

PRIYANKA BAGADE, PhD

(Webpage: <https://www.cse.iitk.ac.in/users/pbagade/>)

Email: pbagade@cse.iitk.ac.in

Phone No.: +91 (512)259/679-2206

Address: KD-306, H. R. Kadim Diwan Building, Department of Computer Science and Engineering, IIT Kanpur, Kanpur 208016, India.

EDUCATION

- Ph.D. in Computer Science (Jan 2010 – Dec 2015)
Arizona State University, 699 S Mill Ave, Tempe, Arizona – 85281, USA GPA: 3.95/4.00
- B. Tech. Electronics and Telecommunication Engineering (Jun 2003 – May 2007)
College of Engineering Pune, Wellesely Rd, Shivajinagar, Pune, Maharashtra – 411005, India GPA: 7.21/10.00

WORK EXPERIENCE

- Assistant Professor in Computer Science and Engineering department at IIT Kanpur (Feb 2021 - present)
- Vision Architect at Intel Corporation (Dec 19 – Feb 2021)
 - Enable computer vision and deep learning features on the Intel devcloud for the edge cloud to enable AI applications development and performance evaluation on various Intel hardware.
 - Provide deep learning expertise to optimize the models while enabling Intel customers from retail, healthcare and transportation verticals on Intel h/w and s/w products such as OpenVINO toolkit.
- Software Engineer at Intel Corporation (Feb 16 - Nov 2019)
 - Provide thought leadership and technical expertise in the area of integrating Intel commercial IoT platform with cloud partner products and services, mainly focused on computer vision and machine learning technology.
 - Enable Intel customers on deep learning technology by Intel. Create demonstrations, product prototypes, and technical documentation and publish editorial insight to positively influence industrial IoT solution developers to support Intel technology.
 - Trained 3100 customers on Intel IoT technology through 16 in-person workshops and 450,000 developers through a webinar.
- Programmer Analyst at Cognizant Technology Solutions (Oct 07 – Oct 09)
 - Implemented business logic for website of One West Bank, USA to electronically underwrite and price loan applications

RESEARCH EXPERIENCE

- Assistant Professor in Computer Science and Engineering department at IIT Kanpur (Feb 2021 - present)
Researcher in developing applications in IoT with data analysis using AI/ML/DL techniques
- Research Assistant at “Impact Lab, Arizona State University” (Jan 11 – Dec 15)
699 S Mill Ave, Tempe, Arizona – 85281, USA
Researcher in developing scientific approach towards designing and developing sustainable, safe and secure wearable devices and mobile platforms
 - Developed an automated code generator, Health-Dev to generate software for mobile medical apps (smartphone health apps) and wearable (IoT) devices using parameterized code frame database.
 - Ensured sustainability, safety and security requirements of the health app using automated techniques: a) non-linear optimization framework to obtain sustainable and safe wearable design, b) theoretical safety verification using reachability analysis, c) hybrid simulator for mobile medical apps to accurately simulate interactions between app software and human physiology to ensure safe working of the health app, d) security-enabled code for data communication interfaces, e) Safety Verification of wearables using hardware emulation to speed up the process of simulating impact of health apps on human body before actual implementation using Field Programmable Analog Array (FPAA).

- Developed a trustworthy data manager to enable automated safety and security verification and also optimization of mobile health applications so that they meet the requirements during practical deployment.
- **Research volunteer at “Food and Drug Administration” (Jun 13 – Aug 13)**
10903 New Hampshire Ave, Silver Spring, Maryland – 20993, USA
 Student volunteer under the program of National Science Foundation (NSF) Scholar-in-resident
 - worked on developing a technique for evaluating software safety of medical devices to be used in device regulation
 - used mathematical models of the medical systems to verify control software

TEACHING EXPERIENCE

- **Assistant Professor at Indian Institute of Technology Kanpur**
 - Instructor for the course “Introduction to Internet of Things and its Industrial Applications” (Aug 21 – Dec 21) and (Aug 22 – Dec 22)
 - Instructor for the course “Deep Learning for Computer Vision” (Jan 22 – May 22)
 - Instructor for the Security E-masters course, “CS683 Embedded, Cyber Physical Systems and IoT Security” (July 22 – Sept 22)
- **Teaching Assistant at “Arizona State University” (Jan 11 – Aug 13)**
699 S Mill Ave, Tempe, Arizona – 85281, USA
 - Instructor for ASU 101 course, an introductory course for freshman students
 - Teaching Assistant for Computer Networks, Operating Systems, Mobile Computing
 - Lab Instructor for courses on C, C++, Java.

