

Pankayaraj . P - BSc Computer Engineering

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🌐 <http://pankayaraj.github.io>

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Employment History


- 2022-Current  **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) 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

- 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

-  **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>
- 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>

Projects (continued)




- 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 anykind 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/1ZcsJkFPDCJhvh8k0yt0LjnxBkJ1cAgaB>
-  **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
- Intrested Fields  Reinforcement Learning, Deep Learning, Machine Learning, Statistics and Probability, Bayesian Models, Numerical Computation, Algorithmic Problem Solving, Web and GUI development
- 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 Pradeep Varakantham

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