Suraj Pattar

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EXPERIENCE

Honda R&D
Staff Engineer
📍 Tokyo, Japan
📅 June 2023 – Present

- Leading research and development for the perception team on the Avatar robot at Frontier Robotics.

Connected Robotics Inc.
Robotics AI Research Engineer
📍 Tokyo, Japan
📅 Jan. 2019 – May 2023

- Expertise in developing computer vision inspection systems for food factories.
- Successfully led a team in creating a robot system for bento-box production at a food factory.
- Conducted joint research with AIST to improve camera depth data in challenging lighting conditions.
- Proven ability to design and prototype systems through simulation before hardware development.
- Specialized in computer vision research and development, including object detection, synthetic data generation, grasp pose estimation, and automatic data collection for a dishwasher robot.
- Mentored interns in cutting-edge research projects utilizing GANs, mobile robots, and new hardware technologies.
- Proficient in various types of cameras, including stereo-camera, time-of-flight, structured light, and event-based cameras.

GV Lab, Tokyo University of Agriculture and Technology
Data Scientist - Part Time
📍 Tokyo, Japan
📅 Jan. 2022 – July 2022

- Proven leadership skills by successfully leading a team of students on a joint research project with AMADA AI Innovation Lab.
- Utilized expertise in AI to analyze motion-capture data of part manufacturing and improve training for future workers.

GV Lab, Tokyo University of Agriculture and Technology
Research Intern
📍 Tokyo, Japan
📅 March. 2018 – Aug. 2018

- Increased engagement and conversation time between a Pepper robot and human subjects through the implementation of unsupervised learning, engagement recognition, chatbot, and face recognition techniques.
- Experienced in conducting experiments in real-world settings with human subjects.
- Accomplished publication of research paper at an international conference, showcasing expertise in the field.

Shiva Sakthi Systems-ISO Certified Manufacturer
Quality Engineer
📍 Bangalore, India
📅 Aug. 2014 - Jan 2016

- Conducted and supervised quality control for mechanical component production.
- Successfully applied Six Sigma methods to improve efficiency and productivity in manufacturing processes.
- Contributed to achieving ISO-9001 BSI re-certification.
- Strong interpersonal and communication skills in resolving quality issues with clients.

Bosch Ltd.
Project Trainee
📍 Bangalore, India
📅 Feb. 2014 – June. 2014

- Improved a quality test on a manufactured component by applying statistical analysis techniques.
- Collected a large dataset of manufactured parts over a period of two months and conducted thorough data validation and statistical analysis.
- Successfully demonstrated through data analysis that there was no correlation between the current quality test and the manufactured dimensions, leading to the improvement of the quality control process.

Tokyo English Lifeline
Volunteer

📍 Tokyo, Japan
📅 Jan 2020 – Present

EDUCATION

Chubu University - Machine Perception Robotics Group (MPRG)
Ph.D. in Robotic Science and Technology

📍 Aichi, Japan
📅 April 2020 - March 2023

Supervisor: Professor Hironobu Fujiyoshi

Research Topics:

Object detection, Grasp-position-detection, 6D Pose estimation, Synthetic data generation, Automated data-collection.

Ecole Centrale de Nantes
Masters in Advanced Robotics - EMARO Plus – Grade: 84.1%

📍 Nantes, France
📅 Sep. 2017 – Aug. 2018

Key Subjects:

Advanced visual geometry, Advanced modeling of robots, sensor based control of complex robots, optimal kinematic design.

University of Genoa
Master of Science in Robotics Engineering - EMARO Plus – Grade: 94.5%

📍 Genoa, Italy
📅 Sep. 2016 – Aug. 2017

Key Subjects:

Mobile robots, human computer interaction, optimisation techniques, non-linear control, computer vision, software architecture for robotics, system identification, modeling and control of manipulators.

