## Contact

www.linkedin.com/in/dr-avinash-kumar-singh-2a570a31 (LinkedIn)
avinashkumarsingh.in/ (Personal)


## Top Skills

Malware Analysis
Machine Learning
Pattern Recognition

## Languages

English (Full Professional)
Hindi (Native or Bilingual)
Bangla (Native or Bilingual)

## Certifications

Introduction to Machine Learning in Production
Machine Learning Data Lifecycle in Production
Introduction to Scrum Master Training
Prompt Engineering for chatGPT

## Honors-Awards

Authentication Techniques and Web Application Security

## Publications

NAO Humanoid Robot: Analysis of Calibration Techniques for Robot Sketch Drawing
An Empirical Review of Calibration Techniques for the Pepper Humanoid Robot's RGB and Depth Camera
Visual Perception based Criminal Identification- a query based approach
Sketch drawing by Nao Humanoid Robot
Face recognition with liveness detection using eye and mouth movement

# Dr. Avinash Kumar Singh


Postdoctoral Researcher at University of Montpellier | AI Trainer and Consultant
Montpellier, Occitanie, France


## Summary


Hi, I am Avinash, I am currently associated with LIRMM lab Montpellier University France as a post-doctoral researcher. Here we are performing activity recognition for Human robot collaboration. I am a part of H2020 project SOPHIA.  I work in the domain of machine learning, deep learning computer vision, natural language processing and human robot interaction (Yes, it is a big list ). It has been more than 8 years working in the domain of artificial intelligence and robotics. I do offer consultancy to industries and corporate training in Artificial Intelligence. I served more than two years with Intain Technologies as a Lead AI consultant and helped them to setup the Artificial Intelligence division (In-D) and design architectures of various machine learning solutions. I am here looking for the consultancy and online training opportunities in these domains.

I started my journey in the domain of AI and robotics as a Ph.D candidate from Indian Institute of Information Technology Allahabad, India. During the time of Ph.D, I worked in human-robot interaction and there we trained Nao humanoid robot to do person identification both in absence and presence of person image. We also trained them to dance and sketch. As the extension of my Ph.D work, I worked two years in the intelligent robotics laboratory at Umea university Sweden as a post-doctoral researcher. We had a family of three Pepper robots and we trained them to perform the collaboration in order to solve a common problem. We further translated their actions into the natural language so that they would be understandable at the same time. In another project we developed an assistance framework so that they can be assistant for the elderly people and can help them in day to day life.

From February 2017 to January 2018, I was associated with HCL Technologies. There, I led the artificial intelligence division. There were 16 members in my team, I was responsible to handle the client

interaction, gather project requirements and then design the machine learning solution. From November 2015 to February 2017, I worked as an associate process manager at eClerx Services Limited. I worked as a technology specialist for the machine learning solutions. I used to work with the development team and advise them to where, how and when machine learning can be implemented in their existing solutions.

For more information about my research projects, you may visit to my website and the the youtube channel.
http://avinashkumarsingh.in/
https://www.youtube.com/channel/UCRdJsCCYkkSp9qhqW4Wbh2Q

## Experience

### Brane Enterprises Pvt Ltd
Senior Solution Leader
May 2020 - Present (3 years 3 months)
Hyderabad, Telangana, India

I am working with Brane enterprises since May 2020, I helped my team to build various solutions in the domain of computer vision and deep learning. I am part of vision for visually impaired people. We developed smart glasses that can help visually impaired people to recognize objects, their colour and the distance from the person. Further, we fused the Geo spatial data and the vision to help them in navigation and to avoid obstacles. Together we developed solutions for face recognition for low resource devices, object detection for the large scale objects (>5000) and scene understanding etc.

### University of Montpellier
Postdoctoral Researcher
November 2020 - November 2021 (1 year 1 month)
Montpellier, Occitanie, France

I have recently joined the robotics division at LIRMM (University of Montpellier). I will be working on the European  Project (H2020) SOPHIA. As a part of the project I would be working on activity recognition that will be useful in the human robot collaboration.

