



RICHARDS BRITTO

Computer Vision Engineer

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Github

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Uppsala, Sweden

LinkedIn

EDUCATION

Masters | Uppsala University

Sept 2021 – CURRENT Uppsala, Sweden

- Major: Image Analysis and Machine Learning

Bachelors | National Institute of Technology Trichy

Sept 2016 – May 2020 Tiruchirappalli, India

- Major: Electronics and Communication Engineering
- Minor: Humanities and Social Sciences (Economics)
- GPA: 8.01

TECHNICAL SKILLS

- PL** : Python, C/C++, JavaScript/JSEX, LaTeX, HTML/CSS
- ML Framework and Library** : PyTorch, TensorFlow, Scikit-Learn, PyGame, OpenCV, Open3D, NumPy, Pandas, Matplotlib, SciPy, BlenderProc, MONAI
- Development Tool** : Git, SSH, venv, VSCode, Linux
- Software** : CARLA, MATLAB, Blender, Microsoft Office
- ML Model and Algorithm**: Mask-RCNN, cGAN, cycle-GAN, YOLOv3, ResNet, UNet, Detectron2, FastSurfer, HighRes3DNet, Q-Learning, SARSA, Dyna-Q, PILCO, Gaussian Process, PCA, Variational AutoEncoder

PROJECT WORK

Autonomous Driving in CARLA | Github | Github

Jan 2023 – Feb 2023 Uppsala, Sweden

- Implemented a CNN based **DQN** to control agents using high-dimensional sensory inputs like vision and velocity.
- Used an experience replay-memory to mitigate the problem of correlated data and non-stationary distribution.
- Trained atari games using the same DQN agent.

Stereo Visual Odometry | Github

Aug 2019 – Oct 2019 Tiruchirappalli, India

- Determined **6-D pose** of the camera using KITTI dataset and estimated 3D location using ORB and disparity map.
- Determined features using the FAST algorithm and tracked them using LK optical flow.

Automated Security | Github

Aug 2019 – Oct 2019 Tiruchirappalli, India

- Implemented **SIFT** and **FLANN** for feature extraction.
- Performed feature extraction and feature matching on the cars entering the NIT Trichy campus.
- Detected cars and people using **YOLOv3**.

WORK EXPERIENCE

Synthetic Data Generation | IMINT AB

Sept 2022 – Jan 2023 Uppsala, Sweden

- Created a tool using blender's python API to generate realistic videos along with depth map, optical flow, etc.
- Simulated real world camera artifacts like lens distortion.
- Generated videos based on gyro and gravity sensor data.
- Customizable environment, weather, and lighting.

Layout Detection and OCR | Intellect (iSEEC Team)

May 2019 – Aug 2019 Chennai, India

- Developed an adaptation of **Detectron2** to detect the layout of non-formatted pdfs with labeled ROIs.
- Leveraged local context to improve region detection.

ACADEMIC RESEARCH

Diagnosis of iNPH using Evan's Index | Github

Jan 2023 – CURRENT Uppsala University, Sweden

- Segmented lateral ventricles using **Fastsurfer**.
- Trained **HighRes3DNet** to locate AC-PC co-ordinates.
- Found the plane parallel to AC-PC plane intersecting temporal horns of the lateral ventricles with maximum width.

Occlusion Aware Origami Pose Estimation | Github

May 2020 – April 2021 NUS, Singapore

- Developed a novel pipeline using **Mask-RCNN** and GAN.
- Generated depth map using **conditional GAN**.
- Generated 3D keypoints using modified Mask-RCNN by inputting concatenated RGB and depth feature.
- Achieved an accuracy of 99% in pose estimation.

RELEVANT COURSES

Deep Learning for Image Analysis

Robotics: Perception

Photogrammetry

Statistical ML

Reinforcement Learning

Advanced Probabilistic ML

Graph Theory (coursera)

Robotics: Aerial Robotics

Applied Game Theory

DL Specialization (coursera)

Data Engineering

CO-CURRICULAR ACTIVITIES

- Represented university's Football Team, Athletics Team, and Power-Lifting Team during undergraduate studies.
- Anime sketching and learning 3D animation.
- Playing for 5th division football club (IK Apollon).