

# BENEDICT AROCKIARAJ

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## SKILLS

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**Languages and Web Development:** C/C++ • Python • Java • HTML/CSS • GLSL • Javascript • PHP • SQL

**Tools and Frameworks:** PyTorch • Tensorflow • OpenCV • Numpy • Git • Docker • Google Cloud • BigQuery • AWS

## EXPERIENCE

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### Cruise

San Francisco, USA

*Machine Learning Engineer (Scene Prediction Team)*

May 2022 - Present

- Enhanced the trajectory prediction models to expand scene-prediction of animal movement, small pedestrians and pedestrians sitting/laying. Improved the end-to-end behavior and safety of Cruise AV around such scenarios by 65%.
- Built Transformers-based trajectory prediction architecture acting on vectorized map/agent information that reduced prediction latency by 20%, improved training/inference speeds by 33% and powers  $\sim 10$  models in the autonomy stack.
- Developed marginal/conditional NPC prediction, and AV trajectory generation on an auto-regressive large driving model showing strong improvements on joint predictions of NPC and AV. Designed common behavior evaluation metrics and enhanced the fidelity of end-to-end acceptance criteria for release test suites by 45%.

### Infilect

Bangalore, India

*Machine Learning Engineer (Computer Vision Team)*

Nov 2020 - July 2021

- Built deep-learning pipelines using object detection, segmentation, fine-grained classification and self-supervised learning for retailers like Kimberly Clark, P&G, Lowe's, Coke and ABInBev to provide real-time competitive intelligence and on-shelf execution insights. Achieved  $>97\%$  accuracy in detecting the smallest of SKUs and lifted per-store sales by 5%.

### Indian Institute of Science (VAL Lab)

Bangalore, India

*Research Intern | Guide: Prof. Dr. R. Venkatesh Babu*

May 2020 - August 2020

- Wrote data-loaders and modeled the architecture for kinematic-structure preserving, unsupervised 3D pose estimation framework to effectively disentangle pose, foreground and background appearance information. Reduced MPJPE by as high as 40% (semi-supervised) and 15% (unsupervised) on datasets like Human3.6M, 3DHP, LSP and 3DPW.

### University of Quebec (LIVIA Lab, ETS Montreal)

Montreal, Canada

*Visiting Research Intern | Guide: Prof. Dr. Éric Granger*

May 2019 - Aug 2019

- Analyzed negative transfer (around 20% drop in mAP from baseline) and catastrophic forgetting of the existing image-to-image domain adaptation approaches on face-detection datasets, and studied the use of local features, and temporal information from trackers to generalize unsupervised domain adaptation approaches on datasets like SCUT and Widerface.

## PUBLICATIONS

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### Linguistic Properties of Truthful Responses

*Published at TrustNLP @ ACL 2023*

January 2023 - May 2023

- Investigated the phenomenon of predicting truthfulness of LLM's response using a large set of 220 handcrafted linguistic features. Focused on GPT-3 models and found that the linguistic profiles of responses are similar across model sizes.

## AWARDS

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- Received the prestigious **Vector Scholarship in Artificial Intelligence** from the Vector Institute, Toronto
- Secured the coveted **Mitacs Globalink Research Internship** award to perform research at LIVIA, ETS Montreal
- Awarded the **Indian Academy of Sciences' Research Fellowship** to conduct research at CVIT, IIIT-Hyderabad

## EDUCATION

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### University of Pennsylvania (MSE in Computer and Information Sciences)

CGPA: 4.0/4.0

**Courses:** Advanced Machine Perception, Learning in Robotics, Reinforcement Learning, NLP, Advanced Algorithms

**Teaching:** Principles of Deep Learning, Applied Machine Learning

### National Institute of Technology, Trichy (B. Tech. Honors in Computer Science)

**Courses:** Probability, ML, AI, Image Processing, Data Mining

CGPA: 9.47/10 | 2<sup>nd</sup>/104 students