



# Suraj Kumar Pandey

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<https://surajkumarpandey.github.io/>

## Research Interests

Artificial Intelligence, Cyber-Physical Systems (IoT, Embedded Systems, Robotics), Bio-inspired algorithms, TinyML, Embodied Intelligence, Chaotic Systems.

## Education

Degree/Certificate	Institute/Board	CPI/CGPA/Percentage	Year
PhD	Indian Institute of Technology, Guwahati	9	July 2018 - April 2024 (anticipated)
B.Tech.	College of Technology, G B Pant University of Agriculture & Technology	7.281	2010 - 2014
Senior secondary	CBSE board	79.0%	2009
Secondary	CBSE board	90.6%	2007

## Publication

- S. K. Pandey, Sonia, T. Semwal and S. B. Nair, “**Smart Patch: An IoT based Anti Child-Trafficking Solution**”, **2020 IEEE International Conference on Internet of Things and Intelligence System (IoTaIS)**, Bali, **2021**, DOI:10.1109/IoTaIS50849.2021.9359702.
- S. K. Pandey and S. B. Nair, “**Immuno-inspired Augmentation of Siamese Neural Networks for Multi-Class Classification**”, **IVCNZ 2022 Image and Vision Computing New Zealand**, **24 - 25 November 2022**, DOI: 10.1007/978-3-031-25825-1\_35.
- “**Vision based Embodied Learning for resource-constrained devices**”, (Manuscript under preparation)

## Professional Experience

- Officer (IT)**  
at **Security Printing and Minting Corporation of India Ltd (SPMCIL)**  
(A wholly owned schedule 'A' Company of Government of India) (15.12.2016-08.07.2018)
- Young Professional II**  
at **Indian Agricultural Statistics Research Institute (IASRI), Indian Council of Agricultural Research** (24.08.2015-31.08.2016)

## Projects

### Academic/Research:

- Multi Agent System Interface for the Webots Robot Simulator**  
Created an interface for a Multi Agent System (TARTARUS) for Webots.  
(<https://github.com/surajkumarpandey/Python-Prolog-Socket-Communication-Prolog-based-Webots-control>)
- Real-time intrusion detection under an IoT**  
Establishes an IoT using cloud services to monitor Lab's access and get real time information remotely using MQTT  
protocol (<https://github.com/surajkumarpandey/Intrusion-Alert-IoT-ESP8266-CloudMQTT->)
- Gait Mapping**  
Performed basic human gait mapping and analysis using the time series data of the acceleration of the foot for recognizing gestures (<https://github.com/surajkumarpandey/Gait-mapping-using-ESP8266-and-MPU6050>)
- Speech based control of a simulated Robot**  
Created a Hidden Markov Model based speech recognizer for controlling a simulated robot

- **Restricted Boltzmann Machine based Recommender**  
Created a movie recommender system using Restricted Boltzmann Machine

## Industrial

- **PAARDAKSH (An ERP based project under SPMCIL)**  
*under Mr. Sunil Tiwari, Dy General Manager (IT)-SPMCIL*  
Executive role involving administration, development and monitoring of IT infrastructure and its related issues.  
Central  
website development
- **SPMCIL Recruitment Portal (A Java based online recruitment portal of SPMCIL)**  
*under Mr. Sunil Tiwari, Dy General Manager (IT)-SPMCIL*  
Designer and developer
- **ICAR Research Data Repository for Knowledge Management (A data repository based project)**  
*under Dr. Rajender Parsad, Sr. Scientist-IASRI*  
Full stack developer role involving development and designing for the project as per the requirements including central  
communication (both research and administrative data) portal for Nodal Officers of ICAR around the globe and handling  
data repositories (<https://krishi.icar.gov.in/>)

