

# Sooraj K Babu

📍 Kerala, India  
☎ +91 81118 37398  
✉ [soorajkbabu@gmail.com](mailto:soorajkbabu@gmail.com)  
🌐 [soorajkbabu.com](http://soorajkbabu.com)  
in [in.linkedin.com/in/soorajkbabu](https://in.linkedin.com/in/soorajkbabu)

## Research Interest

---

A major part of the work I have done so far is in Human-Computer Interaction and Education. More specifically, in HCI my experience is in designing and developing Virtual Reality applications that can improve human performance in vocational skill training and in interpersonal skills. Most recently, I have been contributing to research in Human-Robot Interaction focusing more on rural audiences.

## Work experience

---

### Software Engineer

2016 Aug - Present

[Amrita Multi Modal Applications and Computer Human Interaction Labs](#)

- Research on Human-Computer Interaction, Human-Robot Interaction, and STEM Education
- Develop and integrate Virtual Reality applications for various haptic simulators for skill training
- Trainer of Computational Tinkering for school children
- Curriculum designer for the STEM Education initiatives
- Experienced in working with an interdisciplinary team.

## Education

---

### MTech in Computer Science (E-Learning)

2014 - 2016

[Amrita Vishwa Vidyapeetham University, Kollam, Kerala, India](#)

### BE in Computer Science and Engineering

2010 - 2014

[Visvesvaraya Technological University, Karnataka, India](#)

## Projects

---

### Motorcycle Maintenance course and Fire Safety training in Virtual Reality (2018 - Present)

- Software Developer
- UI/UX Developer

Project BlueSkies is an initiative by AMMACHI Labs to make skill development and vocational education training to the next level by making them fully immersive by using virtual and augmented technologies. Creating a fully immersive training module in the virtual reality for motorcycle maintenance, fire safety, and rebar bending and marking processes are the ironic outcomes of this project.

### Computational Thinking and Tinkering for School Children (2016 - Present)

- Trainer for Computational Thinking/Tinkering in 2nd foundation workshop series
- Curriculum designer, exam pattern designer

The second foundation series of workshops re-imagines education holistically, combining high technology with social and emotional learning (SEL) in five areas - Maker skills, Vulnerability Mapping, Computational Thinking, Robotics & Life Skills in schools and villages across India. It is aligned with global standards like the P21 framework for 21st-century skills, ACM-CSTA, NGSS, and the Common Core.

### Bar Bending Simulator (2016)

- Designed and Implemented the UI/UX
- Contributed to the development of simulation software
- Device testing and commissioning

The bar bending simulator is used to train rebar bending skills for personnel that form a critical workforce component of the construction industry. This simulator has been deployed in two Larsen and Toubro Construction Skills Training Institutes in Tamil Nadu and Delhi where it is being utilized to prepare personnel for the rebar bending activity.

#### **Pepe Jr. A cost-effective platform for Human-Robot Interaction Research (2018)**

- Assessment engine developer

Pepe Jr. is a table lamp-like robot that has the ability to show 6 different emotions. The intention of the study was to research the users' perceptions of a robotic lamp showing different emotions to them.

#### **Kappa: The tangible electronic prototyping kit to promote tinkering among school children (2019)**

- Software Development Team

Kappa is an electronic tangible interface development kit designed to promote computational thinking for school students. Kappa enables students to create interactive games, animated stories and musical instruments using physical objects.

#### **Pepe: A Social Robot to promote Hand Washing in the rural population (2019)**

- Software Development Team
- Eye-movement coordination

A joint project with Dr. Amol Deshmukh from the University of Glasgow, where we developed a social robot "Pepe" that encouraged around 100 children to engage in safe and effective handwashing behavior in a rural village in a Govt. Primary School, Wayanad, Kerala, India.

Pepe won the *Socialis Impremiere* robotic competition at RO-MAN 2019, Delhi.

#### **Virtual reality as a communication skills training tool for students and rural populations. (2019)**

- Software Developer
- Spherical Videographer

Virtual Reality technology enables students to train new behavior in an authentic situated learning context. This study investigated the effects of a 360-degree video-based Virtual Reality intervention on communication skills, academic emotions, and motivation among university students in India.

## **Publications**

---

[1] S. K. Babu, M. L. McLain, K. Bijlani, R. Jayakrishnan and R. R. Bhavani, "Collaborative Game-Based Learning of Post-Disaster Management: Serious Game on Incident Management Frameworks for Post Disaster Management," 2016 IEEE Eighth International Conference on Technology for Education (T4E), Mumbai, 2016, pp. 80-87.

[2] S. K. Babu, S. Krishna, U. R. and R. R. Bhavani, "Virtual Reality Learning Environments for Vocational Education: A Comparison Study with Conventional Instructional Media on Knowledge Retention.," *2018 IEEE 18th International Conference on Advanced Learning Technologies (ICALT)*, Mumbai, India, 2018, pp. 385-389.