PUBLICATIONS

Publications:

1. **P. Bagade**, A. Banerjee, S. Gupta, Rapid Evidence-based Development of Mobile Medical IoT Apps, IEEE International Workshop on Security, Privacy and Trust for IoT, 2016.
2. **P. Bagade**, A. Banerjee, S. Gupta, Optimal Design for Symbiotic Wearable Wireless Sensors, IEEE International Conference on Body Sensor Networks 2014.
3. **P. Bagade**, A. Banerjee, J. Milazzo, S. Gupta, Protect your BSN: No Handshakes, just Namaste! In IEEE International Conference on Body Sensor Networks 2013, MIT, Boston.
4. **P. Bagade**, A. Banerjee, S. Gupta, Safety Assurance of Medical Cyber-Physical Systems using Hybrid Automata: A Case Study on Analgesic Infusion Pump, Medical CPS Workshop 2013.
5. **P. Bagade**, A. Banerjee, S. Verma, J. Milazzo, S. Gupta, A Holistic Tool for Developing Wireless, Home-Based Health Monitoring System, Association for the Advancement of Medical Instrumentation, Horizons 2013 magazine
6. A. Banerjee, S. Verma, **P. Bagade**, S. Gupta, Health-Dev: Model Based Development of Pervasive Health Monitoring Systems, The 9th International Conference on Wearable and Implanted Body Sensor Networks 2012, London UK.
7. J. Milazzo, **P. Bagade**, A. Banerjee, S. Gupta, bHealthy: A Physiological Feedback-based Mobile Wellness Application Suite. In Proceedings of the conference on Wireless Health, ACM, 2013.
8. S. Verma, J. Milazzo, Y. Xie, **P. Bagade**, A. Banerjee, S. Gupta, Model-Based Wireless Health System Design Tool, Wireless Health 2012, San Diego, California. (demonstration)
9. **P. Bagade**, A. Banerjee, S. Gupta, Health-Dev β – A Trustworthy Health App Development Tool. (In preparation)
10. **P. Bagade**, A. Banerjee, S. Gupta, Hybrid simulator for cyber-physical networks. (In preparation)
11. A. Banerjee, **P. Bagade**, S. Gupta, Approximation of Reach Set of a Non-Linear Hybrid Automata using Exponential Box Splines. (Submitted)
12. D. Bisht, M. Kojage, M. Shukla, Y. Patil, **P. Bagade**, Smart Communication System Using Sign Language Interpretation, 31st FRUCT conference, 2022
13. K. Mohan, P. Bagade, Electric Vehicle Battery Management using Digital Twin, IEEE COINS conference, 2022

14. T. Kiran, P. Bagade, Security risks in MQTT-based Industrial IoT Applications, IEEE COINS conference, 2022

Book Chapters:

15. **P. Bagade**, A. Banerjee, S. Gupta, Evidence-Based Development Approach for Safe, Sustainable and Secure Mobile Medical App, Wearable Electronics Sensors for safe and healthy living, Springer International Publisher, 2015.
16. **P. Bagade**, A. Banerjee, S. Gupta, Validation, Verification and Formal Methods for Cyber-Physical Systems, Cyber-Physical Systems: Foundations, Principles and Applications (Elsevier), 2015.

