



# Bhuvaneshwaran Ilanthirayan

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## Summary

Experienced software engineer with a strong background in Big Data and Artificial Intelligence. With 2 years industrial experience in software engineering and product management in Big Data, and 2 years of part-time involvement in an application-oriented AI research environment. With a master's degree in Data Science and AI, equipped with a solid foundation in Deep Learning, Semantic Web, AI Planning, Vision and NLP.

## Experience

### Deutsches Forschungszentrum für Künstliche Intelligenz

Saarbrücken, DE

RESEARCH ASSISTANT (AI ENGINEER - AGENTS AND SIMULATED REALITY)

January 2021 - Present

- **MOSIM** (Digital Integration based on Modular Simulation of Human Motions): Developing Modular Motion interfaces for agent waving reducing animation creation time by 50%.
- Created scripts for automated deployment, saving ~1-2 hours of manual effort per deployment.
- **CrossCDR** (Cross-cultural analysis of pedestrian behaviour in Germany and Japan): Creating a gizmos tool for vehicle spawning and path following, reducing experiment setup time by 50%.
- **AJAN** (Accessible Java Agent Nucleus): Developing Behavior trees for various Agent Simulations, leading to a 25% increase in agent decision-making accuracy. Engineering MQTT Plugin for efficient communication using MQTT Protocol with RDF.

### Infosys Ltd

Mysore, India

TESTING EXECUTIVE (SOFTWARE ENGINEER - SOLUTIONS TEAM, DATA WAREHOUSE TESTING)

June 2018 - March 2020

- Led the development and owned the product - Business Intelligence Report Tester, resulting in remarkable 67% increase in customer count and significant business growth.
- Introduced diverse features such as licensing, LDAP authentication, reducing piracy & increasing sale by 2-3 times.
- Integrated BI visualizers (IBM Cognos, Tableau, Power BI), UI automation (Selenium, SikuliX), increasing revenue by ~30%.
- Automated cloud/Big data migration and eradicated CORS issues, reducing the data migration time by 60%.
- Incorporated ETL from multiple sources, reducing testing efforts and increasing data processing efficiency by 40%
- Architected the sister product of the BI Report Tester, ensuring its seamless integration, increasing user satisfaction and increasing the performance by 10%

### Make a Difference

Coimbatore, India

ACCADEMIC SUPPORT VOLUNTEER

2016 - 2018

- Educated unprivileged children in society and addressed their needs.
- Raised funds for the organization to improve its services.

## Education

### Universität des Saarlandes

Saarbrücken, DE

MASTERS IN DATA SCIENCE ARTIFICIAL INTELLIGENCE

June 2020 - Present

**Thesis:** Agent Planning under uncertainty using Knowledge graphs.

### Coimbatore Institute of Technology, Anna University

Coimbatore, India

BSC IN COMPUTER SYSTEMS AND DESIGN

June 2015 - April 2018

**Thesis:** Smart home manager - Home automation System using Facial Recognition.

- First class with Distinction.

## Skills

### Programming

Python, Java, C#, C++, .NET, SPARQL, SQL

### Libraries/ Frameworks

**Web:** Spring, Flask-restx, FastAPI, Angular - **Deep Learning:** PyTorch - **Data Processing:** Pandas, NumPy  
**Image Processing & Computer Vision:** PIL, OpenCV - **Simulation:** Unity 3D, ROS - **Data Serialization:** Apache Avro

