

Pankayaraj . P - BSc Computer Engineering

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Employment History

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|-----------------------|--|
| 2023-Current | 📌 Teaching Assistant (CMSC742: Algorithms in Machine Learning: Guarantees and Analyses. Instructor: Prof Furong Huang) Department of Computer Science, University of Maryland, USA |
| 2023-2023 - 7 months | 📌 Research Assistant Advisor: Prof. Furong Huang. Department of Computer Science, University of Maryland, USA |
| 2022-2022 - 4 months | 📌 Teaching Assistant (CMSC320: Introduction to Data Science. Instructor: Prof. Maksym Morawski) Department of Computer Science, University of Maryland, USA |
| 2022-2022 - 7 months | 📌 Research Engineer Singapore Management University (SMU)
- Working on Constraint Reinforcement Learning in Hierarchical Settings |
| 2020-2021 - 14 months | 📌 Collaborator Flowers Laboratory, ENSTA Paris.
- Working on the ways to improve continual offline reinforcement learning with artificial curiosity (Manuscript Under Finalization) |
| 2020-2021 - 12 months | 📌 Research Assistant SLTC, QBITS Lab.
- Working on task specialization in the context of multi agent multi goal reinforcement learning
- Continual Offline Reinforcement Learning |
| 2019-2019 - 5 months | 📌 Research Assistant Intern SLTC, QBITS Lab.
- Worked on devising communication strategies for multi agent multi arm bandit problems in both normal and delayed reward settings. |

Education

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|-----------|---|
| 2022-2027 | 📌 PhD Computer Science , Department of Computer Science, University of Maryland, USA.
ADVISOR: Prof Furong Huang |
| 2015-2020 | 📌 B.Sc. Computer Engineering University of Peradeniya, Sri Lanka 3.5 out of 4 GPA |
| 2002-2014 | 📌 Sri Koneshwara Hindu College Trincomalee. |
- English Proficiency 📌 **TOFEL: 112**, Reading: **29**, Listening: **30**, Writing: **26**, Speaking: **27**

Research Publications

Conference Proceedings

- 1 **Pankayaraj P**, & Varakantham, P. (2022). Constrained reinforcement learning in hard exploration problems [**Accepted**], In *37th AAAI Conference on Artificial Intelligence Washington, D.C. USA* **Acceptance rate : 19.6 %**.
- 2 **Pankayaraj. P**, & Maithripala, D. H. S. (2020). A decentralized communication policy for multi agent multi armed bandit problems [**Presented**], In *European Control Conference 2020, Saint Petersburg, Russia* **Acceptance rate : 58%**.
- 3 **Pankayaraj P**, Maithripala, D. H. S., & Berg, J. M. (2020). A decentralized policy with logarithmic regret for a class of multi-agent multi-armed bandit problems with option unavailability constraints and stochastic communication protocols [**Presented**], In *59th IEEE Conference on Decision and Control, Jeju Island, Republic of Korea* **Acceptance rate : 52.7%**.
- 4 Jayatilaka, G., Weligampola, H., Sritharan, S., **Pankayaraj Pathmanathan**, Ragel, R., &], I. N. [(2019). Non-contact infant sleep apnea detection [**Presented**], In *ICIIS 2019 Sri Lanka*.

Under Review

- 1 **Pankayaraj Pathmanathan**, Rodríguez, N. D., & Ser, J. D. (2022). *Using curiosity for an even representation of tasks in continual offline reinforcement learning*.


Symposiums

- 1 **Pankayaraj P**, Sumanasekera, Y., Samarasinghe, C., Elkaduwe, D., Jayasinghe, U., & Maithripala, D. H. S. (2020). *Multi-agent reinforcement learning in sparsely connected cooperative environments* [**Presented, awarded the Best Research Paper**], in *ESCaPe 2020, Sri Lanka*.



Preprints

- 1 **Pankayaraj P**, Sumanasekera, Y., & Samarasinghe, C. (2019). *A review on reinforcement learning based autonomous quadcopter control*.


