE

To pursue a Ph.D. in Computer Science with a focus on programming languages and formal methods. I aim to develop scalable verification frameworks that ensure the correctness, safety, and performance of AI- and LLM-generated code by combining formal reasoning, program synthesis, and machine learning.

EDUCATION

• **East Tennessee State University**   *May 2025*
M.S. Computer Science   Johnson City, USA
  ◦ GPA: 3.97/4.00

• **Tribhuvan University**   *December 2019*
Bachelor of Science in Computer Science and Information Technology   Kirtipur, NP
  ◦ Percentage: 78.21/100 (3.60/4.00)

EXPERIENCE

• **East Tennessee State University [🌐]**   *June 2025 - Present*
Research and Development Engineer   Johnson city, USA
  ◦ Conducting applied research on reliable tracking infrastructure for the College of Nursing, combining software engineering with field safety constraints.
  ◦ Investigating methods for fault-tolerant communication and offline synchronization, bridging practical systems design with formal reliability guarantees.
  ◦ Collaborating with faculty and graduate students to prototype research software for publication.

• **Think Round Inc. [🌐]**   *October 2025 - Present*
Full Stack Engineer   San Francisco, USA
  ◦ Translating legacy CMS into a Next.js-based modular architecture, integrating real-time data and AI interfaces for education research content.
  ◦ Contributing to UX and system evaluation studies for accessibility and performance.

• **East Tennessee State University[🌐]**   *August 2023 - May 2025*
Graduate Teaching Assistant   Johnson City, USA
  ◦ Delivered technical instruction in C#, and JavaScript to 100+ undergraduate students, raising class averages from C- to B.
  ◦ Facilitated code reviews, debugging workshops, and Agile-based team projects, improving student project quality and adherence to best practices.
  ◦ Mentored and onboarded new TAs, standardizing teaching materials and improving instructional consistency across the department.

• **BMP Infology Pvt. Ltd.**   *November 2019 - June 2023*
Software Engineer   Kathmandu, NP
  ◦ Architected and maintained ERP backend microservices in Java, cutting query response times from 15s to under 3s for enterprise clients.
  ◦ Spearheaded migration from monolithic architecture to microservices, reducing infrastructure costs by 25% and improving scalability.
  ◦ Developed a multilingual Angular frontend (English, Chinese, Japanese), expanding the platform's international user base by 75%.
  ◦ Strengthened API security with JWT and RBAC, ensuring compliance and protecting sensitive personal and enterprise data of 1000+ users.

PROJECTS

- **Republic of Marshall Islands Public School System** *September 2024 - May 2025*
  Tools: C, .NET, MVC, JavaScript, Google Cloud, AWS, Docker [O]
  - Developed a progressive web app (PWA) with C#, .NET, and JavaScript, adopted by 80+ schools and enabling offline access for 7,500+ students, streamlining compliance for Individualized Education Programs (IEPs).
  - Integrated Google Translation API for English and Marshallese support, increasing accessibility by 40%+ and expanding community adoption.
  - Containerized and deployed applications with Docker on AWS EC2, achieving 99.9% uptime while reducing operational overhead and infrastructure costs.
  - Implemented centralized AWS CloudWatch logging, reducing mean time to resolution (MTTR) by 40% and improving system reliability.

- **NLP: Sentiment Analysis on Airline Reviews** *August 2024 - December 2024*
  Tools: PyTorch, NLTK, Sci-kit learn, Pandas, NumPy, Python [O]
  - Used DistillBERT machine learning library to analyze 23,171 airline reviews for sentiment classification, acheiving an F1-score of 85%.
  - Identified key factors in airline reservation systems such as seat type, perceived value for money, and staff service as they apply to customer satisfaction.
  - Extracted potentially helpful actionable insights for determining the customer sentiment status of an airline.