Visvesvaraya Technological University
Bachelor of Engineering in Mechatronics – Grade: 86.4%

📍 Bangalore, India
📅 Aug. 2010 – July. 2014

Key Subjects:

Analog and digital electronics, programming, embedded systems, computer graphics, signals and systems, power electronics, manufacturing technology, automotive electronics, sensors and network.

PUBLICATIONS

JOURNAL

- **S. P. Pattar**, T. Killus, T. Hirakawa, T. Yamashita, T. Sawanobori, and H. Fujiyoshi, "Automatic Data Collection for Object Detection and Grasp-position Estimation with Mobile Robots and Invisible Markers," *Advanced Robotics*, 1-16, 2022.

- **S. P. Pattar**, T. Hirakawa, T. Yamashita, T. Sawanobori, and H. Fujiyoshi, "Single suction grasp detection for symmetric objects using shallow networks trained with synthetic data," *IEICE Transactions on Information and Systems*, vol. E105.D, no. 9, pp. 1600-1609, 2022.

CONFERENCES

- **S. P. Pattar**, E. Coronado, L. R. Ardila, and G. Venture, "Intention and Engagement Recognition for Personalized Human-Robot Interaction, an integrated and Deep Learning approach," *2019 IEEE 4th International Conference on Advanced Robotics and Mechatronics (ICARM)*, 2019, pp. 93-98, doi: 10.1109/ICARM.2019.8834226. (*Finalist for Best Student Paper Award*).

- W. S. Lo, C. Yamamoto, **S. P. Pattar**, K. Tsukamoto, S. Takahashi, T. Sawanobori, and I. Mizuuchi, "Developing a Collaborative Robotic Dishwasher Cell System for Restaurants." *In International Conference on Intelligent Autonomous Systems*, (pp. 261-275), Springer, Cham.

Patents

- K Tsukamoto, WS LO, T Killus, **S. P. Pattar**, "Gripping system, gripping method, and storage medium." *US Patent App. 18/099,057, 2023.*

Awards and Accomplishments

- Finalist for Best Student Paper Award at ICARM 2019.
- JASSO Scholarship for Master Thesis at Tokyo University of Agriculture & Technology.
- Consortium Scholarship for European Master in Advanced Robotics.
- Erasmus European Exchange Program Scholarship.

Technical Skills

- **Languages**
  Python, C++, Bash, C#, Rust.
- **Technologies and Frameworks**
  Tensorflow, Keras, Pytorch, OpenCV, Git, Django, NLTK, 3D Printing.
- **OS**
  Linux, Windows, MacOS.
- **Tools**
  Unreal Engine 4, Unity, Omniverse, ROS, RoboDK, SolidWorks, Fusion 360, MATLAB, Gazebo, Robot Studio.

Online Courses and Certifications

- **Introduction to Machine Learning in Production**, deeplearning.ai, Coursera.
- **ROS2**, Udemy.
- **Generative Adversarial Networks (GANs) Specialization**, deeplearning.ai, Coursera.
- **Reinforcement Learning**, Alberta Machine Intelligence Institute, Coursera.
- **TensorFlow in Practice Specialization**, deeplearning.ai, Coursera.
- **Deep Learning Specialization**, deeplearning.ai, Coursera.
- **Fundamentals of Accelerated Computing with CUDA Python**, NVIDIA Deep Learning Institute.
- **Introduction to AI in the Data Center**, NVIDIA Deep Learning Institute.
- **Machine Learning Crash Course (MLCC-2017) - 6 credits course**, UNIGE and MIT.
- **Machine Learning**, Stanford Online, Coursera.
- **SolidWorks**, CADD Centre Ltd..
- **CATIA V5R20**, Swamy Design Solutions Pvt. Ltd.
- **Mechatronics and PLC**, VTU-BOSCH Rexroth Centre of Competence in Automation Technology.

Language Skills

- **English**: Fluent (C2).
- **French and Italian**: Intermediate.
- **Hindi and Kannada**: Native.
- **Japanese**: Intermediate (N3).