US Patents:

17. Banerjee, Ayan, Sandeep KS Gupta and **Bagade, Priyanka** "Systems and methods for model-based non-contact physiological data acquisition." U.S. Patent 9,642,543, issued May 9, 2017.
18. Banerjee, Ayan, Sandeep KS Gupta and **Bagade, Priyanka** "Mobile medical applications with separated communication and development environment for the same" U.S. Patent 9619213-B2, issued Nov 4, 2017

AWARDS AND PRESENTATIONS

- **Division Recognition Award** for prototyping pre-production AI hardware installation with Edge software Hub, Intel, 2020
- **Group Recognition Award** for public launch of Intel IoT devcloud to enable DL inference at the edge, Intel, 2019
- **Visual Computing Products Award** for a successful launch of OpenVINO toolkit, a visual computing tool by Intel to establish Intel as the Visual Computing leader by architecting the technology for customer engagement, 2018
- **Invited Speaker, RoboBusiness Conference 2018**, Accelerate Computer Vision Applications, May 2018
- **Group Recognition Award** for rapid IoT innovation by integrating GE Predix cloud on Intel gateway and developing a web-based interface to provide easy remote access to the gateway, 2017
- **Intel Buzz Lightyear Award** by Developer Program and Initiative for presenting demo on Intel IoT gateway and conducting Joule workshop with GE at Intel Developer Forum (IDF), Intel Corporation, 2016
- **Felicitated with Star Award** given to 15 employees among 6000 by Cognizant Technology Solutions for outstanding performance in improving productivity of the project (2009)
- **Received graduate student fellowship**, ASU, Spring 2012, Summer 2013, Summer 2014, Spring 2015.
- **Presented research paper**, "Protect your BSN – No handshakes just Namaste" in BSN Conference, MIT, 2013.
- **Invited Speaker**, Mobile Medical Application Development, Food and Drug Administration, Maryland, 2014
- **Received GHC Scholarship Grant** to attend the Grace Hopper Celebration of Women in Computing, 2014.
- **Presented research paper** on "A Systematic Approach to Design and Develop Wearable Devices" in Wearable Tech Session of Grace Hopper Celebration of Women in Computing (GHC 2014).
- **Presented Poster** on "Model-based Security Attacks on Body Sensor Networks", selected for ACM Student Research Poster Competition in Grace Hopper Celebration of Women in Computing (GHC 2014).
- **Presented poster** on "Optimal design for wearable devices", in GHC 2015.
- **Presented demo** on "Intelligent Infrastructure for smart cities with Intel IoT gateway" on Intel IoT Developer show, 2017

SERVICE

- Invited expert to present applications of machine learning and IoT in steel industry to SAIL Bokaro, India, 2021
- Invited poster competition judge, Grace Hopper Conference, 2020
- Trained Indian Army Engineers on IoT technology and potential use of IoT in military applications, January, 2022
- Invited expert faculty for AICTE sponsored ATAL-FDP Program on "Cyber Physical Systems & Industrial IOT", January, 2022
- Member of Expert Council of TIH Foundation for IoT and IoE (TIH-IoT), IIT Bombay
- Program Committee Member
 - ACM COMPASS (Computing Systems and Sustainable Societies) 2022 Program

- IEEE ICCCN 2022
- IEEE WINTTECHCON 2022, Technical Conference by Women in Technology, 2022
- Member of e-Masters Program Institute-level Executive Committee, IIT Kanpur, 2022
- Guest speaker at Students' Research Convention, IIT Kanpur, March 2022
- Member of screening committee for “Centre for Innovation for IoT/M2M” by C-DOT to develop national standards compliant IoT/M2M solutions, 2022
- Jury member for an accelerator program for early to growth state Deeptech and IoT startups hosted by IIM Lucknow EIC and Technopark@iitk

TECHNICAL SKILLS

- **Programming Languages:** C, C++, Python, Java, nesC, Architectural Analysis & Design Language (AADL), VB.net, C#, ADO.net, ASP.net, SQL server, AJAX, html, XML, Microcontroller Assembly Language.
- **Software:** SpaceEx, Cadence, MATLAB, Simulink, Latex, Android SDK, Eclipse, Visual studio, Hadoop, github, OpenVINO, Tensorflow, Caffe, Keras.
- **Operating Systems:** Linux, Windows, MacOS, Android, TinyOS.