**Data Visualization:** Matplotlib, Seaborn - **Messaging and Processing:** MQTT, Apache Kafka

**Big Data:** Hadoop: Apache Pig, Hive, Apache Spark - **Industry Standard:** BaSys, OPC UA

### Tools/ Platforms

**Version Control:** Git, Plastic SCM - **Build and Dependency Management:** Apache Maven, CMake, Make

**Project and Process Management:** Trello, JIRA, Camunda - **Deployment:** Apache Tomcat - **CI/CD:** Jenkins

### Databases

**Graph Database:** RDF4J - **Relational Database:** IBM DB2, Oracle DB, MySQL

**Cloud Data Warehouse:** Snowflake - **NoSQL Database:** MongoDB - **Columnar Database:** HBase

## Honors & Awards

|           |  |                   |
|-----------|--|-------------------|
| 2019      | <b>Insta Awards</b> , Infosys<br>Excellent contribution  | Mysore, India     |
| 2018      | <b>Smt. &amp; Sri Rajalakshmi Karthikeyan Annual Memorial Award</b> , Coimbatore Institute of Technology<br>Topper of the department | Coimbatore, India |
| 2015-2018 | <b>Certificate of Merit - Sem 1 - Sem 6</b> , Coimbatore Institute of Technology<br>Topper of the department                         | Coimbatore, India |
| 2013      | <b>Innovation in Science Pursuit for Inspired Research (INSPIRE)</b> , Government of India - Twice<br>Top 1% in Board Examination    | Coimbatore, India |

## Projects

### Beyond Certainty: Empowering Semantic Web Agents with Adaptive Planning Strategies for Uncertain Environments [Ongoing Master Thesis]

Enhancing the capabilities of real robotic drone agent to effectively plan in a industry warehouse scenario. Using computer vision to extract knowledge about the environment from the camera data, storing it in the knowlege graph of the agent for informed decision making.

### Drone Inspection [Digital Twin]

Created a Digital Twin of detected objects during inspection flights using drones, and developed a Real-time simulation environment in Unity Game Engine to represent the Digital Twins of objects and the drone with an accuracy over 80%.

### Single Image Super Resolution on Satellite Images [Computer Vision]

Improve the satellite image resolution by implementing a novel architecture with attention-based mechanism that improves quality of the de-graded image achieving a boost of 2.64% in SSIM & 6.45% in PSNR values. **Dataset:** Draper Satellite Image Chronology.

### Low Resource Text Style Transfer via Domain Adaptive Meta Learning [NLP]

Realized the first half of DAML-ST5 architecture for unsupervised text style transfer through domain adaptation, analyzing performance after a comprehensive 16 hours of pre-training, identified potential issues. **Dataset:** Amazon Dataset, Yelp Restaurant review, IMDB Movie review.

### Image Segmentation [Computer Vision]

Implemented and compared multiple neural methods for object segmentation, reproducing a reference paper's architecture and designing a novel architecture to boost accuracy by 1.5%. **Dataset:** Cityscapes.

### Deepfake Detection [Computer Vision/ CyberSecurity]

Used FGSM attack on pretrained DenseNet architecture to detect deepfake generated by Deepfake methods. Reduced accuracy from 46% to 5.6%. Formulated Lipschitz regularization as defense, restoring accuracy to 67%, affirming the deepfake detection. **Dataset:** Celeb-DF.

### Smart Home Manager [Bachelor Thesis]

Developed Smart Home Manager, an advanced Home Automation System utilizing Facial Recognition for personalized automation, enhanced security, and user interaction with an average of 20 fps.

## Extracurricular Activity

### Google Developer Student Group

CORE MEMBER

- Organizing the events for fellow students with more than 30+ attendees.

Saarbrücken

2022 - PRESENT

### Anna University

STUDENT AMBASSADOR

- Ranked top 60 among the ambassadors of the techno-cultural event Kurukshetra'17.

Chennai, India

2017

### Coimbatore Institute of Technology

EVENT ORGANIZER

- Organized a technical event at the national-level technical symposium - Cyberfest'17

Coimbatore, India

2017

## Workshops & Certifications

|      |  |                   |
|------|--|-------------------|
| 2023 | <b>Introduction to MLflow</b> , Datacamp   | Certification     |
| 2023 | <b>Problem to Market</b> , Universität des Saarlandes  | Workshop          |
| 2023 | <b>Entrepreneurship for Scientists (Design Thinking)</b> , Universität des Saarlandes                    | Workshop          |
| 2021 | <b>International Summer School on Artificial Intelligence and Games</b> , GameAIBook.org                 | Workshop          |
| 2019 | <b>Machine Learning with TensorFlow on Google Cloud Platform Specialization</b> , Google Cloud, Coursera | Certification     |
| 2018 | <b>Machine Learning</b> , Stanford, Coursera   | Certification     |
| 2017 | <b>IBM Machine Learning</b> , Anna University  | Workshop          |
| 2017 | <b>Dream Camp - Mentor</b> , Make A Difference   | Experiential Camp |
| 2017 | <b>Amazon Web Services</b> , Amrita University   | Workshop          |