[3] Anitha, Parameswari, S. K. Babu, et al. "Scratching Out Problems: Exploring the Use of Computational Thinking for Social Work in Rural India." 2018 IEEE Tenth International Conference on Technology for Education (T4E). IEEE, 2018.

[4] Sugunan, Nidhin, S. K. Babu, et al. "Design and Emotional Evaluation of Pepe Jr: A Cost-Effective Platform For Human-Robot Interaction Studies." 2018 IEEE Distributed Computing, VLSI, Electrical Circuits and Robotics (DISCOVER). IEEE, 2018.

[5] Unnikrishnan, R., et al. "Design and Perception of a Social Robot to Promote Hand Washing among Children in a Rural Indian School." *2019 28th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*. IEEE, 2019.

[6] Deshmukh, Amol, et al. "Influencing hand-washing behaviour with a social robot: Hri study with school children in rural India." *2019 28th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*. IEEE, 2019.

[7] Sooraj K Babu, Parameswari Anitha, Unnikrishnan R, Rahul ES, Deepu D Sasi, Ayyappan K, Roopak Seshadri, Rao R. Bhavani., "Igniting the Maker Spirit: Design and Pilot Deployment of the Kappa Tangible Electronics Prototyping Kit", *International Conference on Technology for Education (T4E)*. IEEE, 2019.

[8] Meltem Alkoyak-Yildiz, Sooraj K Babu, Parameswari Anitha, Mukil MV, "Was It Real? - the Effects of Virtual Reality-Based Communication Skills Training Among University Students in India", *International Conference on Technology for Education (T4E)*. IEEE, 2019.

## Academic Projects

---

- 2016      **Collaborative Serious Game to simulate Post-Disaster Management Protocols.**  
Designed and developed the storyboard and serious game to simulate two major disaster management protocols named Rapid Damage Assessment (RDA) and Incident Command System (ICS).  
*Tools used:* Unity3D game engine, SmartFox media server  
*Languages used:* C#, JS
- 2016      **Multimedia collaboration for in an E-Learning platform for effective learning.**  
Developed a web application that serves as a platform for text-based and multimedia-based collaboration thereby increasing the effectiveness of learning while in a collaborative game-based learning environment.  
*Tools used:* Unity3D game engine, Adobe Dreamweaver, WebRTC  
*Languages used:* Nodejs, JS, C#, HTML
- 2014      **College Automation System using Web Technologies**  
Design and implementation of a college automation system with 8 different modules successfully implemented in Coorg Institute of Technology, Kodagu, India  
*Tools used:* Adobe Dreamweaver, phpMyAdmin, Apache Server  
*Languages used:* PHP, MySQL, HTML

## Skills and Achievements

---

- Competent in C, C#, PHP, JS
  - Expertise in tools such as Unity3D Game Engine, Steam Engine, Construct 2 Game Engine, phpMyAdmin, Apache Web Server, Adobe Photoshop, Adobe Dreamweaver
  - Experienced in using and developing applications for *HTC Vive, Oculus Rift, Windows Mixed Reality, Google Daydream, and GoogleCardboard.*
- 2016      Event co-coordinator, webmaster and app admin for First International Conference on Robotics and Automation for Humanitarian Applications (RAHA2016) held at Amrita University
- 2014      Student Volunteer for 6th International Conference on Technology for Education (T4E2014) held at Amrita University

## Workshops and Trainings

---

- 2019      Conducted a 3-day workshop on Computational Tinkering with Kappa, the tangible electronic prototyping kit for 40 students in Hyderabad.

- 2018 Attended Environmental Decision Making Course by Dr. Tarek Rashed, former professor at Polis Center of Indiana University-Purdue University.
- 2018 Conducted workshop on Computational Thinking for 40 students of Amrita Vidyalayam, Thalassery, Kerala.
- 2017 Attended workshop on Cognitive Psychology and Human Development by Dr. Sydney Strauss from Amrita University
- 2016 Conducted 2 Computational Thinking Workshop in the Train the Trainer (TTT) Program of The 2nd Foundation Workshop Series from Amrita University for 40 mentors from Andhra Pradesh.
- 2016 Conducted Virtual Reality and Serious Games Workshop for over 280 students in collaboration with Andhra Pradesh State Skill Development Corporation in four Model Schools.

## Personal

---

Born on December 1st, 1992

Languages: English, French (Elementary Proficiency), Hindi, Kannada, Malayalam

Hobbies: Photography

## Professional Reference

---

1. Mr. Deepu DS, Lead, Haptics, Virtual Reality, and Serious Games Group, AMMACHI Labs, Amrita University.  
Ph: +91 9961 95 13 19  
Email: [deepu.ds@ammachilabs.org](mailto:deepu.ds@ammachilabs.org)
2. Dr. Jose James, Post-Doctoral Research Associate,  
Center for Modeling, Simulation, and Imaging in Medicine (CeMSIM)  
Rensselaer Polytechnic Institute  
Troy, New York.  
Ph: (518) 961-6041  
Email: [jamesj3@rpi.edu](mailto:jamesj3@rpi.edu)