

# Swaroop Joshi

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## Employment

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE (BITS) PILANI, KK BIRLA GOA CAMPUS · GOA INDIA

Assistant Professor, Computer Science and Information Systems 2021–present

UNIVERSITY OF UTAH · SALT LAKE CITY UT USA

Assistant Professor – Lecturer, School of Computing 2019–2020

THE OHIO STATE UNIVERSITY · COLUMBUS OH USA

Senior Lecturer, Computer Science and Engineering 2017–2019

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY · MUMBAI INDIA

Senior Project Engineer, GCC Resource Center 2010–2011

SOFTJIN TECHNOLOGIES PVT LTD · BENGALURU INDIA

Software Engineer 2005–2006

## Education

The Ohio State University, Ph.D. in Computer Science & Engineering 2017

The Ohio State University, M.S. in Computer Science & Engineering 2016

Indian Institute of Technology Bombay, M.Tech. in Computer Science & Engineering 2010

National Institute of Technology Karnataka, Surathkal, B.E. in Computer Engineering 2005

## Publications

### CHAPTERS IN EDITED VOLUMES

O. Ahlqvist, **S. Joshi**, R. Benkar, K. Vatev, R. Ramnath, A. Heckler, and N. Soundarajan. *Defining a Geogame Genre Using Core Concepts of Games, Play, and Geographic Information and Thinking*. In: *Geogames and Geoplay: Game-based Approaches to the Analysis of Geo-Information*. Ed. by O. Ahlqvist and C. Schlieder. Springer International Publishing, 2018, pp. 19–35.

### PEER REVIEWED CONFERENCES

J. S. Bhatia, Parthasarathy P D, S. Tiwari, D. Nagpal, and **S. Joshi**. 2023. *Integrating Accessibility in a Mobile App Development Course*. In *Proceedings of the 54th ACM Technical Symposium on Computer Science Education V. 1 (SIGCSE 2023)*, March 15–18, 2023, Toronto, ON, Canada. ACM, New York, NY, USA, 7 pages. (Preprint: <https://arxiv.org/abs/2210.06132>)

D. Nagpal, J. S. Bhatia, D. Goel, Parthasarathy P D, S. Tiwari, and **S. Joshi**. *Inclusive Thinking Questionnaire: Preliminary Results*. In: *Proceedings of the 53rd ACM Technical Symposium on Computer Science Education V. 2 (SIGCSE 2022)*, Mar. 2022, Providence, RI, USA.

- T. Hattingh, S. Sohoni, A. Agrawal, S. Desai, **S. Joshi**. *An exploration of capacity development of journal reviewers through a mentored reviewer program*. In: Research in Engineering Education Symposium (REES), Dec. 2021, Perth WA, Australia. Australasian Association for Engineering Education.
- S. Joshi**. *Teaching Accessibility in India: A Work in Progress*. In: Proceedings of the 17th ACM Conference on International Computing Education Research (ICER 2021), Aug. 2021, Virtual Event, USA.
- P. Bhattacharya, **S. Joshi**, S. Bandyopadhyay and R. Mittal. *Virtual CS Education in India: Challenges and Opportunities*. In: International Conference on Best Innovative Teaching Strategies (ICON-BITS'21), Jul. 2021, BITS Pilani, India.
- S. Joshi**, N. Soundarajan, and J. Morris. *Innovative Approach to Online Argumentation in Computing and Engineering Courses*. In: 125th ASEE Annual Conference and Exposition. American Society for Engineering Education, 2018.
- N. Soundarajan and **S. Joshi**. *Innovative Approach to Online Argumentation and Models for Structuring the Arguments*. In: 2018 IEEE Frontiers in Education Conference (FIE) (FIE 2018). San Jose, USA, Oct. 2018.
- S. Joshi** and N. Soundarajan. *Using Anonymity and Rounds-Based Structure for Effective Online Discussions in STEM Courses*. In: 124th ASEE Annual Conference & Exposition Proceedings. American Society for Engineering Education, 2017.
- S. Joshi** and N. Soundarajan. *CONSIDER: A Novel Approach to Conflict-Driven Collaborative Learning in Engineering Courses*. In: 2016 ASEE Annual Conference & Exposition Proceedings. American Society for Engineering Education, June 2016.
- S. Joshi** and N. Soundarajan. *Enabling Deep Conceptual Learning in Computing Courses through Conflict-based Collaborative Learning*. In: 2016 IEEE Frontiers in Education Conference (FIE) (FIE 2016). Erie, USA, Oct. 2016.
- S. Joshi** and N. Soundarajan. *Exploring conflict-based collaborative learning in engineering courses*. In: ASEE North Central Sectional Conference Proceedings. American Society for Engineering Education, Mar. 2016.
- S. Joshi**, N. Soundarajan, and R. Ramnath. *Conflict-Driven Cooperative-Learning in Computing Courses (Abstract Only)*. In: Proceedings of the 46th ACM Technical Symposium on Computer Science Education - SIGCSE '15. Association for Computing Machinery (ACM), Mar. 2015.
- N. Soundarajan, **S. Joshi**, and R. Ramnath. *Collaborative and Cooperative-Learning in Software Engineering Courses*. In: 2015 IEEE/ACM 37th IEEE International Conference on Software Engineering. Institute of Electrical & Electronics Engineers (IEEE), May 2015.
- N. Soundarajan, **S. Joshi**, and R. Ramnath. *Work-in-Progress: Conflict-Driven Cooperative Learning in Engineering Courses*. In: 2015 ASEE Annual Conference and Exposition Proceedings. American Society for Engineering Education, June 2015.
- N. Soundarajan, **S. Joshi**, and R. Ramnath. *Work-in-progress: A novel approach to collaborative learning in the flipped classroom*. In: 121st ASEE Annual Conference and Exposition. American Society for Engineering Education, June 2014.