### Intain - Building Intelligent Blockchains
Lead Consultant
January 2018 - May 2020 (2 years 5 months)

Sweden

At Intain innovation lab, we work on different aspects of artificial intelligence. We work on  deep neural network, computer vision, machine learning and natural language processing. We are streamlining the process of digitization using all these components. The major problem of digitization process is to handle the unstructured data source. The non linearity present in terms of different document layout, nomenclature, diversity in scanning, alignment, document quality, resolution, etc. we try to mitigate these risks using our state of the art algorithms. Our product In-D can address these challenges and mitigate the risk. Apart from the product division, we do have patent and publishing section in Intain where we encourage people to publish their work in global forums such as in renewed conferences, journals and patents.

### Umeå University

Postdoctoral Research Fellow

February 2018 - January 2020 (2 years)

Umea, Sweden

I am working on Human Robot Interaction. We have a family of Pepper Robot which are used as the testbed for our demonstrations. We are training them to understand their own limitations and ask human to collectively solve the problem. We are designing their cognitive model in such a way that they will learn from human demonstrations/examples

### HCL Technologies

Deputy Manager at HCL Technologies

February 2017 - January 2018 (1 year)

Noida Area, India

I worked with HCL Innovation Lab, Noida for almost one year. I lead the Artificial Intelligence division and executed several projects such as Information Extraction from the unstructured data sources, Document Classification and Information Localization, Object Detection, Face & Signature Verification System, etc.

### eClerx

Associate Process Manager

November 2015 - February 2017 (1 year 4 months)

Mumbai Area, India

At eClerx services limited, I worked as a full stack developer for machine learning based solution. As a developer, I deployed two solutions such as email classification where I used Bayes, ANN, SVM, KNN, etc. to train the

system, on the other hand in the email information extraction, I used natural language processing specially named entity recognition to extract information from the mail communication.

### Indian Institute Of Information Technology
Research Scholar
November 2011 - November 2015 (4 years 1 month)
Allahabad, Uttar Pradesh

I pursued my Ph.D in Human Robot Interaction under the supervision of prof. G C Nandi from Indian Institute of Information Technology, Allahabad, India. Here is the sort description of my work.
This thesis addresses four problems such as face recognition, face liveness detection, criminal
identification and sketch drawing by humanoid robot. All these problems are solved with
respect to the human robot interaction. The existing face recognition problem has been tackled
with our proposed component based fragmented face recognition framework. The proposed
framework uses only a subset of the full face such as eyes, nose and mouth to recognize a
person. It’s less searching cost, encouraging accuracy and ability to handle various challenges
of face recognition offers its applicability on humanoid robots. The second problem in face
recognition is the face spoofing, in which a face recognition system is not able to distinguish
between a person and an imposter (photo/video of the genuine user). The problem will become
more detrimental when robots are used as an authenticator. A depth analysis method has been
investigated in our research work to test the liveness of imposters to discriminate them from
the legitimate users. The implication of the previous earned techniques has been used with
respect to criminal identification with NAO robot. An eyewitness can interact with NAO
through a user interface. NAO asks several questions about the suspect, such as age, height,

her/his facial shape and size etc., and then making a guess about her/his face. A rough set based
reasoning approach has been proposed to map the eyewitness imprecise knowledge to the
existing criminal database. If the facial description is not matched inside the database, it is
assumed that there is no previous information about criminal face exists. In all such cases NAO
help Police sketch artist to create portrait of the criminal.

## Education

### Indian Institute Of Information Technology

Doctor of Philosophy (Ph.D.), Information Technology · (2011 - 2015)

### Indian Institute of Technology, Kanpur

Workshop on Machine Learning , July 1 to 3, 2013, Machine learning · (2013 - 2013)

### Indian Institute of Technology, Madras

DAAD Supported International Workshop on Advances in PDE Modeling and Computation (APDEMC 2013), Advances in PDE Modeling and Computation · (2013 - 2013)

### National institute of technology Delhi

Faculty Development Programme on Image Processing, Computer Vision and Pattern Recognition, conducte, Image Processing, Computer Vision and Pattern Recognition · (2013 - 2013)

### Banaras Hindu University

National workshop cum training program on Computing Techniques and Applications (NWCTP-CTA) during J, Computing Techniques and Applications · (2012 - 2012)