## Invited Talks/Demonstrations

- **TEQIP-III workshop on Recent Trends in Embedded System for IoT and Mechatronics (RTESTM-2019), National Institute of Technology Arunachal Pradesh,**  
Prof. Shivashankar B. Nair, Suraj Pandey, Divya D. Kulkarni and Menaxi Bagchi  
24.09.2019-28.09.2019
- **ATAL Workshop on IoT and Cyber Security, Indian Institute of Technology Guwahati,**  
Prof. Shivashankar B. Nair, Suraj Pandey, Divya D. Kulkarni and Menaxi Bagchi  
19.08.2019-23.08.2019
- **TEQIP FDP organized by the Dept. of Mechanical Engineering, Indian Institute of Technology Guwahati,**  
Prof. Shivashankar B. Nair, Suraj Pandey, Divya D. Kulkarni and Menaxi Bagchi  
03.2019

## Technical skills

- **Programming languages:** Java, C, C++, Python, MicroPython
- **Web technologies:** HTML, CSS, JQuery\*
- **Database management :** MySQL
- **Operating System:** Windows, Ubuntu, Raspbian
- **Microcontroller/ single-board computer and sensors:** Arduino\*, Raspberry Pi\*, ESP8266\*, ESP32\*, Lego Mindstorms NXT\* and respective sensors
- **Miscellaneous:** TinyML\*, Tensorflow, Tensorflow Lite\*, Webots, MQTT, Octave, Drupal, Joomla!., Android programming \*, SAP-ERP\*  
\*elementary proficiency

## Relevant Courses/Certifications undertaken

- Machine Learning (Online: Coursera)
- Neural Networks and Deep Learning (Online: Coursera)
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization (Online: Coursera)
- Structuring Machine Learning Projects (Online: Coursera)
- Convolutional Neural Networks, Currently attending (Online: Coursera)
- Introduction to Dynamical Systems and Chaos (2020), (Online: Complexity Explorer)
- Introduction to Complexity (Online: Complexity Explorer)
- Speech Processing (Indian Institute of Technology Guwahati)
- Artificial Intelligence (Indian Institute of Technology Guwahati)
- Mobile Robotics (Indian Institute of Technology Guwahati)
- Advanced Topics in Artificial Intelligence (Indian Institute of Technology Guwahati)

## Positions of Responsibility

- Officer (IT), SPMCIL
- President, SPIC MACAY-Pantnagar Chapter (2013-14)
- Teaching Assistant for various Undergraduate and Postgraduate courses in IIT Guwahati

## **Achievements**

- Selected for attending Google's research symposium 'Research Week with Google, Google Research India,' (08.02.2022-11.02.2022)
- Presented an accessibility android application (NETRA) for the visually challenged in an international technical fest organized by TimesWorld Group in association with Ministry of Science & Technology, Government of India and All India Council for Robotics & Automation
- Attended Gartner Security & Risk Management Summit 2017 (Mumbai) as a delegate of SPMCIL
- Obtained merit based Prime Minister's scholarship for graduate program
- Obtained merit based scholarship for 10+2 education
- Received the Certificate of Honor from the Vice Chancellor of the University for leading as the president of SPIC MACAY, Pantnagar Chapter during 2013-14

## **Extracurriculars**

- Actively served as a member of the University's Chapter of an International body, SPIC MACAY and led as its President for the session 2013-14
- Cyber presence: <http://surrealsuraj.blogspot.in/>, <https://github.com/surajkumarpandey>, <https://www.youtube.com/channel/UCj7d4-KJ5MgJiOwBcJ27I7Q/about>
- Got shortlisted as a finalist in "Unrestricted" organized by TEDxIIT Guwahati
- Published an Indian mythology based android game on google play store that holds a 3400+ user base. Presented it as a finalist in the presence of our honorable Prime Minister Shri Narendra Modi at Toyathon 2021, an inter-ministerial initiative organized by Ministry of Education's Innovation Cell with support from All India Council for Technical Education, Ministry of Women and Child Development, Ministry of Commerce and Industry, Ministry of MSME, Ministry of Textiles and Ministry of Information and Broadcasting. (<https://play.google.com/store/apps/details?id=comhanuman.endlesshanuman.game>)

I hereby declare that the aforementioned information is true to the best of my knowledge.

Suraj Kumar Pandey

28.02.2023