## DISSERTATIONS

**S. R. Joshi.** *CONSIDER: A Novel, Online Approach to Conflict-Driven Collaborative-Learning.* PhD thesis. The Ohio State University, Aug. 2017.

**S. Joshi.** *Extending the Generic Data-Flow Analyzer (gdfa) in GCC.* Master's Project Report. Indian Institute of Technology Bombay, June 2010.

## REPORTS

S. Bandyopadhyay and **S. Joshi.** *A Report on the Second International Workshop on Software Engineering for Artificial Intelligence (SE4AI 2021).* In: 14th Innovations in Software Engineering Conference (ISEC 2021). Association for Computing Machinery (ACM), 2021.

## Awards and Honors

### ACCESSIBLE SCIENCE LABS FOR VISUALLY IMPAIRED SCHOOL CHILDREN

Role: PI

Agency: Vision Empower Trust

Budget: INR 2 L | Duration: Apr-Nov, 2023

### HUMAN-CENTERED FUTURE COMPUTING (GOA/ACG/2021-2022/Nov/05)

Role: PI (Other PIs: Sougata Sen and Sravan Danda)

Program: Additional Competitive Research Grant

Agency: Sponsored Research and Consultancy Division, BITS Pilani

Budget: INR 29.75 L | Duration: Dec. 10, 2021–Dec. 9, 2023

### A GIT AND DOCKER BASED TOOLCHAIN FOR INTRODUCTORY PROGRAMMING COURSES

Role: PI (Co-PI: Pritam Bhattacharya)

Agency: Teaching Learning Center, BITS Pilani, KK Birla Goa Campus

Budget: INR 1.45 L | Duration: Oct. 2021–Mar. 2022

### SUGAMYATA: ACCESSIBILITY IN COMPUTING EDUCATION (BPGC/RIG/2020-21/04-2021/02)

Role: PI

Program: Research Initiation Grant (RIG)

Agency: BITS Pilani

Budget: INR 2 L | Duration: Apr. 2021–Apr. 2023

### LECTURER TEACHING DEVELOPMENT GRANT, SPRING 2017

University Center for Advancement in Teaching, The Ohio State University

### BEST STUDENT PAPER AWARD, 2016

American Society for Engineering Education, North Central Section

## Invited Talks

### ANDROID APP DEVELOPMENT WORKSHOP @ YEB 2023: MAR. 29, 2023

Mobile app development workshop for the participants of the Young Entrepreneurs' Bootcamp at BITS Pilani Goa. The highschool students developed a simple dice game Cho Han.

INTEGRATING ACCESSIBILITY TOPICS IN COMPUTING EDUCATION @ IIT BOMBAY: MAR. 24, 2023

Presentation as part of the weekly seminar at the Education Technology interdisciplinary program at IIT Bombay.

POSTMAN API CLASSROOM PROGRAM: API 103, FEB. 2022

Last of the three modules of Postman's API-based programming course focusing on building a full-stack web application using Glitch, Node.js, Express, axios, handlebar, and Spotify API

CPS IN COMPUTING EDUCATION: CURRENT TRENDS, OCT. 2020

Current Trends in Cyber-Physical Systems (CTiCPS) 2020

EFFECTIVELY TEACHING A PRINCIPLES OF PROGRAMMING LANGUAGES COURSE, FEB–APR, 2019

Indo-Universal Collaboration for Engineering Education, a 10-week web course for 50 CS faculty from various engineering colleges in India

COOPERATIVE AND COLLABORATIVE LEARNING IN ENGINEERING CLASSROOMS, JUL. 2018

Indo-Universal Collaboration for Engineering Education Webinar, attended by over 100 engineering faculty across India