- **Predictive Model for Layoff Risk Assessment** *February 2024 - May 2024*
  Tools: NumPy, Pandas, Sci-Kit Learn [O]
  - Developed an ML model on 10K+ employee records achieving 93% accuracy enabling proactive HR workforce planning.
  - Compared the accuracy of several predictive models such as Logistic Regression and Decision Trees on determining key factors regarding layoff risk in information technology companies.
  - Identified tenure, employee performance score, and location as key demographic features impacting mass layoffs.

- **Online Delivery Management System** *March 2019 - August 2019*
  Tools: Java, SpringBoot, JavaScript, Thymeleaf, MapBox [O]
  - Engineered a full-stack delivery management platform (Java, Spring Boot, JavaScript, MySQL).
  - Integrated MapBox API for real-time routing, utilizing Dijkstra's algorithm for shortest-path calculations.
  - Enhanced user authentication with a secure JWT-based system, ensuring data integrity.

PUBLICATIONS M= MANUSCRIPT, T= THESIS

- **[M.1]** Dr. Jeff Roach, Sangam Shrestha, et al. (2025). **Developing Educational Software for Resource-Constrained Environments: A Case Study of an IEP Management System in the Marshall Islands.**(In Preparation)

- **[T.1]** Sangam Shrestha, et al. (2019).**Delivery Management System Using Dijkstra's Algorithm**, B.Sc.CSIT Thesis, Institute of Science and Technology, New Summit College, TU, Kritipur, NP.

SKILLS

- **Programming Languages:** Java (8/11/17/21), C#, Python, JavaScript, TypeScript
- **Technologies:** Spring Boot, Angular (8-13), Hugging Face, Sci-kit Learn, PyTorch, Z3, React, NextJS, .NET Core
- **Cloud & DevOps:** AWS (EC2, S3, RDS, IAM, CloudWatch, ECS), Docker, Kubernetes, CI/CD (Jenkins, GitHub Actions, GitLab CI), CloudFormation, Canary/Blue-Green Deployments
- **Database Systems:** MySQL, PostgreSQL, SQL Server, MongoDB
- **Security & Testing:** OAuth2, JWT, Spring Security, API Gateway, JUnit, NUnit, Cucumber
- **Monitoring & Tools:** CloudWatch, GitHub, Bitbucket, JIRA, Confluence, IntelliJ, Maven, NPM, Splunk, OpenTelemetry
- **Research Skills:** Technical Writing and Presentation, Investigative Methodology, Statistical Analysis and Data Interpretation, Research Software Development and Deployment, Literature Review, Collaboration
- **Interpersonal:** Oral and Written Communication, Presentation, Collaboration

Honors and Awards

- **Graduate Teaching Assistant** *August 2023 - May 2024*
  ETSU Computing Department
  - Selected by a faculty review committee from a large pool of applicants.
  - Received for maintaining outstanding academic merit.

- **Frank and Ginger Hawk Rutherford Scholarship** *August 2024*
  ETSU College of Business and Technology
  - Selected from a pool of over 900 applicants.

- **Letter of Appreciation** *August 2022*
  New Summit College, Tribhuvan University
  - Graduated undergraduate studies with highest honors.
  - Recognized at college graduation.

- **Girls in ICT Hackathon Top Five Finish** *April 2018*
  Kathmandu, Nepal
  - Placed fourth at the Girls in ICT hackathon hosted by Nepal Telecommunications Authority in Nepal.

- **High Achieving Academic Award** *December 2015 - December 2019*
  New Summit College, Tribhuvan University
  - Consistently ranked in top three academically performing students in respective college.

References

1. **Jeff Roach**
   Professor, Computing
   East Tennessee State University
   Email: roachj@etsu.edu
   Relationship: Capstone Project Advisor

2. **Chelsie Dubay**
   Professir, Computing
   East Tennessee State University
   Email: dubayc@etsu.edu
   Relationship: Supervisor

3. **Shehenaz Shaik**
   Professor, Computing
   East Tennessee State University
   Email: shaiks@etsu.edu
   Relationship: Mentor