Academic Volunteering







- 2020  **Peer Reviewer : Journal** IEEE Transactions on Communications
 - Impact Factor : 5.69 (2018)
 - Done during the undergraduate period

Projects






- 2023  **Efficient Exploration in Reinforcement Learning** Improving the sample efficiency in RL where entropy of occupancy measure is used as an exploration mechanism
 Report <https://drive.google.com/file/d/1ESQZunSYI8WegsgiQ63HJmHgUXHIF1LU/view?usp=sharing>
-  **Virtual Maze Navigation Using Different Locomotion Techniques** Analysing the effects of Redirected Walking and Steering in VR environments and proposing a hybrid locomotion technique.
 Report <https://drive.google.com/file/d/11JiiJo0ZzJLbtfumzjThmq3Yp0BEG1pF/view?usp=sharing>

Projects (continued)

- 2019  **Reinforcement Learning Based Autonomous Quadcopter Control**
Using Reinforcement Learning algorithms to make Quadcopter control decisions on an AirSim simulated environment

REPORT: <https://drive.google.com/drive/folders/16Ej8XL4SRrtHL58FsMMnYDaD5WYWruF9>
- 2018  **A user recommendation method using Bayesian Reinforcement Learning**
Github Link : <https://github.com/pankayaraj/sitnshop/tree/BackEndAlgorithm>
REPORT : <https://drive.google.com/drive/folders/19Sq1UEXeANUWQGGVf8EXBCrPRntAFvaF>
- 2017  **Creating a python based library with a Tensor flow back end for Bayesian Optimization and Multi Arm Bandit Problem**
Github Link : <https://github.com/pankayaraj/Multi-Arm-Bandit-Library>
PyPi link : <https://pypi.python.org/pypi/mabandit/1.3>
REPORT: <https://drive.google.com/drive/folders/1H2Pcbfj825LPbYjo3rnKLY0lgRQCfwXb>
- 2018  **SitnShop– An Advertising platform for shops** An advertising platform for any kind of shop and it also helps the customers of the shops to easily find related shops.
Github Link : <https://github.com/pankayaraj/sitnshop/>
REPORT : <https://drive.google.com/drive/folders/1ZcsJkFPDCJhvh8kOyt0LjnxBkJ1cAgaB>
-  **Infant Sleep Apnea detection system : A portable device that can detect Sleep Apnea condition in infants using techniques such as Optical flow, Edge detection, Fourier analysis with python, Raspberry pi.**
Github Link : https://github.com/pankayaraj/Sleep_Apnea_Detection
REPORT: https://drive.google.com/drive/folders/17fLXhj1uxl5MuqNqEM46_tYuRsWoXC2Z
-  **Making a central server for the sleep apnea problem**
Technologies : Python, Django, Django rest framework, HTML/CSS, JS
Github Link: https://github.com/pankayaraj/Django_Server_Sleep_Apnea
- 2017  **ExpertMiner :**
Earth resource location prediction using Hyper Spectral Images from satellites Techniques : Pattern Recognition, Correlation Mapping
Github Link : https://github.com/pankayaraj/HSI_Project

Skills




- Languages  English (TOFEL: 112, Reading: 29, Listening: 30, Writing: 26, Speaking: 27), Tamil(Native).
- Coding  Python , Java , \LaTeX , C++, C, Matlab
- Libraries  Tensorflow, Pytorch, Kivy, Numpy, Scipy
- Web Dev  Django
- Interested Fields  Reinforcement Learning, Deep Learning, Machine Learning, Statistics and Probability, Bayesian Models, Numerical Computation, Algorithmic Problem Solving, Web and GUI development

Skills (continued)

Misc.  Academic research

Miscellaneous Experience

Awards and Achievements

- 2017  **ACES Hackathon 2017(Intra university hackathon)** : Project:Expert miner: Software section winners, Best idea of the competition
- 2016  **ACES Coders v6.0** (Inter university programming competition):Country Rank : 4th
-  **IEEEExtreme 10.0 Programming competition**(24 hour Global Programming competition
Country Rank: 38th
World Rank: 330th

References

Prof Furong Huang

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Prof Pradeep Varakantham

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Dr D.H.S Maithripala

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