## **Service**

JOURNAL EDITORIAL BOARD

Associate Editor, Journal of Engineering Education Transformations, 2018–2022

JOURNAL REVIEWER

IEEE Transactions on Education  
Frontiers in Computer Science  
Journal of Engineering Education Transformations  
The ASEE Computers in Education (CoED) Journal  
SAIEE Africa Research Journal

SENIOR PROGRAM COMMITTEE MEMBER

ACM SIGCSE Technical Symposium: 2024  
ACM CompEd: 2023  
ACM India Compute: 2023

CONFERENCE PROGRAM COMMITTEE MEMBER

ACM SIGCSE Technical Symposium: 2023, 2022, 2021, 2019, 2018  
Research in Engineering Education Symposium (REES): 2021  
ASEE Annual Conference & Exposition: 2021, 2019, 2018, 2017, 2016  
IEEE Frontiers in Education (FIE): 2018, 2017, 2016  
IEEE Teaching, Assessment and Learning for Engineering (TALE): 2018  
Midwest Instruction and Computing Symposium (MICS): 2020.

CONFERENCE OR WORKSHOP ORGANIZER

*Co-organizer*, Software Engineering for Artificial Intelligence (workshop), ACM 14th Innovations in Software Engineering Conference, online, Feb. 2021

## LEADERSHIP

*Secretary-Treasurer, ASEE Computers in Education Division, 2018–2020*

## BITS PILANI

Member, Departmental Committee on Academics (DCA): Oct. 2023–Jun. 2024

Doctoral Advisory Committee

Nitish Yadav, CSIS (Supervisor: Dr. Rajesh Kumar), Title: *Periculo-Procuratio: Analytical tools and techniques for integrated safety-security risk analysis*: May 2023–present

Saumya Mathkar, CSIS (Supervisor: Dr. Vinayak Naik), Title: *A Scalable Cloud and Edge-based Framework to Ease The Deployment of IoT-based Applications*: Aug 2023–present

Guest speakers hosted

Dr. Viraj Kumar, IISc, *Should Programming Pedagogy and Assessment Change in Response to Advances in Generative AI?*: April 2023

Dr. Santosh Nagarakatte, Rutgers University, *A Case for Correctly Rounded Math Libraries*: March 2023

Mr. Prasad Ranganekar, Former Advisor, Tata Aerospace Systems Ltd., India @ 75: *Dr. Kalam's vision*: Oct. 2022

Department Level Selection Committee (CSIS Faculty hiring): 2022

Faculty Advisor, DevSoc: Jun. 2022–present

Ph.D. admissions interview panel: Feb. 2021, Aug. 2021, Jan. 2022, Dec. 2022

Practice School I: 2021, 2022

Goa Campus Coordinator, Postman Classroom Program: Oct. 2021–present

## UNIVERSITY OF UTAH

Lecturing faculty search committee, School of Computing, 2019–2020

## GOVERNMENT BODIES

*Member, Governing Council, Goa State Research Foundation, June 2023–present*

## PH.D. THESIS EXTERNAL EXAMINER

Karunakara Rai B., *Reasoning Methodology for Estimating the Degradation in the Performance of a Real-Time Fault Tolerant System*. PhD thesis. Visvesvaraya Technological University (VTU), Karnataka India, 2019.

Sahana B., *Analytical Framework for Fault Management in Communication Networks*. PhD thesis. Visvesvaraya Technological University (VTU), Karnataka India, 2022.

## Teaching Experience

### COMPUTER SCIENCE & INFORMATION SYSTEMS, BITS PILANI, GOA

CSF111 Computer Programming (Instructor in-charge: Sp'22, Sp'23)

CSF314 Software Development for Portable Devices (Instructor in-charge: Fa'21, Fa'22)

CSF213 Object Oriented Programming (Instructor: Fa'21, Fa'22)

CSF363 Compiler Construction (Instructor: Sp'21)

SCHOOL OF COMPUTING, UNIVERSITY OF UTAH

Mobile App Development  
Senior Capstone  
Data Structures & Algorithms

COMPUTER SCIENCE & ENGINEERING, THE OHIO STATE UNIVERSITY

Principles of Programming Languages  
Software II: Software Development and Design  
Software I: Components  
Introduction to Computer Programming In Java  
Data Structures Using Java  
Mobile App Development  
C++ Programming  
Introduction to Computer Programming in C++ for Engineers and Scientists

### **Teaching Areas**

Programming Languages  
Mobile App Development  
Compiler Construction and Optimization  
CS1/CS2

### **Professional Memberships**

Institute of Electrical and Electronics Engineers (IEEE)  
Education Society  
Computer Society  
Association for Computing Machinery (ACM)  
Special Interest Group on Computer Science Education (SIGCSE)  
Special Interest Group on Accessible Computing (SIGACCESS)  
Special Interest Group on Software Engineering (SIGSOFT)